

INCLUSIVE DISASTER AND EMERGENCY MANAGEMENT FOR PERSONS WITH DISABILITIES

A review of needs, challenges, effective policies, and practices

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2013

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CHAPTER 1: INTRODUCTION

1.1 Disability, vulnerability, and disaster situations

In June 2013, cloudbursts caused devastating floods and landslides in the state of Uttarakhand in India, resulting in a massive loss of life (with thousands of fatalities) and property, destroying infrastructure, and leaving thousands of pilgrims and visitors stranded for days. The past decade has witnessed numerous mass disasters and emergency events globally, including the Asian Tsunami of 2004, Hurricane Katrina in the United States in 2005, the recurring floods in Bangladesh, earthquakes in Kashmir (2005), Haiti (2010) and Japan (2011), triggering in turn a tsunami and nuclear emergency. About 332 natural disasters were recorded in 2011, leading to 30,773 fatalities and leaving 244.7 million people affected in their wake (Guha-Sapir, Vos, Below & Ponserre, 2012). Economic damages from natural disasters alone were estimated to be US \$366.1 billion. Technological disasters such as industrial and transport accidents and collapses have killed in the hundreds in 2012 alone and numbers of people affected in the ten worst technological disasters in 2012 ranged from 140 to 13323 (EM-DAT, 2013). Countries around the world are also increasingly affected by man-made emergencies such as terrorist attacks, which have wreaked severe damage and destruction to people and property such as the Mumbai attacks in 2008, attacks in Pune 9/11 attacks and Boston bombings in the United States in 2013.

Disasters and emergency situations have direct and indirect impacts on the people they affect, ranging from small inconveniences and disruptions to daily life to life threatening conditions, loss of life, death or displacement of loved ones, damage to property, loss of livelihoods, migration and displacement, and large scale destruction of entire communities (Norris, Friedman & Watson, 2002; Fjord & Lenore, 2009; add more cites). Disasters wreak havoc and destroy full-scale infrastructures, homes, schools, hospitals, communication systems, and disrupt access to food, clean water, electricity, and transportation. An indirect impact of disasters and emergencies is the heightened risk of abuse and violence against disadvantaged communities. In addition, the pathways for long-term recovery and restoration may remain murky, slow, and obstacle driven.

As stated by Morrow (1999), “disaster vulnerability is socially constructed” (p. 1). In the event of a disaster or emergency, a complex range of social and economic factors affect the ability of individuals to respond; socioeconomic inequalities determine the level of risk different individuals face, and thus their vulnerability during disaster or

emergency (Hilhorst & Bankoff, 2004). What this means is that different populations may face similar exposure to the negative effects of any disaster or emergency situations, but their actual vulnerability is dependent on their socio-economic conditions, civic and social empowerment, and access to mitigation and relief resources. Hence, in thinking about the policy and material response to emergencies and disasters, it is important to understand heightened risks and vulnerabilities that arise out of social disparities and environmental barriers. This will allow officials and emergency responders to tailor disaster preparedness and response services to be inclusive of all needs.

Increased scrutiny on disasters and emergencies over the past decade has shown that persons with disabilities are disproportionately affected in almost all types of disaster and emergency situations. As pointed out in a United States Congressional briefing (2005), most disaster management systems are “usually designed for people without disabilities who can rely on walking, running, seeing, hearing or quickly responding to instructions” (National Council on Disability [NCD], p. 22). Persons with disabilities face unique challenges during every stage of emergency and disaster management due to inaccessible warnings, evacuation, response (including shelters, camps, and food distribution), and long-term recovery efforts. Pre-existing inequities may constrain their ability to access aid, acute trauma care, and relief services compounding their vulnerability during a disaster. In many cases, a vicious cycle is set in motion as persons with existing disabilities or those who acquire disabilities in a disaster face greater inequities during recovery and reconstruction due to challenges in re-integrating into the workforce, finding accessible housing, getting access to health and social services, and increasing dependency due to inaccessible infrastructure.

A review of the literature on disaster vulnerability by Cutter, Boruff, and Shirley (2003) revealed specific social determinants of vulnerability—such as, income, education, political power, potential for employment loss, communications and transportation infrastructure, education, access to medical services, dependence on social services, and invisibility in communities due to inaccessibility. All of these social determinants are significantly relevant to the social status and economic self-sufficiency of persons with disabilities. In addition, gender, age, race, and ethnicity can further compound their vulnerability.

Over a billion people in the world, i.e. about 15% of the world’s population, have disabilities (World Health Organization and World Bank, 2011). More than 80% of individuals with disabilities live in low and middle income countries based on WHO data on the prevalence of disease and injury related disabilities (WHO, 2004), and

constitute a significant proportion of the poorest of the poor in the world. They face inequalities in access to education, health care, employment and sustainable livelihoods, asset accumulation, and opportunities for social, civic, and community participation. Stigma remains one of the most intractable barriers towards the inclusion of people with disabilities. These existing inequities have a snowballing effect on their vulnerability in adverse situations, many times trapping them in a vicious circle of social and economic exclusion. There is an increasing understanding among governments, UN agencies, development agencies, and aid and relief NGOs of the importance and mandate to make disaster and emergency management inclusive of persons with disabilities at each stage. This report aims to provide an overview of the needs of persons with disabilities during disasters and emergencies, describe the challenges they face at different stages of the response and recovery process, and offer examples of effective practices and initiatives.

1.2 Importance of and need for inclusive disaster management practices

Persons with disabilities face unique challenges during every stage of emergency and disaster management due to inaccessible warnings, evacuation, response (including shelters, camps, and food distribution), and long-term recovery efforts. Additionally, disruption to physical, social, economic, and environmental networks and support systems affect people with disabilities in greater proportions. Common experiences reveal that people with disabilities are more likely to be left behind or abandoned during evacuation in disasters and conflicts. They may be separated from their family members and caregivers, as well as their assistive devices (e.g. wheelchairs, prosthetics) or may be unable to operate them in a disaster (e.g. aids that run on electricity or batteries). Shelters and relief camps are frequently inaccessible to persons with disabilities, and they may be unable to easily access food and water distribution centres. The paucity of statistical data on persons with disabilities and limited knowledge on how to respond to their needs is another factor that heightens their vulnerability in a disaster or emergency situation (Smith, Jolley & Schmidt, 2012). Resources and necessities may become scarce during a disaster situation, and there is a potential for discrimination on the basis of disability in such scarcity.

People also acquire impairments due to a disaster or emergency situation. These two groups may have differing needs in response and recovery starting from the need for acute medical attention and rehabilitation resources. Physical impairments can result from traumatic spinal cord and brain injuries, amputations, and other injuries incurred in the disaster or emergency. When people face traumatic situations, especially on the

scale of a mass disaster or emergency, they are also at risk for experiencing psychosocial disabilities such as post-traumatic stress, anxiety, depression, cognitive difficulties due to traumatic brain injuries, and may other psychological implications.

When there is a large scale disaster leading to significant damage to property and entire neighborhoods, there is a need for a long reconstruction effort. People with disabilities face compounded effects when rebuilding efforts do not incorporate accessible design or inclusive resources. Thus, persons with disabilities may face barriers in entering government buildings to access relief and welfare resources, new short term and housing projects, access to far off sites providing aid, and re-entering the workforce to earn a sustainable livelihood.

Common perception is that inclusion and accessibility only matter to a small percentage of the population and thus are not cost effective. Leaving aside the fact that persons with disabilities are not a small and irrelevant percentage, accessible and disability inclusive approaches in fact benefit many others. Elderly persons are one of the most affected groups in a disaster or emergency situation. Aging and disability are linked with each other, and many persons develop disabling conditions as they age including limited mobility, low vision, and hearing difficulties. They will significantly benefit from physical and communication accessibility in disaster preparedness, evacuation, relief, and recovery. Similarly, providing information in multiple formats beyond text such as graphical and oral formats can make this important information available and accessible to people with low or no literacy as well as children.

1.3 International mandates and guidelines

The Convention on the Rights of Persons with Disabilities is the first international human rights treaty that specifically addresses the rights and freedoms of persons with disabilities (Lord, Samant Raja & Blanck, 2012). The CRPD was adopted by the UN General Assembly in 2006 and opened for signatures on March 30, 2007. The CRPD had one of the shortest periods to come into force as the required twenty ratifications were achieved barely a month after it opened for signatures.

The entire CRPD and its eight operating principles raise the need to make all disaster and emergency planning accessible and inclusive, failing which States Parties will not be able to meet their obligations under the CRPD. Additionally, the CRPD is specific about the need to make emergency and disaster management operations inclusive of persons with disabilities. Article 11 of the Convention on the Rights of Persons with Disabilities (CRPD) (UN Enable, 2006) on "Situations of Risk and Humanitarian

Emergencies” states that:

States Parties shall take, in accordance with their obligations under international law, including international humanitarian law and international human rights law, 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.

The CRPD’s direct mention of disasters and emergencies represented the first major global treaty to focus attention on the needs of persons with disabilities in disaster events. In addition, Article 9 on Accessibility requires States Parties to ensure that people can access, on an equal basis with others the physical environment, transportation services, information and communications technologies and systems and all public facilities and services which include emergency services and facilities. Article 9 specifically mentions the need to make “information, communications and other services, including...emergency services accessible.” Declarations and initiatives before that such as the Hyogo Framework for Action, which is the widely accepted blueprint for Disaster Risk Reduction in countries, failed to mention and take into account the importance of addressing disability issues. As of September 16, 2013, 134 countries have ratified and 156 have signed the CRPD (UN Enable, 2013). States parties to the CRPD have to work towards making disaster risk reduction and all stages of the disaster and emergency management process accessible and inclusive of persons with disabilities.

Article 32 on International Cooperation focuses on the need to ensure that international cooperation initiatives, including development programs, are accessible and inclusive of people with disabilities. States are encouraged to support capacity building and the exchange of knowledge and best practices, strengthen research collaborations and access to scientific knowledge, and offer technical and economic assistance to help meet a state’s obligations under the convention. This provision is very relevant to the aid and humanitarian relief operations conducted by development and aid agencies and international NGOs. It promoted increased technical cooperation on disability and reiterates the need to include disability in all development and aid programming.

Many of the articles of the Convention intersect with different aspects of the disaster management cycle such as education and employment which are relevant in recovery and reconstruction. A few relevant articles are given below.

Article 9 on Accessibility requires States Parties to ensure that people can access, on an equal basis with people without disabilities, physical environments, transportation

services, information and communications content, technologies, and systems and all public facilities and services which certainly apply to emergency services and facilities. Article 9 specifically mentioned the need to make “information, communications and other services, including...emergency services” accessible. Article 31 on Statistics and Data Collection encourages States Parties to collect statistical and research data that can help in formulating and implementing effective policies to give effect to the different articles of the Convention. Article 26 on Habilitation and Rehabilitation focuses on organizing, strengthening and extending comprehensive habilitation and rehabilitation services and programmes which are important during the response and immediate recovery following serious injuries in disasters and emergencies, as well as for long-term recovery and rebuilding.

Other major declarations that raise the need for inclusive disaster and emergency management include the Yogyakarta declaration on disaster risk reduction in Asia and the Pacific 2012, the Phuket Declaration on Disaster Preparedness for Persons with Disabilities in 2009, and the Biwako Millennium Framework for Action 2003-2012.

The Hyogo Framework for Action, adopted in 2005 at the World Conference on Disaster Reduction, is considered to be a blueprint to guide nations in their disaster risk reduction efforts until 2015. The framework which was signed by 168 countries does not address disability specifically, resulting in continuing exclusion of persons with disabilities in most DRR plans (Scherrer, 2013). However, efforts are underway to promote the inclusion of disability in the next iteration of the Hyogo Framework.

1.5 Scope and Methodology of this Report

The goal of this report is to serve as a primer on the needs of persons with disabilities in disasters and emergencies, and to provide a comprehensive compilation of effective policies, practices and strategies for inclusive disaster and emergency management. This report utilizes a literature review of policy, practice, and research documentation on the different dimensions of inclusive disaster and emergency management. A diverse set of sources were compiled for this review including:

- research articles, reports, and evaluations of responses in past disasters
- country policies and initiatives for disaster management
- best practice manuals and handbooks, and
- reports from advisory groups and discussion forums

Chapter 2 offers an overview of the disaster and emergency management process by

describing each stage of the process and the different types of disasters and emergencies that affect populations around the world today. Chapter 3 lays the foundation for inclusive disaster and emergency management by discussing the different types of disabilities, and how persons with different disabilities might be affected in a disaster or emergency situation. It discusses the needs of persons with disabilities across different stages and activities such as preparedness, search and rescue, sheltering, food distribution, recovery and reintegration, and long-term reconstruction and rehabilitation.

Chapter 4 focuses on the growing use and saliency of Information and Communication Technologies (ICTs) throughout the disaster and emergency management process and addresses the need to ensure that people with disabilities are not excluded from relief and recovery initiatives due to ICT inaccessibility. At the same time, it underlines how accessible ICTs can break traditional barriers to resources, relief, and information for persons with disabilities. Chapter 5 provides a compilation of policies, programs, initiatives, and strategies that have been put in place to support inclusive disaster and emergency management and found to be effective in meeting the needs of persons with disabilities. Finally, Chapter 6 offers conclusions and recommendations to all relevant stakeholders (governments, persons with disabilities and their families, Disabled Peoples' Organizations, aid and humanitarian relief organizations, other NGOs, and private entities) in meeting their part to ensure that persons with disabilities are no longer overlooked or excluded in disasters and emergencies.

CHAPTER 2: UNDERSTANDING DISASTERS AND EMERGENCIES

Before we begin to address the needs of persons with disabilities at different stages of disaster and emergency management, it is important to understand the complex world of disasters and emergencies. Disasters and emergencies can result from a variety of triggers and hazards, both natural and man-made. They vary in intensity and area of impact. Some result in a drawn out situation such as earthquakes with aftershocks and industrial leaks and spills over several days, or famines and droughts over several years. Others could be high intensity but active in a short time span such as terrorist attacks or cyclones and tornadoes. Some could have a snowballing effect and start as one type of emergency and cascade into another, e.g. the earthquake in Japan in 2011, which spiraled into a nuclear emergency due to the damage sustained by the Fukushima Daiichi nuclear power plant by the earthquake and resulting tsunami (Demetriou, 2011).

A disaster and emergency event also goes through several different stages which commence in mitigation and disaster risk reduction activities before the disaster or emergency even begins, and ends long after the active disaster or emergency has ended through long periods of reconstruction and rebuilding. Each stage has a different impact on persons with disabilities and each stage has to be disability inclusive. The disaster and emergency management process is also cyclical as the end of any disaster or emergency feeds into the preparedness and mitigation of the next one.

This chapter discusses the major types of hazards and disasters prevalent in the world today, and describes all the different stages of the disaster management cycle.

2.1 Types of Disasters and Emergencies

Disasters and emergencies emerge from a range of different hazards. As described in the Human Resource and Capacity Development Plan for Disaster Management and Risk Reduction in India (Government of India, 2013), disasters and emergencies can occur due to different triggers such as:

- **Natural triggers** include environmental and natural physical geophysical, hydrological, meteorological, climatological, or biological phenomena which can result in sudden, short-term events, long-term, drawn out disasters, or health-related emergencies (International Federation of Red Cross and Red Crescent Societies [IFRC], n.d.; Government of India, 2013).

- **Human-induced technological and other triggers** arise from man-made processes, conditions, materials, or errors but are not the result of direct human intent to cause harm and destruction (Government of India, 2013).
- **Man-made** triggers usually represent direct, predicated human activity resulting in societal emergencies where the proponents have direct or indirect knowledge of the resulting catastrophic and destructive consequences of the event (Government of India, 2013).

The different triggers described above give rise to different kinds of emergency and disaster situations:

- **Natural/Environmental disasters:** These are mostly caused by natural triggers such as earthquakes, landslides, floods, tsunami, storms, cyclones, and forest fires. Natural climate and weather related phenomena can also result in long-term disastrous events such as droughts. Natural triggers are often also responsible for triggering health related emergencies such as disease epidemics. In some cases, environmental disasters occur due to human-induced triggers such as oil spills, industrial and chemical accidents, and release of radioactive materials.
- **Technological and Human-induced disasters:** These occur due to human negligence and human-induced triggers and can result in severe consequences for people, communities, and the environment at large. Examples include oil spills, industrial and chemical accidents, and release of radioactive materials. Human-induced emergencies also include those due to technical, mechanical, and human failures that cause mass accidents such as transport accidents.
- **Man-made, security related emergencies:** These include high-intensity security and violent situations such as terrorist attacks, violent conflict, and riots.
- **Emergencies in situations of crowd and panic:** These include highly fatal and harmful events such as stampedes that can occur in crowded venues during festivals, pilgrimages, and similar situations.
- **Personal emergencies:** Emergencies are not only mass events, but many times include personal events such as traffic accidents, home fires, and medical emergencies. While these do not come under the purview of national disaster management authorities, it is still important to train first responders (including police) and medical personnel to provide inclusive and accessible assistance and support to persons with disabilities during personal emergencies. While many

aspects of personal emergencies will be outside the scope of this paper, it will still cover best practices that impact response and access to services in personal emergencies to the extent possible.

Thus disasters and emergencies can occur due to widely varying phenomena and exhibit their destruction in different forms. Disasters can be sudden-onset events such as earthquakes, tornadoes, and terrorist attacks or slow-onset events such as famines and droughts. Mass disaster and emergency situations are often unpredictable, not only in their occurrence but also their scale and scope, and generally trigger panic and chaos.

2.2 Stages of Disaster and Emergency Management

Disaster and emergency management basically includes several stages before, during, and after the disaster/emergency event. Many countries and international organizations have developed a schema for the disaster and emergency management cycle, with some variations in the exact terms and definitions used. Different countries adopt different terms and label stages slightly differently based on their experiences. However, most disaster and emergency management cycles primarily break up in the following manner. The pre-event stage involves prevention and mitigation or risk reduction to either prevent the event from occurring or decreasing its severity and impact on populations (Albores, Rodriguez & Roy, 2013). This stage also includes disaster preparedness which builds in the resources and mechanisms that will be put into action in a disaster or emergency with the aim to lessen the loss of life, injury, and damage to property. Preparedness, risk reduction, and mitigation occur after each disaster as well to be better prepared for future events. Immediate response and relief operations occur as soon as a disaster or emergency event begins and usually last until after the hazard/trigger subsides. Response and relief operations spillover into recovery and then into long-term reconstruction and rebuilding, most commonly after the disaster or emergency has passed.

The following general descriptions of the stages in a disaster or emergency management process were compiled based on a review of different disaster management cycle schemas.

a. Mitigation/risk reduction, and prevention

Mitigation, prevention, and risk reduction activities are conducted before a disaster occurs with the intention of reducing the harmful impact of a future disaster. It pertains to precautions that can be taken to reduce the risk of a disastrous event occurring, as

well as boosting the resiliency of communities and built environments. These may include conducting comprehensive risk assessments and analysis to identify natural, human-induced, and man-made hazards in advance such as flood hazard mapping or identifying industrial sites which contain toxic or inflammable materials (FEMA, n.d.). Examples of risk reduction activities include strengthening standards for building structures, improved regulations to over dangerous materials, building levies and dams to prevent flooding.

b. Preparedness

The Disaster and emergency preparedness stage focuses on the preparations required at personal, community, state, regional and national levels to minimize the damage to life and property in the event of a disaster. The goal of preparedness activities is to build and strengthen the resilience of communities. A comprehensive approach to inclusive disaster preparedness includes both top-down and bottom-up initiatives. Top-down approaches involve national and state level law and policy, disaster management plans, government initiated and developed disaster response infrastructure and apparatus (e.g. shelters, health care systems, and food delivery mechanisms), conducting needs assessments of people and communities for different kinds of disasters and emergencies, public awareness raising campaigns and communications infrastructure, large scale response drills (Mohanty, 2005). Bottom-up approaches include personal awareness and preparedness within homes, awareness raising campaigns by NGOs and community based organizations, local levels drills, and volunteer based community response teams and efforts (Inglesby, 2011; Paton, 2003). Approaches towards preparedness and the specific actions taken will be dependent on several factors such as risk of different natural and man-made disasters, location and population, infrastructural capability, possibilities for escape routes and strategies and other factors (Sullivan & Ha'kkinen, 2011).

c. Response

This stage of disaster management refers to the immediate response to a disaster, when the disaster strikes and might still be unfolding (e.g. a hurricane or terrorism event) or in its immediate aftermath (e.g. an earthquake). The main focus of response activities is to minimize loss of life, injury and damage to property and communities (GoI, 2013). Response activities usually include search and rescue, evacuation, access to medical aid and care, and efforts to stem further damage and destruction to property.

d. Relief

This phase of disaster management follows or may even overlap with the response

phase and focuses on providing people with temporary relief and access to essential services such as sheltering, temporary housing, relief camps, providing food, water and sanitation, temporary transportation facilities, and access to welfare and government benefits and services (GoI, 2013).

e. Recovery

This phase of disaster management focuses on trying to bring the community back to its regular state of functioning (Messer, 2003; Warfield, n.d.). Recovery can include restoring essential services and basic infrastructure such as roads and bridges, ongoing medical and mental health care services, planning for long-term reconstruction, assisting displaced populations to come back home, setting up temporary schools, and other public systems (Federal Emergency Management Agency, 1993; GoI, 2013).

f. Reconstruction

This refers to the long-term rebuilding and sustainable development of the affected community. Reconstruction phases can last for many years, and involve the rebuilding of homes, schools, government and other buildings, as well as community infrastructure thus creating opportunities for improving design structures and resiliency (GoI, 2013). In many cases, it is difficult to pinpoint exactly when recovery stops and reconstruction begins (Messer, 2003).

The disaster management process is an ongoing cycle and reconstruction usually goes along with or leads into mitigation, prevention and risk reduction to strengthen affected communities even further to brace against future challenges. Each stage impacts the next one and each stage can insert its own barriers and challenges for persons with disabilities as discussed in the next chapter. Another thing to keep in mind is that one stage does not necessarily end before the next stage begins. For example depending on the event, search and rescue operations will continue while rescued individuals are given relief and aid, and short term recovery begins to help people get back to their communities.

CHAPTER 3: INCLUSIVE DISASTER AND EMERGENCY MANAGEMENT

As discussed in Chapter 2, the disaster or emergency management process cycles through several different stages. Disaster and emergency situations can be chaotic, and often require instant reactions to save lives and property. The needs of persons with disabilities must be assessed and included at every stage of disaster management i.e. mitigation, preparedness, response, relief, recovery and reconstruction. This chapter provides an overview of the needs of persons with different disabilities in disaster or emergency situations, and discusses the challenges they may face at different stages of the disaster management process. It offers effective strategies to ensure that all stages of the disaster management process are inclusive and accessible. In addition, the chapter provides case studies that depict how some of these strategies have been implemented in different countries and in different situations.

3.1 Types of disabilities and corresponding needs in disaster situations

There are several different definitions of disability and cultural and contextual factors affect the conceptualization of disability across different countries. According to Article 1 of the CRPD, persons with disabilities “include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others” (UN Enable, 2006). This definition is incorporated into the Draft Rights of Persons with Disabilities Bill, 2012 developed by the Ministry of Social Justice and Empowerment (2012) in India. This underlines the fact that disability is not merely a medical condition but rather an interplay between the inaccessibility of an individual’s environment, their impairments, and the barriers they face in accessing services and facilities that impact the activities they can undertake.

Disability is a multidimensional construct (Smith, Jolley & Schmidt, 2012). Persons with disabilities are not a heterogeneous group, and persons with different disabilities or different severity of a disability will have different needs in a disaster or emergency situation. Disabilities can be broadly classified into the following categories for the purposes of inclusive disaster management (NCD, 2009): sensory, mobility, cognitive, and psychosocial. The table below gives an overview of the needs of persons with different disabilities in a disaster or emergency situation.

Table 1: Barriers faced by persons with different disabilities in disaster or emergency situation

Disability Category	Possible Conditions	Example of barriers in a disaster or emergency situation
Sensory Disability	Total blindness or low vision	<ul style="list-style-type: none"> • Reading print warnings, evacuation and other instructions, and documents on emergency preparedness, relief, and other information • Emergency warnings, updates, and other critical information provided in text form only on television • Navigating new surroundings in shelters and temporary housing
	Total deafness or disability hearing	<ul style="list-style-type: none"> • Hearing warnings, weather information and maps of impact areas, evacuation/safety instruction, guidelines and updates on the radio or television without captions or sign language interpretations • Communicating with first responders, emergency management personnel, and providers involved in relief operations
	Speech impairment	<ul style="list-style-type: none"> • Communicating with first responders, emergency management personnel, and providers involved in relief

Disability Category	Possible Conditions	Example of barriers in a disaster or emergency situation
Physical Disability	This includes loss of mobility, dexterity, and control over some level of body functioning.	<p>operations</p> <ul style="list-style-type: none"> • Loss of essential assistive devices like a wheelchair or durable medical equipment in rapid response and evacuation situations • Lack of accessible transportation for evacuation • Evacuation and rescue from high buildings when elevators stop functioning • Being unable to enter or use shelters or temporary housing (including restrooms and toilets) due to accessibility barriers, or enter public buildings to access welfare and other assistance services • Commuting between places (such as between home, aid camp, shelter) due to debris and destruction on roads
Cognitive Disability	Cognitive disabilities include many different types of disabilities which may impact a person's memory, thinking and problem-solving, visual, math, reading and language comprehension, ability to pay attention or follow instructions.	<ul style="list-style-type: none"> • Difficulty understanding, remembering, or following instructions • May not remember contact information for emergency contacts, family members

Disability Category	Possible Conditions	Example of barriers in a disaster or emergency situation
Psychosocial Disability	Just like physical disabilities, psychosocial disabilities may exist prior to a disaster or may result from the traumatic and distressing events surrounding a disaster or emergency situation (e.g. post-traumatic stress disorder).	<ul style="list-style-type: none"> • Need for screening and counseling services, especially when disaster causes onset of psychosocial disabilities • Lack of awareness and empathy about the needs of persons with psychosocial disabilities • Disruptions of established relationships with care providers.

The table above gives an overview of the types of access barriers that people with different disabilities may face in a disaster and emergency situation. It is important to keep in mind that individuals may have multiple disabilities or secondary conditions which will also impact their ability to access and benefit from disaster and emergency management services. Below, we discuss in greater detail the needs of persons with disabilities at different stages of the disaster cycle and common issues that people across disability types may face.

3.2 Needs at different stages of the disaster and emergency management process

a. Knowledge and awareness about people with disabilities

Barriers and Challenges

One of the major barriers to successfully meeting the needs of persons with disabilities in disaster or emergency situations, is that many first responders or government service providers may not know how many persons with disabilities are affected and where they might be. The lack of accurate and comprehensive statistical data on persons with disabilities has been highlighted as a challenge in several past disasters. National level data from Census measures may not present a full picture due to a narrower interpretation of disability in the questions, which captures only the most significant

disabilities, and statistical data may not even be available at state or local levels (Smith, Jolley & Schmidt, 2013). Owing to stigma, societal misconceptions, and physical inaccessibility, persons with disabilities are often *invisible* or *hidden* in their communities (IFRC, 2007).

Indeed, persons with disabilities who were registered with local authorities had a higher probability of receiving relief aid and services in recent disasters (IFRC, 2007). For example, persons with disabilities in Chennai who were registered with state authorities were able to receive some food, clothing, and medical help following the Indian Ocean Tsunami in 2004 whereas those who were not registered were unable to get state assistance and welfare (IFRC). Similarly, after Hurricane Katrina in 2005, Independent Living Centers and other disability organizations played a key role in rescue and evacuation efforts because they knew of people with disabilities in their communities and were able to provide that information to first responders (BBI, XX). In some cases, the paucity of data or the focus on visible disabilities has the negative consequence of suggesting that disability is a marginal issue and that there aren't many people with disabilities.

Effective Practices and Strategies

The following effective practices and strategies can be used to obtain knowledge about persons with disabilities for use during disasters or emergencies:

- Include disabilities in any capacity and vulnerability assessments for all development activities, including disaster and emergency planning.
- Risk and needs assessments done during preparedness and disaster risk reduction activities should include questions to determine the prevalence of people with different disabilities in a given area (Fox, White, Rooney & Rowland, 2007).
- Tap into the different kinds of vulnerabilities that persons with disabilities face which can raise their risk in disasters and emergencies such as economic, physical and environmental, or sociopolitical vulnerabilities (Handicap International [HI], 2012).
- Use of community registries to identify persons with disabilities in a community as well as collate information that will enable responders to reach them and provide services to them in a disaster or emergency situation (e.g. location, specific needs) (Smith, Jolley & Schmidt, 2011).

- Persons with disabilities and their families must be included in any emergency registration for the general community. Such databases can also help disaster management authorities to better understand the needs of persons with disabilities in a community, and develop preparedness and response plans to ensure accessibility and inclusion. These measures may not be perfect though due to the potential for inaccuracies in data collection, loss of physical records during the disaster, or inability to use electronic records due to power loss.

Handicap International (2012) recommends the following mechanisms in conducting inclusive community vulnerability assessments:

- Conduct a walk-through in the community together with individuals with different disabilities to identify physical and environmental barriers, and also facilitators
- Undertake participatory community mapping which can help incorporate accessibility of buildings and infrastructure, and safety and accessibility of different evaluation outs
- Resource and institution mapping which can “identify availability, relevance, importance, and access to key services and resources in and around the community” (p. 44) (including DPOs, rehabilitation providers).
- Include disability in household and other surveys conducted in the community. Household and census surveys are excellent vehicles to add disability modules as they are intended to reach all households.

Examples of effective initiatives

Inclusive Vulnerability and Capacity Assessments in Odisha (India): During an accessibility audit of multipurpose cyclone shelters constructed by the Odisha State Disaster Management Authority (OSDMA), a team of HI, OSDMA, and UNDP realized that persons with disabilities had never participated in any drills in the shelters and their needs were not included in any assessments. Following this an inclusive assessment was undertaken in Bhadak District. Persons with disabilities, and their families and caregivers were notified and given information about the assessments beforehand through household visits. When given the opportunity to participate, all persons with disabilities in the community took part in the assessment. The assessments were conducted in accessible settings and facilitated through different aids. Due to the participation of persons with disabilities and their input into the assessment, service

providers gained an increased understanding of their vulnerability in a disaster situation as well as their actual capacities and needs.

Other example case studies covered in Chapter 5 include:

- Registry of Persons needing Assistance during Disasters (Japan)
- Potential problems of using registries

b. Awareness, Preparedness Information, and Warnings

When possible, early and accurate warnings are critical to alert citizens that they may be in danger as well as provide information on where they could go for aid and resources. Similarly, people need information and knowledge to know how to prepare adequately for a disaster and what to do to remain safe during any particular emergency situation. In today's information society, people rely heavily on different channels of information to get information about disaster preparedness and impending and ongoing disasters or emergencies. However, when persons with disabilities are unable to access preparedness information or urgent warnings, they are at greater risk of harm to themselves, their families, and their properties. This issue is discussed in greater detail in Chapter 4.

c. Evacuation

Barriers and Challenges

Evacuation is one of the most critical operations in any disaster or emergency response process to ensure that people are taken away from a dangerous or toxic situation and transferred to a place of safety. Past experiences have shown that evacuation operations rarely take into account the needs of persons with disabilities and that first responders are not trained on the needs of persons with disabilities. Barriers to evacuation of persons with disabilities arise from inaccessibility of buildings and transportation. Some persons may depend on caregivers and family members, who themselves may be hurt, unable to physically help the person evacuate, or face conflicts such as having to save their own families in the case of hired caregivers. During Hurricane Katrina in the United States in 2005, there were harrowing fatal incidents where persons with disabilities were unable to leave their homes due to the floods, got trapped due to the rising water, and no first responders could get to them in time.

People with mobility disabilities in multi-storey and tall buildings need assistance to evacuate in disaster events when elevators may not exist or may not be working or

where buildings have begun to collapse in parts. Even in cases of single storey buildings, damage to infrastructure and debris may block the evacuation route of persons with mobility disabilities who use wheelchairs, scooters, or tricycles. For example, during floods rain water can cause embankments to become slippery or even collapse making it very difficult for persons with mobility disabilities. In many countries, persons with disabilities (especially those with intellectual and psychosocial disabilities) are institutionalized and may be physically restrained within these institutions. This can lead to fatal consequences when there is a sudden emergency and persons are unable to escape as was the case in the horrible tragedy in an institution for persons with psychosocial disabilities in Erwadi, Tamil Nadu, India in 2001. Twenty eight of the inmates at the institution were unable to escape when a fire broke out because they were tied to chains, and in the absence of any evacuation plan or assistance by the authorities burned to death.

It is important that first responders and emergency personnel are trained to assist persons with disabilities to evacuate safely. Emergency personnel have to be sensitized to the needs of persons with disabilities. Evacuations are usually rapid operations and often occur in chaotic and tense circumstances, where responders have to try and save as many people as possible. In such cases, if there is insufficient sensitization, responders may prioritize evacuation persons without disabilities as narrated by Gerber (2009). Individuals working with the American Foundation for the Blind experienced several emergency drills conducted for the building, and were told to stay behind and let persons without disabilities down the stairwells first due to stereotypes of them being incapable and slow.

The second part of evacuations is transportation/infrastructure to take the evacuees to safe harbors. Many persons with disabilities, and especially those in poor neighborhoods, rely on public transportation. In the face of mandatory mass evacuations e.g. with impending tsunami or other natural disasters, persons with disabilities may simply not be able to evacuate if government authorities and disaster response personnel cannot provide accessible transportation. Accessible transportation is particularly essential for people who use assistive devices such as wheelchairs. In an emergency situation, where there is no access to public transportation, emergency personnel may carry the person out but may have to leave their wheelchair behind. This is a major problem for a person with a disability who relies on this device for independence and views it as an essential part of themselves. As we discuss a little later, persons with disabilities may not receive other assistive devices to compensate for the ones left behind during the response and relief operations.

Effective practices for evacuations

When there is an early warning about an impending disaster, it can help to organize voluntary or mandatory early evacuations to get persons with disabilities and their families into safe and accessible shelters.

- Identify and map accessible evacuation routes in building, neighborhoods, and communities.
- Fire stations, rescue workers, and disaster management personnel should have access to accessible transportation and make plans for using different types of evacuation mechanisms to assist persons with disabilities.
- Conduct regular evacuation drills in communities and prepare persons with disabilities and their families, rescue and disaster management personnel, and community volunteers for appropriate evacuation and rescue in different kinds of disasters and emergencies.

Example of effective practices:

Accessible Transportation for evacuation during Floods: High waters during floods make usual modes of evacuations difficult to implement. Boats are frequently used for evacuations in flooded areas. However, these boats can be built or modified to be able to accommodate people with mobility disabilities who use wheelchairs. There are many examples of how to make different kinds of boats accessible for persons with disabilities. The Centre for Disability and Development built a model boat to assist with evacuations in Bangladesh, equipped with a ramp and accessible latrines (Bari & Saha, 2012). Other options are using boats with flat floors with one side that can be brought down to provide a roll-on/roll-off ramp (e.g. see Wheelyboat).

Other example case studies covered in Chapter 5 include:

- DAISY Consortium's evacuation training manual for people with psychosocial disabilities
- Equipment for vertical evacuations

d. Shelters, Relief Camps, and Food Distribution

Barriers and Challenges

Physical and communications inaccessibility in shelters and relief camps has been highlighted as one of the biggest challenges in effectively including people with disabilities in disaster management. Shelters and displacement camps tend to be overcrowded, and most experiences suggest that their physical layouts and designs are inaccessible to persons with different types of disabilities (Lord, 2010; Women's Refugee Commission), starting with people being unable to even enter the shelters as witnessed during Hurricane Katrina in the United States, in many places during the Asian Tsunami of 2004, (GPDD, 2010). Other times, people can get into shelters but are unable to use basic necessities such as latrines and toilets. For example, a DPO representative shared the story of a girl with a young girl with paraplegia in Indonesia who found the lack of privacy to be a major challenge during her stay in a tent-based shelter after the Tsunami who was unable to access the bathroom, and even forced to change clothes in the open tent itself (GPDD, 2010).

In an influential study conducted by the Women's Refugee Commission (2008), researchers found there were accessibility problems with the layout and lack of physical access in every camp and settlement surveyed. At times buildings were difficult to maneuver in, at other times they were located in inaccessible terrains (e.g. hilly) which made it difficult for persons with disabilities to get there. Sometimes people are turned away by shelter workers who believe that they either need to go to medical locations such as hospitals because they have a disability (BBI, 2006), or because shelters are not accessible.

Another problem with inaccessible shelters and relief camps is that they are usually the gateways to access other essential services such as food and water. If a person cannot enter or maneuver around in a shelter they may be completely left out from accessing these essential services. A survey conducted after floods in Bangladesh in 2004, shows huge discrepancies in access to food and relief distribution between families with members with and without disabilities on the grounds of inaccessible shelters and food distribution services (Kett, 2005). This finding was also reflected in the Women's Refugee Commission (2008) study which found that food distribution services and systems were inaccessible to people with visual and physical disabilities because they were not prioritized in the system, the services were often very far away from their homes and difficult to get to, and also overcrowded.

Effective Practices and Strategies

The following strategies and practices can help to make immediate and long-term

shelters accessible to people with disabilities:

- Develop and use guidelines on shelter design.
- When building such as schools and public community centers are built or remodeled, they must be made accessible so that they can also serve as accessible shelters in disasters or emergencies.
- Provide clear signs to help people get a sense of facilities in the shelter, using raised and big letters.
- Provide multiple modes of communication e.g. oral and written.
- Ensure physical accessibility of the shelters and facilities such as sanitation areas, food and water distribution e.g. providing ramps, using handrails, keeping big furniture out of hallways or pathways.
- Ensure safety and privacy of individuals with disabilities to safeguard them against abuse and violence, such as keeping them together with family members and caregivers, and using dividers and other resources to create private spaces to change clothes.
- Be sensitive about the needs of persons with disabilities during food and water distribution. For example volunteers should note if they are unable to come to the central food distribution lines and go to their location to provide their portion.

Example of effective initiatives

Turning schools into accessible shelters in Bangladesh: The Centre for Disability and Development in Bangladesh worked with local school management committees to adapt schools to become accessible shelters during floods or other disasters. They also created raised areas in the schools to protect against flooding.

Another example case study covered in Chapter 5 includes:

- Creating privacy in shelters in Japan

e. Access to accommodations and assistive devices

Barriers and Challenges

An assistive device is a piece of equipment that can enhance functioning and promote the independence of a person with disability. Assistive devices can include mobility aids such as wheelchairs, crutches, prostheses, hearing aids, communication aids such as Braille translators, memory aids, screen and e-book readers, and assistive software (WHO, 2013). Assistive devices may be crucial for mobility and communications and the lack of an assistive device can be serious disadvantage for a person with a disability seeking disaster response services.

In the destruction and rapid evacuation caused by a disaster or emergency, persons with disabilities may lose access to their assistive devices such as wheelchairs, artificial limbs, and hearing aids (NCD, 2005; Lord, 2010). Devices that run on battery or electricity may run out if people don't have access to replacement power. People who acquire disabilities due to the disaster may also require access to medical rehabilitation and rehabilitation technology devices following trauma care. It may also be difficult for people to replace their assistive devices during recovery as some devices may have been very expensive and customized to user need (Roth, 2010). Disasters also cause major disruptions in supply and service delivery systems making it harder for some persons with disabilities to obtain a replacement in a timely manner. A rise in the number of persons with disabilities after the disaster can also lead to shortages in assistive devices such as artificial limbs and other mobility aids (Phillips, Estey & Ennis, 2010).

Persons with disabilities may also require accommodations at shelters or in seeking services. For example, people who are deaf or hard of hearing may need access to sign language to communicate with aid and relief personnel, and request for services.

Effective Practices and Strategies

- Disaster budgets can include contingency funds to cover assistive devices or durable medical equipment lost or damaged in the disaster (NCD, 2009).
- Provide alternative formats of communication within shelters, response and recovery centers, and other physical spaces such as braille signage on the shelter walls, audible alerts, and written communications.
- Prepare stockpiles of assistive devices such as wheelchairs, canes, hearing aids,

healthcare supplies, extra batteries, chargers in advance at disaster management centers for quick use and deployment during response and recovery.

f. Recovery, Reconstruction and rebuilding

Barriers and Challenges

After the immediate response and relief phase starts to fade, people start looking towards getting back to normalcy such as getting back to their homes and work. With some disasters like the Haiti earthquake this process can take months to arrive because of the scale of the infrastructural destruction and displacement of communities.

The long-term process of building communities again, and getting all systems moving and operational is challenging, but also brings along with it opportunities. Mainly the opportunity to “build back better” (Samant & Reina, 2010). Past work has demonstrated that it is most cost effective to build accessibility into any process and construction right from the start, rather than retrofitting. The need to rebuild infrastructure, schools, homes, government buildings, and other public access facilities is also an opportunity to build an inclusive community and address disability through all stages of the reconstruction phase. In fact, it is critical that developers, builders, government authorities, and emergency personnel take the lessons learned to ensure that their communities are more resilient with regards to the vulnerability of persons with disabilities in future disasters. This should be a critical part of the mitigation and risk reduction process for the future. Not making communities accessible and inclusive will be a terrible oversight. If building and facilities are not made accessible there will be an additional population that will be excluded, i.e. the individuals who acquired disabilities in the disaster and are no longer able to return to education or employment because of inaccessible environments. Another important reason for inclusive reconstruction is that the lack of it will further cement the exclusion of persons with disabilities from educational, economic and vocational, and community participation further perpetuating their isolation and lack of opportunity (Samant & Reina, 2010).

However, literature shows that this is not always the case. After Cyclone Sidr in Bangladesh in 2007, a number of cyclone shelters were built using foreign aid. However, studies showed that despite information on the importance and how-to of accessible design, the shelters were not constructed to be accessible (Bhattacharjee, 2007; HI, 2011). As a study stated, “not a single one of them have ramps or any other accessibility features. Even the stairs are high and risky” (Bhattacharjee, 2007, p.2). The statement by

Mr. Ban Ki-Moon (2009), UN Secretary General after the earthquake in Haiti applies to any disaster situation, “Renewal, not restoration, should be the goal...As we move from emergency aid to longer-term reconstruction, let us recognize that we cannot accept business as usual.”

Effective Practices and Strategies

- Building back better should not focus only on disaster response infrastructure but be ingrained in all reconstruction. For example, schools that are being rebuilt can be built to have ramps, accessible classrooms, and accessible toilets.
- Government offices, especially those that expect citizens to come for services, can similarly be made physically accessible and also provide Braille signage.

Example of effective initiatives:

The concept of universal design is helpful to consider and implement during reconstruction and rebuilding. Universal design refers to “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.” (Center for Universal Design, n.d.). The principles of universal design are as follows:

1. Equitable Use: The design is useful and marketable to people with diverse abilities.
2. Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.
3. Simple and Intuitive Use: Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level.
4. Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.
5. Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.
6. Low Physical Effort: The design can be used efficiently and comfortably with minimum fatigue.
7. Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user’s body size, posture, or mobility (Center for Universal Design, 1997).

3.3 Other important issues in Inclusive Disaster and Emergency Management

a. Twin-track approach

Disability organizations advocate a “twin-track” approach as best practice in including persons with disabilities in disaster and emergency management activities. This approach essentially comes from the fact that persons with disabilities are not a homogenous group, and while it is essential that their needs are included in every stage and program, they may also need specialized programs targeted for their needs (GPDD, 2010). Mainstreaming disability into all development programming and disaster risk reduction and management is a key focus of the CRPD and many disability advocates, and indeed this is essential to make sure that persons with disabilities are fully included in all socioeconomic and community activities.

At the same time, mainstreaming alone may be inadequate to address the needs of all persons with disabilities, and many can benefit immensely from targeted, customized programs and specialized services that are focused on disability issues. As HI (2011) cautions, inclusion in mainstream programs may be limited to the minimum required standards and tokenism without delivering meaningful empowerment. Specialized services such as sign language interpretation, physical rehabilitation, and assistive devices in fact enable their participation in mainstream activities and empower them to become fully participating citizens.

This is also true in disaster and emergency management. Thus the twin-track approach aims to combine two elements to lead to “equality of rights and opportunities for persons with disabilities:”

- an inclusive system, for all, with ordinary, support and specialized services, and
- empowerment of persons, with disabilities through targeted, initiatives for capacity building, independent living support etc. (HI, 2011, p. 6).

Thus inclusive disaster and emergency management should blend necessary specialized disability services with ensuring access to every mainstream efforts and activity.

Example of Effective Initiatives:

Evacuation Training using the Twin-Track Approach: In Vietnam, the National Disaster Management Committees worked together with Malteser International to include disability in their Community-Based Disaster Risk Management efforts. One of the

initiatives included a twin-track approach towards promoting accessible early warning mechanisms and priority evacuation assistance in 47 villages in the Quang Nam province (Disability Inclusive DRR and CBM, n.d.). The program provides targeted training to DPOs to strengthen their capacity to implement accessible disaster management activities and empower them by improving their self-representation and self-determination (Malteser International, 2011). The other track focuses on making community disaster management practices and systems more inclusive through various activities such as, “Village Disaster Risk Management plans, developing inclusive early warning and evacuation mechanisms, and awareness raising” (Disability Inclusive DRR and CBM, p. 18).

b. Intergovernmental, Interagency, and Public-Private Sector Coordination

Mass disasters and emergencies bring many different players and stakeholders into the disaster management process. It usually involves several different Ministries and government departments at the national, state and local levels, foreign aid and relief organizations, NGOs and civil society, and volunteers and citizen action groups. In some cases each agency and organization has a prescribed mandate, but most often these mandates and roles overlap. It is important for all agencies and organizations involved in the response efforts to communicate, coordinate, and work with each other to ensure an effective response. However, disasters and emergencies in the past decade have highlighted that coordination and collaboration can often be challenging in high stress situations with negative impacts on persons with disabilities. “During emergencies, the lack of coordination in service delivery has profound consequences” (BBI report, 2007, p.91).

Coordination between national-state-local level government agencies

Depending on each country’s constitutional makeup, primary responsibility for disaster management differs by falling under local, state or national governments. For example, in the United States disaster management first falls under the jurisdiction of local and then state governments. The federal government becomes involved in providing direct relief and support when requested by the State governments (American Bar Association, 2006). In India, “State Governments are primarily responsible for disaster management including prevention and mitigation” with assistance from the Central government (National Disaster Management Division, 2004). Federal and national governments usually get involved immediately following terrorism attacks.

In most major natural or man-made disasters, all levels of government need to work together to provide a robust and comprehensive disaster response. Local governments and even state governments can become overwhelmed with the scale of the disaster, and need national level resources. This means that a number of different governmental departments and agencies get involved in the disaster or emergency response and it becomes crucial for them to collaborate and coordinate services in an effective manner. In such situations, “it is essential to have a policy in place, as it serves as a framework for action by all the relevant departments/agencies” (NDMI, 2004). Past disasters have shown that lack of clarity about roles and responsibilities, lack of a clear chain of command, and breakdowns in communications between different agencies can become barriers to smooth operation of relief and response services.

These barriers can be particularly problematic for persons with disabilities when agencies and departments are not sensitized to their needs and think that some other agency is responsible to address their needs. For example, studies evaluating the response to Hurricane Katrina for persons with disabilities found that “departments were confused about their specific responsibilities and authorities in the immediate response efforts, and on several occasions Hurricane victims were continuously referred from one department to the other as a result” (BBI report, 2007).

Collaborations Between Public, Private, and Government Entities

In addition to government disaster management personnel many non-governmental and private organizations are involved in disaster response and relief efforts such as the International Federation of Red Cross and Red Crescent Societies, charity and volunteer organizations. These organizations bring in resources and manpower that can complement and supplement the work of the government personnel. Both International NGOs (INGOs), which are usually well funded, and local NGOs are involved in disaster and emergency response. Many of the same lessons, i.e. providing training and disability sensitization to staff, and ensuring collaboration and coordination between the different players apply for NGO and other private entities.

The Inter-Agency Standing Committee (IASC) in 2005, the UN introduced the Cluster Approach in an effort to improve the coordination and collaboration of all UN agencies and NGOs involved in providing humanitarian assistance. The Approach was developed to address the growing number of actors involved in disaster response and recovery operations, and harness the collective strength of all organizations rather than

a piecemeal approach which fell short. The Cluster Approach teams up different agencies and organizations as per their core expertise to focus on one thematic area in disaster management. The Clusters include nine sub-sectors (e.g. Education, Health Security, WASH) and three cross-cutting issues (Early Recovery, Gender Task Force, Mental Health and Psycho-Social).

Past studies have shown that while some NGOs provide accessible disaster response services and resources, most refer persons with disabilities to disability specific organizations (BBI, 2007; GPDD, 2010; Kett, 2005). Most national and international NGOs and private entities may lack awareness and training in responding to the needs of persons with disabilities. On the contrary, it is crucial that the important services provided by NGOs and private entities including shelters, food, water and sanitation, and medical services, are made accessible to persons with disabilities. In recent disasters, different approaches have been used to address disability. For example, in Haiti an Injury, Rehabilitation and Disability Group was created within the Health Cluster (Tataryn and Blanchet, 2012). After the emergency in Gaza in 2008, a disability sub-cluster was created under the Health Cluster (Perry & Héry, 2010). As a multidimensional and cross-cutting issue, disability ideally should be mainstreamed and represented in each Cluster. "Coordinated quality control in each cluster could ensure accessible communications, transportation, shelters, sanitation, and relevant post-disaster education" (GPDD, 2009, p. 13).

The influx and aid from international organizations can bring much needed relief, and offer critical services that are lacking or absent. For example, the role and impact of the outpouring of aid and a large number of NGO and private organizations getting involved in disaster response can be clearly understood from the example of Haiti post the earthquake. Major disability focused NGOs such as Handicap International, CBM, and others helped to provide critical rehabilitation services that were not available otherwise. As observed in an evaluation of the physical rehabilitation sector by Tataryn and Blanchet (2012), about 125 organizations were involved in providing physical rehabilitation services. This included assessing the needs and fit for aids and devices, providing orthotics, prosthetics, wheelchairs and other assistive devices, and offering physiotherapy services.

At the same time, a heavy reliance on external organizations can have some drawbacks when there isn't sufficient involvement of local authorities, local NGOs, and service providers. When agencies leave after the short term or intermediate period, this will

leave a major gap in continuing relief or recovery services. Hence, again, it is important for all participating agencies and organizations to link with each other and it is important to involve local professionals and providers in the delivery of services from the early stages of the operation.

Collaboration and Consultations with Disability Related Organizations

The involvement of Disabled Persons' Organizations in all stages of the disaster management process is very important for mainstreaming disability in disaster management. DPOs, governments, disaster management authorities, and civil society should work together before, during, and after a disaster or emergency strikes. However, persons with disabilities, their families, and DPOs are not routinely included in disaster preparedness, planning, and mitigation discussions or exercises. The disability and disaster management communities do not get sufficient opportunities to interact and learn from each other, and do not routinely participate in the meetings and conferences held by the other sector (GPDD, 2009). Starting with Hurricane Katrina, there is a growing understanding and recognition that DPOs can and do play a central role in assisting persons with disabilities. DPOs can provide tremendous advice, guidance, and recommendations to make disaster management accessible and can work together with disaster management personnel to develop inclusive risk reduction, mitigation, preparedness, and response plans. Additionally, in coordination with DPOs, other providers can conduct important capacity building and training programs directly with persons with disabilities and their families. DPOs within a community may have contact information for persons with disabilities in their communities and know how to reach out to them to connect them with essential disaster management services during search and rescue and relief operations.

CHAPTER 4: ACCESSIBLE ICT IN EMERGENCY AND DISASTER MANAGEMENT

Recent disasters and crises have shone a spotlight on the role that Information and Communication Technologies (ICT) can play in connecting people to information, people to rescue workers and resources, and people to people in the immediate aftermath and recovery. In one of the most widely reported episodes of ICT use during the Asian Tsunami of 2004. After an earthquake in Izmit in Turkey in 1999, fixed phone lines and mobile networks went down leaving the internet as the only communications infrastructure. During the attacks in Mumbai in 2008, the micro-blogging site Twitter and photosharing site Flickr, were widely used by citizens to instantly capture and share images and news about the attacks around the world (Beaumont, 2008; Stelter & Cohen, 2008). Since the mass shooting at Virginia Tech in the United States, most universities and colleges have incorporated ICT-enabled warning systems that can instantly alert all staff and students using SMS, phone calls, and emails about any potential threats and directions to stay in place.

After Typhoon Pablo hit the Philippines in December, 2012, the Office of the Coordination of Humanitarian Affairs (OCHA) in the United Nations used images and videos populating Twitter, and extracted or identified information about their location and type of damage or destruction to create a crises map (iRevolution, 2012a). The crises map contained information such as people displaced, damage to buildings and infrastructure, and locations of evacuation centers (iRevolution, 2012b). ICTs are also incorporated into disaster risk reduction schemes. An example of this is the India Disaster Resource Network (IDRN), which is an online inventory of “essential and specialist resources for disaster response, covering specialist equipment, specialist manpower resources and critical supplies” (Ministry of Home Affairs, National Disaster Management Division, n.d., p.3).

What these few examples demonstrate is that ICTs are becoming a salient tool in disaster response and management operations (on both supply and demand ends), and that ICTs are looked upon as playing a crucial role to save lives, minimize destruction, and connect people to aid and resources. Starting with the traditional forms of ICT i.e. television and radio, the world of ICT today involves landline telephones, cellular and mobile audio telephony, text messaging/SMS, and internet based resources and services such as websites, video, instant messaging over the Internet, Voice over Internet Protocol services, web conferencing, social media which allow for instant communications, instant photo/video capture and sharing, and satellite

communications. This wide variety of technologies and channels available to provide information and communities is an important benefit as communications technologies are susceptible to natural or man-made disturbances (Qureshi, n.d.). For example, natural disasters like earthquakes and typhoons can severely damage communications infrastructure, high call volumes during mass emergency and crises situations can clog voice traffic over cellular networks, or power grids can come down disrupting connectivity through electricity powered devices. However, given the proliferation of different kinds of ICTs there is hope that information can still get through some channels. For example, during Hurricane Katrina data networks functioned even when the network could not sustain voice traffic volumes and people could connect using SMS (UNDP, 2007).

ICT connectivity is growing – current figures. ICTs harness tremendous potential to facilitate coordination and collaboration across multiple stakeholders in a disaster situation.

The next section describes the increasingly ubiquitous and essential role of ICT for disaster management. It then highlights the barriers to ICT accessibility that are faced by persons with disabilities.

4.1 Preparedness and Planning

Public awareness raising campaigns to inform people about preparing for a disaster can take many different forms including:

- radio and television public service announcements
- announcements and tips sent through SMS, MMS
- mass emails to citizens from government authorities, aid and relief agencies, and others
- electronic fact sheets, handbooks, and manuals
- multimedia including presentations, webinars, webcasts, and videos including on popular sites such as YouTube,
- social media such as Facebook pages and Twitter accounts created by governments and disaster response organizations
- citizen focused working groups and discussion forums

The biggest benefit to using ICTs for disaster preparedness and planning materials is that content can be created and delivered in multiple formats through multiple media. However, despite their potential many of these formats may be inaccessible to persons with disabilities. For example, television public service announcements, online videos, and purely audio based webcasts will be inaccessible to persons who are deaf or hard of hearing if they are accompanied by subtitles or sign language interpretation. Fact sheets, handbooks, and manuals may be unusable by persons using screen readers if they are in formats that cannot be read aloud such as jpeg files or inaccessible image based PDFs. Additionally if images and graphics are used to depict content without textual information, persons with severe visual impairments will not be able to understand that information.

Websites providing disaster management information must be tested for accessibility to ensure that persons with disabilities do not face barriers in accessing the important information shared on the website. Examples of website access barriers include: using images without a textual description or 'alt text,' using styling elements like tables which cause difficulties for people using screen readers, using document formats that are not accessible to persons with disabilities, and using flashing text that could be distracting for people with cognitive disabilities (Web Accessibility Initiative, 2005). Attention must also be paid to archival information such as documentary videos and past news programs accessible which can help prepare people for future disasters (Kawamura, 2012).

Instructions to assist people in preparing for disasters should also give guidances on how people can get ready to receive disaster notifications. For example, if the disaster management authority has set up social media pages where information will be disseminated during a disaster or emergency event, this should be publicized in advance and tested for accessibility to ensure effective functioning and use when the need actually arises.

4.2 Disseminating warnings and alerts

Rapid and early warnings about impending or ongoing disasters allow people to make informed decisions about evacuating or sheltering in place, and help to save lives. New ICTs enable authorities to send out mass notifications within seconds and to keep updating information about threats and aid resources through multiple media channels. SMS messages are one of the most important tools in sending instant information to cell phone users.

Many natural disasters such as droughts and cyclones allow for adequate early warnings, whereas others such as earthquakes, landslides, and tsunamis may occur with very little notice. In any case, once a hazardous activity and potential disaster is detected it has to be properly and effectively communicated to all persons that lie in the path of that hazard. Disaster management authorities can quickly transmit this information to individuals' personal media devices using SMS warnings as well as sending emails, and posting alerts on their social media pages on sites such as Facebook and Twitter.

Accessibility is again an important imperative to consider. For example, disaster warnings as well as real-time information about ongoing situations conveyed over the television may be purely visual, and provided as a ticker or crawl at the bottom of screen (Gerber, 2009). Many times the quotation that “a picture speaks a thousand words” is implemented in practice because people believe that a visual image is enough to convey a message. Without an auditory accompaniment such messages will be completely inaccessible to persons who have visual disabilities (Gerber). If information is sent out only as SMS, people who need non-visual inputs and don't have access to high end devices that can convert text to other formats like audio will be excluded. Hence, warnings and alerts should also go out in multiple formats across different dissemination channels.

4.3 Enabling people to communicate with authorities

Another important benefit of the growing pervasiveness of ICT and mobile devices among society is that people can now ask for assistance in a disaster or emergency situation through several different channels. Most countries have dedicated numbers which enable persons to connect directly with police, fire personnel, and medical help (e.g. 100 in India, 911 in the United States) using their phones. The growing use of mobile phones has created further opportunities to ensure that people can connect with authorities and help in a dire situation. For example, individuals can now send text messages to police centers in an emergency or criminal threat. In events where a person fears for their life due to criminal or terrorist activity, there are advantages to using text messaging to alert authorities rather than making an audio call. Police can also use cell phone location data to pinpoint the general area from which a person is calling, thus helping to activate a quicker response. Using text messaging to receive calls for police and other first responders is highly beneficial to individuals who are deaf or hard-of-hearing or have speech and communication disabilities. In mass disaster situations, if phone lines and networks are down, dedicated social media pages and dedicated email

accounts can also be set up to receive requests for help and information about whereabouts from persons affected by the situation.

Deaf Australia Inc. articulated another reason to allow individuals the ability to text in an emergency – equal opportunities. People who are hearing can use their mobile phones to reach the emergency call numbers, but in Australia people with hearing disabilities could only use their telephone typewriters (TTY) which are not mobile. This puts people with hearing or speech impairments at a disadvantage if they need to contact emergency personnel but are away from their TTYs.

4.4 Sharing information, connecting people with resources

Phone helplines during disasters have long been used to give people a channel of communication with relief and rescue workers to find out about their loved ones, shelters and food supplies, and welfare resources. Disaster management personnel can now multiply the channels of communication that are available such as websites, SMS central numbers, and social media, to ensure instant and rapid communications between people and organizations, between government agencies involved in the disaster response efforts, and between government agencies and relief organizations. ICT based disaster management platforms are increasingly being used to provide and perform many of these operations.

Government ministries and all aid and relief organizations can also use ICT-enabled tools to coordinate their work and ensure smooth collaborations. An example of this is the Sahana Disaster Management System, a free and open source application, developed after the Asian Tsunami of 2004 by a software foundation in Sri Lanka (Wattegama, 2008). Sahana integrated features such as a ‘missing persons’ registry, coordinating the aid and response operations of different relief organizations, and provide relief organizations with the ability to track and respond to the needs of persons impacted by disasters and (Careem et al., 2006). Disaster management platforms such as Sahana are also used to track the number of disaster victims in relief camps and shelters. A well-designed disaster management platform can become a tremendous resource to provide accessible services by being able to track persons with disabilities who need services in an area and any access barriers they are facing in an emergency, to keep track of accessible shelters and resources available to the community such as reserves of durable medical equipment or assistive technology, and to bring in personnel that are trained to address any high level needs of persons with disabilities. Another example of using ICT-based services to coordinate disaster relief and response services is the use of Google Groups by the different working groups of

the Sphere project.

Another ICT-enabled process that is being used in disaster situations is crowd aggregation and crowdsourcing. Crowdsourcing involves participation in an online activity (which seeks to solve a problem or is aimed at achieving a particular deliverable) by a crowd of distributed people who each contribute a part of the larger solution to a problem (Estellés-Arolas & González-Ladrón-de-Guevara, 2012; Howe, 2006, 2008). For example, after the earthquake in Haiti, people used social media to share their personal photos and experiences widely, thus instantly providing an aggregated understanding of what was happening on the ground (Gao, Barbier & Goolsby, 2011). Crowdsourcing platforms such as Ushahidi (n.d.) have been especially created to be able to harness the data that people can send using social media in crises situations and link it with geographical data on Google Maps to generate an aggregated map. Such “crowdmaps” enable disaster/crises victims to send eyewitness reports and allow relief workers and crises managers to get an understanding of needs on the ground, especially when it is difficult for external aid workers to enter the disaster or crisis area. In Haiti, Ushahidi “pulled information from Twitter, Facebook, and blogs and received it via text message to create reports that were placed on a Web-based, interactive map available to anyone with an Internet connection” (thus providing search, rescue, and relief workers with a valuable source of information).

Crowdsourcing can be another important mechanism for persons with disabilities with access to social media and photo/video capturing tools to share their reports and accounts of their location and immediate needs in a disaster situation, and to seek help and relief. However this will not be possible if such crowdsourcing platforms are not accessible to persons with disabilities.

4.5 Ensuring ICT accessibility

Although ICTs are becoming more and more pervasive in most social and economic domains, the continued lack of attention to accessibility is a concern when services are offered primarily through ICT. The section above demonstrates the value and growing importance of ICTs in disaster and emergency management. Disaster management personnel have to look upon ICTs as a tool to level the playing field and go around the traditional access barriers to reaching persons with disabilities. At the same time, they have to be cautious that ICT-enabled disaster and emergency management does not pose further barriers due to inaccessibility – in a disaster or emergency situation, being shut out of information sources and being unable to connect with relief personnel or resources can prove fatal. For example, websites should be designed to be accessible

and follow the latest version of Web Content Accessibility Guidelines (WCAG) developed by the Web Accessibility Initiative of the World Wide Consortium. If websites are not designed to be accessible, people using assistive devices or needing alternative means of input/output will be unable to access the information.

CHAPTER 5: CASE STUDIES

This chapter provides a sampling of case studies under different aspects of inclusive disaster management.

5.1 Legislation and Policies

United States

The United States of America has taken specific steps towards including disability in disaster related policies. Some were taken prior to Hurricane Katrina of 2005, and some were taken in response to the wide problems that persons with disabilities faced during the hurricane.

The Interagency Coordinating Council: In July 2004, President George W. Bush issued an Executive Order to create the Interagency Coordinating Council on Emergency Preparedness and Individuals with Disabilities (ICC) under the U.S. Department of Homeland Security. The objective was to bring all relevant Federal agencies together to ensure that the needs of persons with disabilities were addressed in disaster and emergency management.

As stated by the ICC, “the purpose of the Council is to:

- Consider, in their emergency preparedness planning, the unique needs of agency employees with disabilities and individuals with disabilities whom the agency serves;
- Encourage, including through the provision of technical assistance, consideration of the unique needs of employees and individuals with disabilities served by state, local, and tribal governments, and private organizations and individuals in emergency preparedness planning; and
- Facilitate cooperation among federal, state, local, and tribal governments and private organizations and individuals in the implementation of emergency preparedness plans as they relate to individuals with disabilities.”

The ICC (2009) brings together over 25 Executive Departments and Federal agencies which span every area of activity that impacts individuals with disabilities across all stages of disaster and emergency management. These include Homeland Security, Transportation, Federal Communications Commission, Health and Human Services, Housing and Urban Development, Agriculture, Commerce, Defense, Education, Energy,

Interior, Justice , Labor, State, Treasury , Veterans Affairs, Environmental Protection Agency, General Services Administration, Office of Personnel Management, and Social Security Administration. In addition, the ICC involves agencies that focus on equal opportunity and disability issues including the Access Board, Equal Employment Opportunity Commission, National Council on Disability, President’s Committee for People with Intellectual Disabilities, and the White House Office of Domestic Policy (ICC).

ICC’s main activities and achievements have included:

- The creation of a *Comprehensive Preparedness Guide 301* to build capacity of state, local governments, territorial, and tribal governments to plan effectively to include the needs of persons with disabilities in emergency planning including communications, independence, and transportation.
- Recommendations and advocacy to include disability in disaster management working groups and frameworks such as (1) the *Long Term Disaster Recovery Working Group* established by the White House to ensure the community recovery and restoration is inclusive of people with disabilities; and (2) the National Disaster Recovery Framework to identify where changes in law and policy may be needed to make recovery processes inclusive.
- Presentations and trainings conducted by ICC members to build capacity of governments and other stakeholders to include the needs of persons with disabilities in disaster and emergency situations.
- Actions by different members of the ICC to enhance accessibility and inclusion in their own initiatives, programs, and directives some of which are covered below.

FEMA Special Advisor on Disability: One of the most commended moves by the United States was the establishment of the post of Senior Advisor for Disability Issues within the Federal Emergency Management Agency (FEMA) in 2009 (NCD, 2009). The Senior Advisor set up the Office of Disability Integration & Coordination which “provides guidance, tools, methods and strategies to integrate and coordinate emergency management inclusive of individuals with access and functional needs” (FEMA, 2013a). The Special Advisor and the Office of Disability Integration & Coordination has conducted several programs and undertaken initiatives to promote inclusive disaster management such as:

- Developing preparedness resources targeted at individuals with disabilities, communities, and governments at different levels.

- Bring all stakeholders including persons with disabilities and their families, non-governmental organizations, and relevant government representatives together in disability community stakeholder forums to discuss “ways of improving whole community disaster planning and recovery assistance” for inclusion.
- Training and technical assistance to emergency planners and disaster shelter planners around the nation, including those working at Disaster Recovery Centers and provide in-person capacity building on disability issues and the use of disaster kits.
- Develop partnerships and set up task forces and working groups to strengthen interagency and public-private partnerships for a coordinated response.
- Train disaster recovery personnel on assistive technology needs and resources.
- Place Disability Integration Advisors across members of national FEMA Incident Management Assistance Teams and as part of the Command staff at the Joint Field Office advising the Federal Coordinating Officers.
- Assess building sites and offices established by FEMA for disaster recovery operations to ensure physical and communications accessibility.
- Provide live assistance and technical support in the event of a disaster or emergency situation.
- Provide briefing to Congress about the need for inclusive disaster management and effective strategies (FEMA, 2013b; ICC, 2009).

Policy Initiatives by the Federal Communications Commission: The Federal Communications Commission is the US telecommunications and broadcasting regulator. The FCC has issued directives and guidances to ensure that warning systems and emergency communications are accessible. The FCC requires that any emergency information transmitted by broadcasters, cable TV operators, and satellite TV operators must be available in visual and aural formats to be accessible to people with visual and hearing disabilities. For example, if information is provided through crawls or scrolls at the bottom of the TV screen it must be accompanied by audio descriptions. Similarly if information is provided through audio must be accompanied by closed captioning or subtitles. However, the National Council on Disability (2009) reported that the FCC receives several complaints about non-compliance, which again underscores the need to put in place mechanisms to ensure compliance with regulations and policies. The FCC has also made efforts to make that persons with hearing or speech disabilities who use alternative communications devices have equal access to 911 calling for assistance. This includes text telephone devices that can send text messaged over telephone networks as well as Video Relay Services and Internet Protocol Relay Services.

5.2 Mitigation/Risk Reduction, Preparedness and planning

1. *DAISY Standards to develop DRR materials*

DAISY stands for “Digital Accessible Information System” is a set of open accessible standards to develop printed materials that are accessible and allow users to navigate printed content similar to persons without print disabilities. The vision of the DAISY Consortium (2014) is “that all published information is available to people with print disabilities, at the same time and at no greater cost, in an accessible, feature-rich, navigable format” (para. 4). Hence the Consortium works to use multimedia to provide equal access to printed information, including offering content over e-book readers and audio players including MP3 players.

The DAISY standards are considered to be the premier standards for accessible publishing and provide guidance for the entire publishing ecosystem, and should be adopted when developing any printed documentation on disaster and emergency risk reduction and preparedness. The DAISY consortium provides a wide range of tools for accessible publishing including Authoring and Production Tools (e.g. to create Digital Talking Books, Braille translators), Conversion tools (e.g. EasyProducer which converts Word files into audio-text synchronised talking books), Hardware and Software playback tools and mobile applications (e-book readers, apps and software, EPUB readers), and text-to-speech packages. Disability management authorities and organizations providing preparedness materials should utilize the DAISY standards and tools to provide materials in accessible formats.

2. *Disability risk reduction for children with disabilities*

Arbeiter-Samariter-Bund Deutschland e.V. (ASB) conducted a project to provide DRR information to children with disabilities out of school in Yogyakarta, Indonesia, and to establish a model of providing information on practical strategies and procedures on DRR targeted at children (United Nations, 2013). ASB addressed a very important gap seen in many low and middle income countries, i.e. children with disabilities are rarely able to attend school. Thus they are excluded from receiving any information other children receive in school, and are also unable to take that information and share with

family members and friends (Disability Inclusive DRR and CBM, n.d.). The project used a train-the-trainer format and existing government supported channels of providing this information. The indirect beneficiaries of this project included the families and neighbours of children with disabilities, DPOs, and government officials. ASB provided training to government and DPO officials at the sub-district levels and they in turn turned cadres at the village levels who provided the DRR information to children without disabilities (United Nations, 2013).

The results of the program are encouraging. Thirty two “DPO members and 70 sub-districts delivered DRR information and procedures to village cadres; 690 village cadres delivered DRR information and procedures to children with disabilities. Additionally, 929 children with disabilities out of school, ~3,716 family members and ~3,716 neighbours of children with disabilities successfully conducted a safe-room setting in their homes and completed evacuation drills” (United Nations, 2013, p.). DPOs were successfully trained to become DRR and development agents. The program was also able to demonstrate the possibility of delivering DRR information to people with disabilities without needing extensive funding or only needing technical people to deliver information to the end-user.

3. Registry of Persons needing Assistance during Disasters (Japan):

After the Great East Japan Earthquake, the Japan Disability Forum formed the Fukushima Support Center for Persons with Disabilities in Affected Areas to respond to the needs of persons with disabilities during the response and recovery efforts. Several of the affected municipalities within the Fukushima Prefecture actually have routine registries of “People Requiring Support in the Event of Disaster” and information on those who receive disability related welfare assistance (Japan Disability Forum, 2011; Rangan, 2011). However after the earthquake most municipalities would not provide this information to the Fukushima Support Center for Persons with Disabilities in Affected Areas and other social welfare organizations due to concerns about violating the Personal Information Protection Bylaw and privacy rights.

This severely hampered their ability to help persons with disabilities to evacuate and deliver necessary supplies and resources. In fact the bylaw allows exceptions in certain conditions, and one exception was the badly affected City of Minamisoma. Thus having registries and records are not enough when there aren’t clear procedures to ensure that the registered people get response and recovery assistance and services. In the chaotic aftermaths of major disaster, non-governmental organizations become important

players in the response. Hence there needs to be advanced planning on how registries could be shared with certain social welfare organizations while respecting and protecting individuals' privacy. After this experience the Japan Disability Forum is creating a new Registry that they can access during future disasters.

4. Challenges with the use of registries

It is important to note that while evidence shows that community registries have been valuable in getting disaster relief services to people with disabilities, they do have some shortcomings. If registries are used, they should either be in multiple formats and on multiple sources. Electronic registries may become inaccessible if there are power outages and server failures (NCD, 2009). Hence they should be replicated on multiple media such as CDs/DVDs, USB drives, physical copies, and ideally on an online server as well. Importantly, some persons with disabilities and DPOs have expressed concerns about recording personal disability information in a government or community database. They fear that the information may be misused and disability identification may be used to exclude them from opportunities such as getting a job or from receiving equal treatment in civic and community participation.

It is also important to not rely on the registry as the only means of receiving help in a disaster. Being on a registry gives individuals a sense of hope and expectation that someone is coming to rescue them, which can prove fatal if rescue workers are unable to get to them in a mid to large scale disaster (Norwood, 2011). Hence it is important for both individuals with disabilities and rescue workers to have alternative rescue and evacuation plans.

5. Inclusive Vulnerability and Capacity Assessments in Odisha (India)

During an accessibility audit of multipurpose cyclone shelters constructed by the Odisha State Disaster Management Authority (OSDMA), a team of HI, OSDMA, and UNDP realized that persons with disabilities had never participated in any drills in the shelters and their needs were not included in any assessments. Following this an inclusive assessment was undertaken in Bhadak District. Persons with disabilities, and their families and caregivers were notified and given information about the assessments beforehand through household visits. When given the opportunity to participate, all persons with disabilities in the community took part in the assessment. The assessments were conducted in accessible settings and facilitated through different aids. Due to the participation of persons with disabilities and their input into the assessment, service providers gained an increased understanding of their vulnerability in a disaster situation as well as their actual capacities and needs.

5.3 Evacuation

1. *Accessible Transportation for evacuation during Floods*

High waters during floods make usual modes of evacuations difficult to implement. Boats are frequently used for evacuations in flooded areas. However, these boats can be built or modified to be able to accommodate people with mobility disabilities who use wheelchairs. There are many examples of how to make different kinds of boats accessible for persons with disabilities. The Centre for Disability and Development built a model boat to assist with evacuations in Bangladesh, equipped with a ramp and accessible latrines (Bari & Saha, 2012). Other options are using boats with flat floors with one side that can be brought down to provide a roll-on/roll-off ramp (e.g. see Wheelyboat).

2. *Equipment for vertical evacuations*

High-rises and multi-storey buildings pose a major challenge during evacuations for people with mobility disabilities as lifts may not work. Several kinds of aids are available to evacuate persons using wheelchairs using the staircases such as evacuation chairs which are designed to help a person using a disability to go down a staircase instead of a lift. Examples include Evacu-Trac (<http://www.evacutrac.com/emergency-evacuation-chairs-product-comparison.html>) and Evac+Chair (<http://www.evac-chair.com/>). These chairs are designed so that even a single person can assist in the evacuation of the person using a wheelchair. These can be purchased in advance in office buildings and by evacuation teams and rescue workers. However it is important that users are regularly trained in accurately and quickly using these chairs.

3. *DAISY Consortium's evacuation training manual for people with psychosocial disabilities*

The DAISY Consortium, in collaboration with the NRCD Institute and autism researchers from the US, has developed an accessible ICT-based evacuation training manual for persons with psychosocial disabilities (Kawamura, 2012). An evacuation guide on Tsunami was used for pilot testing in Urakawa. The training was developed using a story format and told using popular Manga (comics) characters such as Tsunamiman created by Mr.Takashi Yanase. Using human voices and text highlights, the guide demonstrates evacuation routes with details of rooms, stairs, doors, roads and landmarks. This manual has been tested with persons with psychosocial disabilities in Urakawa, and is followed by an evacuation drills so participants can implement what they learn from the manual (Kawamura).

One of the key characteristics of the DAISY evacuation manual process is that the participants are allowed to gain ownership over the process. Which means that they are given authoring privileges and where possible images from their own drills replace the standard images used before. Significantly, the manual has also proved to be a train-the-trainer type of exercise as participants themselves conduct drills.

4. Evacuation Training using the Twin-Track Approach

In Vietnam, the National Disaster Management Committees worked together with Malteser International to include disability in their Community-Based Disaster Risk Management efforts. One of the initiatives included a twin-track approach towards promoting accessible early warning mechanisms and priority evacuation assistance in 47 villages in the Quang Nam province (Disability Inclusive DRR and CBM, n.d.). The program provides targeted training to DPOs to strengthen their capacity to implement accessible disaster management activities and empower them by improving their self-representation and self-determination (Malteser International, 2011). The other track focuses on making community disaster management practices and systems more inclusive through various activities such as, “Village Disaster Risk Management plans, developing inclusive early warning and evacuation mechanisms, and awareness raising” (Disability Inclusive DRR and CBM, p. 18).

5.4 Emergency Communications, Information Sharing

1. SMS for emergency messaging

Police divisions in cities across India have started SMS helplines for people with communication disabilities by providing a dedicated cell phone number to receive these requests, for example Mumbai Police and Delhi police. The Delhi Police are researching on the logistics to establish a system to receive SMS messages on a dedicated police helpline service (Disability News and Information Service, 2012). The Mumbai Police are working on a similar initiative to create a helpline service with dedicated staff (Venkat, 2013). Currently, people with communication disabilities can use other dedicated cell phone numbers to send text messages to receive police assistance.

Several disability and consumer advocacy groups in Australia advocated strongly to implement SMS systems during an emergency and to allow emergency communications using smartphones (Australian Communications Consumer Action Network, 2011). In February 2013, the Australian Minister for Broadband,

Communications and the Digital Economy (2013) announced improvements to the National Relay Service which included the ability to send a SMS to contact emergency services, and enable the use of relay services on mobile phones and internet-enabled devices. SMSAssist (Western Australia Police, n.d.) is an emergency text messaging service in Western Australia which allows people who have hearing or speech disabilities to text to a dedicated number to ask for police assistance or report matters to the police. People can register beforehand and enter their personal details, but prior registration is not required.

FrontlineSMS is another service that has been used in disaster situations. FrontlineSMS is an open source platform that allows a user to distribute and received information from a number of individuals simply using text messaging capability on a cell phone. Recently researchers at the University of Alberta successfully used FrontlineSMS to promote greater inclusion of persons with disabilities and it offers another platform to ensure that people with disabilities can receive and are able to send information in disaster situations.

A communications company in the United States, Intrado, is rolling out the TXT29-1-1 service that can support text messages to 911 (Walford, 2013). Texting 911 in an emergency opens up a dedicated conversation between the individual originating the text and the 911 call handler. While the ability to text to 911 is not generally available around the United States, the FCC expects that it will become increasingly available in the year of 2013. Intrado has also developed a smartphone application, 911Link Mobile, that allows an individual to send a text message to a 911 call center even when the call center is still getting the capability to accept direct text messages (Jackson, 2013). Intrado does this by providing an intermediary who receives the text from the mobile device and connects the right 911 center. This is an intermediate solution until the call centers get the required infrastructure.

2. Sharing information during a disaster and connecting people to resources

Following the floods in Pakistan in 2010, a Pakistani DPO Special Talent Exchange Program (STEP) together with SightSavers International set up the Information Resource Center on Disability (IRCD) to coordinate information sharing and dissemination between two affected districts, Nowshera and Charsaddah (Khan, 2011). IRCD used a computerized database which then connected to the central crises center operated by the Red Crescent of Pakistan, immediately linking the disability specific

information to the larger disaster relief and recovery operations. The database was populated with the national identity card numbers, type of disability, location, and location of family members. STEP used this database for knowledge sharing with persons with disabilities as well as aid and relief personnel. Through the database, STEP could identify persons with disabilities in affected areas and provide them with information on “food distribution systems, medical outreach services, distribution of cash and food grants, cash-for-work programmes” (Khan, 2011, p.30). Similarly it could offer information on the needs of persons with disabilities to the WASH and shelter clusters to promote the accessibility of their programs. STEP planned to continue using the IRDC even after the immediate needs had subsided to provide persons with disabilities with continued capacity building including vocational and networking opportunities.

5.5 Accessible Shelters

1. Turning schools into accessible shelters in Bangladesh

The Centre for Disability and Development in Bangladesh worked with local school management committees to adapt schools to become accessible shelters during floods or other disasters. They also created raised areas in the schools to protect against flooding.

2. Creating privacy in shelters in Japan

After the Great East earthquake in Japan, cardboard partitions were used to create private areas within shelters in Kesenuma City for persons with functional needs. Separately, specially designed shelters were opened and operated in some of the affected cities (Tatsuki).

5.6 Recovery and reconstruction: Building back better

1. Using the cluster system to integrate accessibility into reconstruction

After the earthquake in Haiti in 2010, the UN Cluster system was activated to assist the government in different aspects of the relief, recovery, and reconstruction process. The Education Cluster led by Save the Children and UNICEF assisted in the reconstruction of schools and took several steps to make sure the needs of children with disabilities were addressed (United Nations, 2011). Questions on disability were included in a survey distributed to 3,700 schools in Port au Prince. The Education Cluster collaborated with the inter-agency Disability Working Group and discussed inclusive

education. Most significantly, the Education Cluster together with Handicap International worked with the “WASH (Water, Sanitation and Hygiene) in Schools” working group, the cluster was able to advocate for accessible designs for toilets and handwashing facilities in schools that were being rebuilt or repaired. As a result, each block has at least one wheelchair accessible toilet. One of main lessons learned from this experience was that groups should visit the actual sites of reconstructive to interact personally with the people involved in reconstruction and provide the most constructive guidance on accessible rebuilding as opposed to just seeing designs on paper (UN, 2011). The Education Cluster also faced barriers and lack of interest from other NGOs who did not understand the importance of making schools accessible when there were no current students with disabilities. However, these are opportunities for awareness raising and advocacy by sharing the possibility that students with disabilities (including those with new disabilities due to the earthquake) can finally go or return to schools that are accessible (UN, 2011). Based on this experience, the Cluster recommends that inclusive education should be discussed and advocated immediately after an emergency and local DPOs should receive trainings on inclusive educations with practical examples.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

India has a large constituency of persons with disabilities and other vulnerable groups who are presently excluded from emergency planning and response services due to lack of adequate accessible infrastructure and trained manpower. In India alone, as per the 2001 Census, there are around 2.19 crore disabled people, constituting 2.13% of the total population of the country (Disability India Information Resources, 2007). However, this figure can be estimated to be lesser than the actual number due to large spread and prevalent under reporting.

It is imperative that the Government of India, through the NDMA adopt measures to remedy this situation. India has a broad legal framework which requires emergency services and resources to be made accessible for persons with disabilities. Part III of the Constitution of India, which deals with the fundamental rights of citizens, recognizes the principle of equality of all people. Article 14 states that the government must accord equal protection of the law to any person within the territory of India.¹ This recognition of the importance of non-discrimination means that the State must ensure that people with disabilities do not suffer disadvantages when it comes to accessing public services in times of emergencies.

Section 15 of the Draft Rights of Persons with Disabilities Bill, 2012² recognizes the rights of people with disabilities in times of risk, and states: “All persons with disabilities shall have the right to suitable protection and safety in situations of risk, including situations of armed conflict, humanitarian emergencies and natural disasters”, and directs appropriate governments and local authorities to take effective and appropriate measures to enable the protection and safety of persons with disabilities in these situations on an equal basis with others.³ The Bill goes on to direct the Disaster Management Authorities at various levels to take the rights of people with disabilities into account when formulating the disaster management plans.

Internationally, India has signed and ratified the United Nations Convention on the Rights of Persons with Disabilities (CRPD) way back in 2008 and is hence bound to ensure that national laws and policies reflect this commitment. There have been several

1. Article 14: Equality before law - The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India (Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth).

2. Available at <http://socialjustice.nic.in/pdf/draftpwd12.pdf>.

3. Section 15(2), Draft Rights of Persons with Disabilities Bill 2012.

judgements of the Supreme Court which uphold the UNCRPD as law to enforce the rights of persons with disabilities. Article 9 of the UNCRPD lays down that persons with disabilities have a right to access information and information and communication technologies, the internet and new media on an equal basis and without discrimination. Article 10 recognises that all persons with disabilities have a right to life and that states parties have an obligation to protect and promote the enjoyment of this right. Article 11 specifically deals with situations of risk and humanitarian emergencies and obliges states parties to take all necessary measures to protect and safeguard persons with disabilities in situations of risk such as armed conflict, humanitarian emergencies and occurrence of natural calamities.

National Policy on Disaster Management

The National Policy on Disaster Management (“NPDM”) ⁴ recognises India’s vulnerability to national disasters and emergencies, and more specifically, acknowledges that economically and socially weaker segments of the population often face worst situations in cases of national disasters.

“Within the vulnerable groups, elderly persons, women, children - especially women rendered destitute and children orphaned on account of disasters and the differently abled persons are exposed to higher risks.”⁵ One of the objectives of the policy is “ensuring efficient response and relief with a caring approach towards the needs of the vulnerable sections of the society.” Hence there is a broad mandate to cover the needs of persons with disabilities.

The policy envisages a shift from a disaster relief perspective to a more proactive and prepared approach, with a focus on averting or mitigating disasters in order to minimise loss to life and property.

Section 5.2.6 of the NPDM discusses forecasting and early warning systems, and mentions several Information and Communications Technology (ICT) tools that can be used for forecasting as well as imparting timely warning of disasters. The scope of this section needs to be broadened to include information and communications technologies which are accessible.

⁴. Full text of the policy is available at <http://ndmindia.nic.in/NPDM-101209.pdf>.

⁵. *Id*, page 1.

Though Section 5.3.2 of the NPDM reiterates that several segments of the population – the elderly, women, children, and differently abled persons – need special attention when it comes to formulating a policy on disaster management, it only advocates that women and youth be encouraged to participate in decision making committees and action groups for effective management of disasters. There needs to be a more holistic understanding of the issue and persons with disabilities need to be included in the consultative process as well.

Conclusion and recommendations

In the light of the above, it is clear that India has both a dire need and requisite legal mandate to implement accessibility in its disaster and emergency response service. A few recommendations are made in furtherance of this:

1. The NDMA may set up a small committee to study the contents of this report and chart out a plan of action to move forward.
2. This Action plan document may contain both policy level as well as programme level suggestions for change with different time lines.
3. This document may be put up for public feedback and if possible a physical consultation with representatives from different areas- persons with disabilities, police, first responders, trainers and other relevant bodies may also be organised.
4. NDMA may also consider putting out an RFP for funding some projects for persons with disabilities and these may be done in collaboration with organisations for the disabled.
5. There should be an overall plan to bring in accessibility within the national emergency response system within the next 4-5 years. This could include:
 - (a) retrofitting all existing shelters to make them accessible
 - (b) creating and disseminating information packs and training kits in accessible formats for persons with disabilities and manuals for training first responders and other relief personnel
 - (c) ensuring that persons with disabilities are included into evacuation drills
 - (d) making its own website and web sites of other relevant and associated bodies accessible as per the WCAG 2.0 standard
 - (e) bring in some policy level commitment towards making disaster and emergency services accessible.
 - (f) ensure that all relief personnel as well as persons dealing with emergencies on a day to day basis are sensitized and trained to cater to the needs of persons with disabilities.

(g) ensuring that there is an effective single number helpline throughout the country for persons with disabilities which is accessible through voice and relay. Work with relevant government bodies such as USoF/ TRAI/ MIT/ MSJE to set this up.

6. Work in partnership with other relevant bodies administering emergency services such as the police to promote the accessibility agenda.

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