



MEDIA CAPACITY BUILDING AND DISASTER RISK REDUCTION:

Building Resilience and Protecting
Socio-Economic Development
Gains in Southeast Asia



International Development
Australian Broadcasting Corporation

BACKGROUND

Funded by Australian Aid, Australian Broadcasting Corporation International Development (ABC ID) has undertaken a program of support to raise awareness and capability amongst national broadcasters from Association of Southeast Asian Nations (ASEAN) countries to develop Emergency Broadcasting planning & systems that will enhance civic resilience and accelerate recovery.

Literature Review

This literature review focuses on the value of investing in building the communication capacity of broadcasters in the ASEAN region, for the purpose of strengthening civic resilience and sustainability of socioeconomic development in the context of environmental disasters. Both are drivers for poverty alleviation. It serves as an orienting piece to the ABC ID in-country program activities that have been conducted in the Philippines, Indonesia, Myanmar, Laos, Cambodia and Vietnam. It was used as a resource to brief the program team before they conducted their field trips to apprise them of the situation in each of the countries.

The review adopts a regional perspective on disaster risk reduction and emergency broadcasting with examples of disaster communication in localised environments. It is a useful summary of information which can be used by media development practitioners, public broadcasters or those with an interest in building community resilience to emergency situations.

Review Process

The review process included a systematic search and analysis of available literature which was contextually specific with a particular focus on the six selected countries. Online searches were conducted using search terms relevant to disciplinary and practical literature and case studies available in published works. Criteria for inclusion included literature which addressed themes related to natural disaster preparedness, response and recovery, communications and emergency broadcasting. It should be acknowledged that the review only includes resources that were publicly available and written in English. A total of seventy five documents were assessed. It was beyond the scope of the review to include all academic, unpublished or non-English language resources for this work, though it may have provided additional insights. ABC ID acknowledges that these resources would provide important additional information for any parties seeking to further develop a review of literature on this subject matter. This document provides a review for practitioners in the field but is not exhaustive in its scope or findings.

Acknowledgements

ABC ID acknowledges the primary contributor to this review, Akina Mikami. The review has benefited from inputs by Angela Davis, Vipul Khosla and Sam Freeman from the ABC and ID Insights and Impact team and; Jo Elsom, Robert Batten, Irene Scott and Emma Walker from ABC ID. The literature review does not necessarily reflect the views of the ABC or the Department of Foreign Affairs and Trade (DFAT) Australian Aid.





CONTENTS

3	Executive Summary
4	Introduction: Reducing Disaster Vulnerability in Southeast Asia
6	Disaster vulnerability in Southeast Asia
7	Communication as resilience
8	Approaches: Building Media Capacity and Reducing Disaster Risks
8	Media capacity building and disaster risk reduction
10	Policy and legislation
11	Technical communication systems
11	Emergency communication network
12	Content production
14	Organizational management
14	Research
15	Key considerations
15	Communication for Development (C4D)
15	Gender and disability
16	Local relevance
19	Scales of cooperation
20	Communication for Resilience in Action
21	Preparedness
21	Raising disaster risk awareness: Participatory soap opera radio programs involving Vietnamese women in the Mekong Delta region
22	Response and Recovery
22	Coordinated communication with affected community: Creating information flows in 2013 Typhoon Haiyan (Yolanda) in the Philippines
25	Delivering information as aid: BBC Lifeline Radio Project in Myanmar immediately after Cyclone Nargis in 2008
27	Acronyms
28	Appendix
31	References



EXECUTIVE SUMMARY

Investing in media capacity building is investing in the protection of socio-economic development gains

- **There is a need, and also an opportunity, to reduce disaster vulnerability in Southeast Asia.** As one of the most disaster-prone regions in the world, Southeast Asia is exposed to frequent natural hazards, such as floods, which are increasing, not in number, but in severity (IFRC, 2009). Each year, damage caused by disasters exceeds US\$4.4 billion on average, amounting to more than 0.2 per cent of the region's gross domestic product (GDP) (World Bank, 2012). While mortality rates due to disasters are decreasing, disaster-related economic losses are increasing as risk continues to grow faster than wealth (Jamil & Ali, 2013; UNISDR, 2012).
- **Systematic efforts to reduce disaster vulnerability and strengthen community resilience can reverse these devastating trends.** It can protect socio-economic development gains, and ultimately help save lives and improve livelihoods.
- **Building the capacity of media can significantly increase community resilience.** It enables effective information flows that can reach mass audiences before, during and after a disaster, leading to better disaster preparedness, response and recovery. Building media capacity enables better community dialogue, leading to building a more resilient society.

Improving the ability of media to deliver these services can best be achieved through alignment with the goals of disaster risk reduction (Hyogo Framework for Action) and sustainable development (Millennium Development Goals). Approaches include:

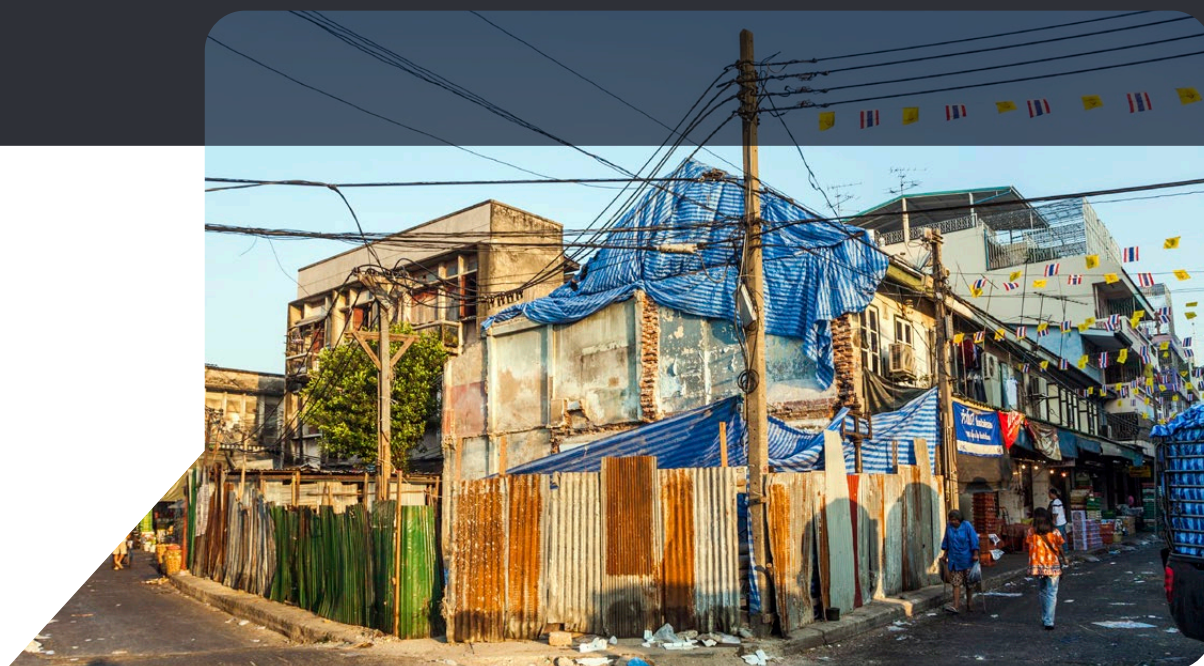
- **Policy and legislation:** develop and implement emergency broadcasting plans and policies; integrate broadcasting communication policies in national and local disaster risk reduction policies; and promote media legislation that enables community dialogue.
- **Technical communication systems:** The construction, maintenance and use of infrastructure to enable early warning broadcasting systems.

- **Network:** strengthen the relationship between media and other key actors in emergency communication network to facilitate multi-directional flow of information (e.g. with affected communities, national and local disaster management authorities, emergency service providers etc).
- **Content production:** develop knowledge and skills to produce content that contributes to better disaster preparedness, response and recovery.
- **Organisational management:** develop media's organisational capacity to manage disaster risks and protect the safety of media staff and employees.
- **Research:** strengthen media's research capacity to better understand the disaster risks of the community and their information needs.

Building resilience involves not only mitigating hazard impacts, but also tackling the socio-economic conditions that exacerbate vulnerability.

Building resilience involves not only mitigating hazard impacts, but also tackling the socio-economic conditions that exacerbate vulnerability. Media capacity building can reap most benefits when it is underpinned by **Communication for Development (C4D) principles** with consideration for **gender and disability issues**. It is most effective when **local relevance and locally specific communication environments** are considered as important and accounted for, while taking into account the innovative use of information communication technologies (ICTs) in disasters, such as social media and space applications. **Regional cooperation** at supra- and sub-national levels is important when building media capacity, given the disaster risks are not contained in national borders or broadcast zones.

INTRODUCTION: REDUCING DISASTER VULNERABILITY IN SOUTHEAST ASIA



Disaster risks spread across national borders, affecting not only the livelihoods of communities directly exposed to these hazards but those of the wider communities.

Southeast Asia is the most disaster-prone region in the Asia Pacific, and the Asia Pacific region alone has accounted for 85% of disaster-related deaths and 38% of economic losses globally between 1980 and 2009 (UNISDR, 2010). Each year, it faces disaster-related damage in excess of US\$4.4 billion on average, which is equivalent to more than 0.2% of the region's GDP (World Bank, 2012). Due to development progress, the mortality rate due to extreme weather incidents is decreasing in the region. However, it is facing increasing economic losses (UNISDR/UNESCAP, 2012). For example, the region suffered economic losses of US\$28.3 billion between 2000 and 2009, and US\$41.3 billion in 2011 alone due to disasters (Guha-Sapir et al., 2013). The countries that suffer from the highest annual economic losses (AEL) due to disasters are the Philippines, Indonesia and Vietnam in that order. The country with the highest AEL as a percentage of GDP is Myanmar, with an average loss that amounts to 0.9% of its GDP, followed by the Philippines and Vietnam with 0.8% respectively. Laos and Cambodia also have significant AEL, equivalent



Reducing disaster vulnerability is a regional challenge requiring regional solutions.



to 0.7% of their respective GDPs (World Bank, 2012).

Disasters don't affect populations evenly. It is often the poor who are impacted most. As a recent report on the geography of poverty and disaster suggests, disasters can "entrench poverty that already exists and pull more people down into poverty as their assets vanish, together with their means to generate an income" (ODI, 2013: 2).

Reducing disaster vulnerability is a regional challenge requiring regional solutions. Disaster risks spread across national borders, affecting not only the livelihoods of communities directly exposed to these hazards but those living in a circle of wider communities (UNISDR/UNESCAP, 2012). For example, the recurrent flood and drought problems in the lower basin of the Mekong River basin are closely linked to food security issues in the region. These hazards impact upon an estimated population of 60 million people living within the lower basin across Cambodia, Laos, Thailand and Vietnam. Many of these inhabitants are farmers, further affecting the rice production that feeds 300 million people annually (FAO, 2011).

Building community resilience is the central way to reduce disaster vulnerability. Resilient communities are communities that have the capacity to cope with hazard impacts, adapt to changes that occur and restore quickly to sustain their qualitative condition with minimal losses. When natural hazards occur, resilient communities can protect livelihoods and their socio-economic development gains (UNISDR/UNESCAP, 2012).

At the foundation of resilient communities are individuals' understanding of what to do before, during and after a hazard event. Fundamental to this understanding is effective communication among all the key actors across all stages of disaster risk reduction (ReliefWeb, 2014). When the right people can access the right information in a timely manner decision-making is enhanced, leading to better allocation and mobilisation of resources which can significantly mitigate the human and economic losses (CDAC Network, 2011). The capability of an individual to seek, receive and utilise life-saving information is considered not just a privilege, but also a basic human

right, as is enshrined in the Article 19 of the Universal Declaration of Human Rights (UN, 2014).

In recent years, there has been an increased recognition worldwide of the value in investing in disaster risk reduction to achieve and sustain development goals. The 2005 Hyogo Framework for Action, of which Australia is a signatory, is a global effort to substantially reduce all disaster losses by 2015 (UNISDR, 2007). Founded on a culture of prevention, rather than reaction, disaster risk reduction is based on the thinking that there is no such thing as a 'natural' disaster, only natural hazards (UNISDR, 2014). While natural hazards are inevitable, they can be prevented from becoming a disaster by mitigating the scale of impact those hazards can have on society and environment. Disasters often follow natural hazards, such as cyclones, floods and droughts, posing significant threats with devastating human and economic costs. Globally, due to disasters, more than 2.7 billion people were affected and more than US\$1.3 trillion was lost between 2000 and 2011 (UNISDR, 2014). Disasters not only bring immediate harms to the affected communities like damages to livelihoods and properties, they also have far-reaching social, economic and environmental costs, impacting the socio-economic relations with the wider communities as



Every year, Southeast Asia is exposed to hazards such as tropical cyclones, floods, droughts and sea level rise, which are increasing, not in number, but in severity.

well as the environment of future generations.

Systematic efforts to reduce disaster vulnerability and strengthen community resilience can reverse these devastating trends. It can protect socio-economic development gains, and ultimately help save lives and improve livelihoods. This review focuses on emergency communications in relation to natural hazards, however the principles and approach can also be adapted or activated to prepare and respond to other types of emergencies such as disease outbreaks or conflicts.

DISASTER VULNERABILITY IN SOUTHEAST ASIA

In order to plan and respond adequately to the communication needs of the Southeast Asia region, it is important to understand the context of its disaster vulnerability. Southeast Asia is one of the regions in the world most vulnerable to disaster risks (UNISDR/UNESCAP, 2012). It confronts a combination of frequent and stronger natural hazards, poorly planned and rapid urban growth, as well as marginalised areas lagging in development processes. There is an increased importance on integrating disaster risk reduction with climate change adaptation, urban planning and sustainable development processes.

Every year, Southeast Asia is exposed to hazards such as tropical cyclones, floods, droughts and sea level rise, which are increasing, not in number, but in severity (IFRC, 2009). The areas that are especially vulnerable to these hazards are the Philippines, the Mekong Delta region of Vietnam, all the regions of Cambodia, north and east of Laos, the Bangkok region of Thailand, Myanmar, and the west and east of Java and the urban area of Jakarta in Indonesia (IFRC, 2009; Jamil & Ali, 2013). Among these areas, Myanmar, Vietnam, the Philippines and Thailand were ranked in the top ten countries in the world most affected by extreme weather between 1993 and 2012, according to the 2014 Global Climate Risk Index (Kreft and Eckstein, 2014).

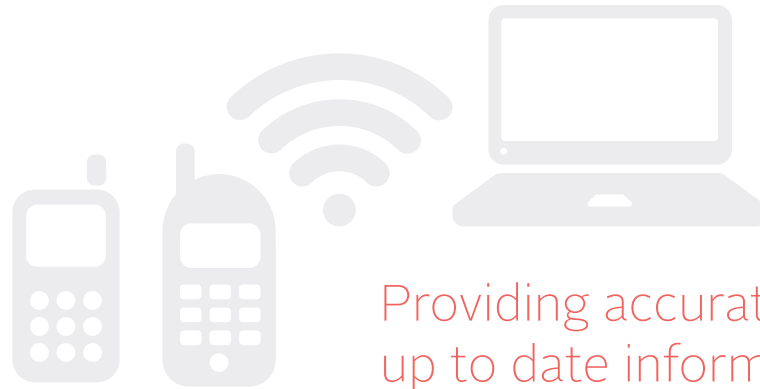
In addition, the exposure and vulnerability to the natural hazards is rising due to increasing population and rapidly growing economic activities concentrated in poorly

planned urban areas. Southeast Asia's estimated population of 600 million in 2010 has doubled since 1970, and is expected to rise to 760 million by 2050 (Jones, 2013: 3; Hirschman and Bonaparte, 2012: 9). The proportion of the population living in urban areas has doubled since 1970, and more than half of the population of Southeast Asia is expected to concentrate in urban areas by 2030 (Jones, 2013: 7). In particular, the mega-cities like Jakarta and Manila, with populations of 9.6 million and 11.9 million respectively, are located geographically in hazard-prone areas (Jones, 2013: 7). Urbanisation in Southeast Asia is proceeding with poorly planned public infrastructure, such as drainage and property construction, that are not disaster resilient (UNISDR/UNESCAP, 2012). The risk of human and economic losses is higher in these urban areas, due to concentration of inhabitants and the centrality of economic activities.

Disaster vulnerabilities of communities also continue to rise in areas where development has not been sufficient. For example, from 1970 to 2009, the mortality rate due to small-scale disasters in Laos and Indonesia increased, in spite of the overall decline of mortality rates in the region (UNISDR/UNESCAP, 2012). The poorest often bear the greatest burden of disaster impacts. The 2009 Typhoon Ketsana caused \$58 million in damage, out of which 55% of the losses were borne by small and marginal farmers in Laos. In the Philippines, the same typhoon resulted in \$4.3 billion damage with 90% of losses carried by poor urban households (UNISDR/UNESCAP, 2012).

In Southeast Asia, there is a need, and also an opportunity, to turn these vulnerabilities into resilience by viewing disaster risk reduction in the context of sector and community-wide sustainable development and climate change adaptation strategies (ReliefWeb, 2012). Regionally, there is growing recognition of the importance of addressing these trans-boundary disaster risks through regional and sub-regional cooperation. There is also emphasis on strengthened local level initiatives and action, with greater focus on community engagement and attention to cross-cutting issues such as gender and disability in design and implementation of disaster risk reduction interventions (UNISDR, 2013a).

COMMUNICATION AS RESILIENCE



Investing in effective communication is important for building community resilience because it enables timely, accurate and relevant information flow. Early warning is essential in providing information that allows individuals and organisations exposed to those hazards to take action to avoid or reduce the risks (Kalathil, 2008). After the 2004 Asian tsunami that predominantly affected Indonesia and Thailand, there has been significant progress in improving early warning systems across Southeast Asia. Reduced mortality rates during disasters in the region have largely been attributed to strengthened early warning systems (UNISDR/UNESCAP, 2012).

The delivery of information has traditionally been overlooked, but is increasingly valued as a basic need in humanitarian emergency response because of its critical role in the delivery of food, shelter and medical aid (OCHA, 2013; Quintanilla and Goodfriend, 2011).

Local media, particularly broadcast media, are key actors of disaster communication due to their immediate access and proximity to communities through various new and traditional media platforms (Crowe, 2012). Local media that are equipped with strong communication capacity can facilitate community dialogue that lays a solid foundation for a resilient society. It can help the community to better understand the disaster risks they are exposed to so they can prepare more effectively to reduce the possibility of human and economic losses (Kalathil, 2008).

At the sudden onset of natural hazards, many local public service broadcasters, such as Japan's public broadcaster NHK and Myanmar Radio and Television (MRTV), are mandated to coordinate with actors such as the office of meteorology, national disaster management office and emergency service providers, to deliver relevant information to affected communities (Mendel, 2000). Others, such as the Australian Broadcasting Corporation (ABC) have developed their own internal emergency broadcasting policies to act as the framework for systematic and coordinated response to emergencies. Providing accurate and up to date information to citizens to save lives and protect property has been at the core of ABC emergency broadcasting since it was formalised over ten years ago (Mannix, 2013). Emergency broadcasting is identified as a core responsibility of the ABC in its 2013-16 Strategic Plan. (Australian Broadcasting Corporation, 2013).

During emergency response, a lack of information as well as the spread of inaccurate or irrelevant information

Providing accurate and up to date information to citizens to save lives and protect property has been at the core of ABC emergency broadcasting since it was formalized over ten years ago.

can be extremely dangerous to affected populations (Kalathil, 2008). For example, the spread of rumours or self-promotion by relief agencies can be equally as harmful as having no information at all (Ride, 2014). It is critical that the local media have well-established plans and well-trained staff to address these challenges effectively and promptly. This includes being able to manage the competing priorities of actors during these times to ensure that citizen information needs are met.

Recent literature on the role of information in emergency response has particularly focused on the value of capitalising on innovative ICTs to fill the critical gaps in the information chain during disasters (UNISDR/UNESCAP, 2012: 111). Some examples of these include satellite broadband communications, remote sensing (RS), geographic information systems (GIS), and web-based and mobile terminals. In an increasingly networked communication environment, there is also a focus on new techniques of information gathering and sharing, such as crowdsourcing, crowdseeding and mobile caching in relation to 'big data' or 'open data' that are assembled largely through social media applications (OCHA, 2013). These emerging trends in humanitarian communication need to be further contextualised in locally specific media and communication environments.

In recovery processes, media can play a role in reducing the economic costs of disasters (Kalathil, 2008). It can facilitate community dialogue that can contribute to the resilient futures of the affected community. It can restore public confidence in the recovery of livelihoods and reconstruction of communities. It can help build collective memory that aids emotional and psychological healing processes. Investing in the communication capacity of local media is investing in community resilience (Ride, 2014).

APPROACHES: BUILDING MEDIA CAPACITY AND REDUCING DISASTER RISKS



When natural hazards occur, local and international media are among the first responders, joining local authorities and professional emergency service providers to disseminate information to the public.

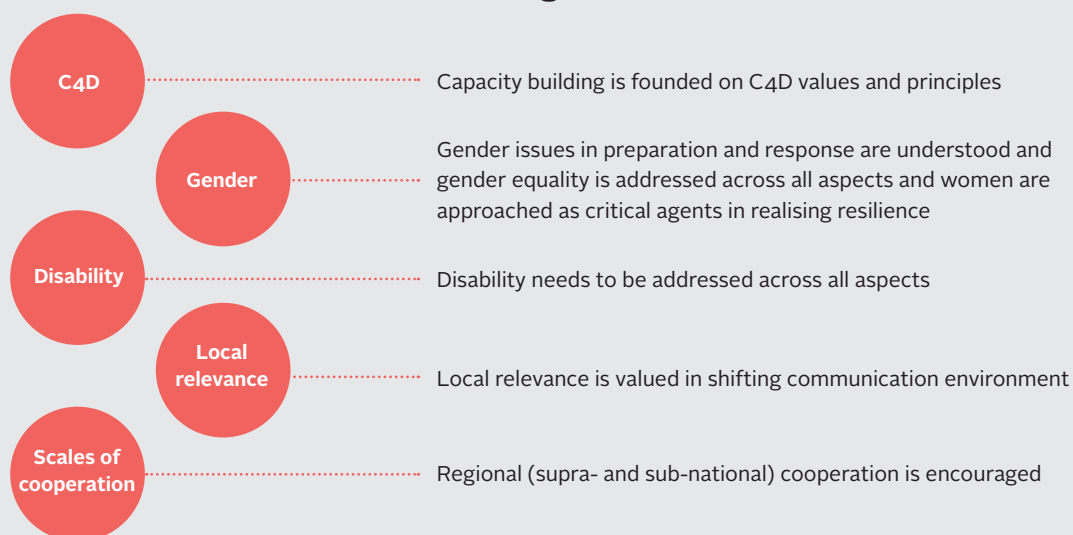
MEDIA CAPACITY BUILDING AND DISASTER RISK REDUCTION

Building the capacity of media in the context of disaster risk reduction involves many facets. It can be approached from the perspectives of policy and legislation, technical communication systems, emergency communication networks, content production and research. It gives active consideration to C4D principles, gender, disability, local relevance and scales of cooperation as key cross-cutting themes (See UNISDR, 2013b).

Aspects of Media Capacity and Relation to Disaster Risk Reduction



Cross-cutting themes





Policy and legislation

One of the key ways to build the media capacity and strengthen disaster resilience is to ensure that policy and legislative structures offer strong and enabling media and communication environments that lead to effective information flow across the stages of preparedness, response and recovery.

When natural hazards occur, local and international media are among the first responders, joining local authorities and professional emergency service providers to disseminate information to the public. It is vital that every media institution is equipped with an emergency broadcasting communication plan, which is harmonised with other response agencies and actors (Leoni and Radford, 2011: 73-75). Comprehensive emergency broadcasting plans will vary across context and time however a comprehensive plan should:

- Be flexible enough to be adapted to particular emergency situations. At the same time, it should offer comprehensive coverage not just in the response stage, but also the preparedness and recovery phases.
- Clearly define the roles that the media play in relation to other key actors in the emergency communication network to avoid information clashes and confusion.
- Be relevant to the local media and communication environment and be aligned to the information needs of the community.
- Address gender and disability issues, both at the level of public information dissemination, and at the organisational level including support to media staff and employees.
- Set out operational plans for facilities, such as backup generator power and transmitter locations, associated long-term fuel storage, as well as backup facilities in secondary locations where information gathering and studio work can be relocated if the primary location is disabled due to catastrophic conditions (ITU, 2013).

Importantly, the plan should be a living and active document, updated regularly and mainstreamed at the organisational level through regular training and drill exercises.

According to the Hyogo Framework for Action in Asia and the Pacific 2011-2013 report there has been growing importance of institutional and legislative arrangements in Southeast Asia to achieve disaster risk reduction objectives (UNISDR, 2013b). In particular, there is greater

emphasis on efforts to boost public awareness and improve early warning systems across the region (UNISDR, 2013b). It is important that emergency broadcasting policies are integrated with the overarching disaster risk reduction policies and legislation at national and local levels. The report outlines the process of institutional and legislative changes necessary for Southeast Asia to achieve disaster risk reduction objectives. (UNISDR, 2013b). For example, in Myanmar, the Disaster Management Bill was drafted and submitted to the Parliament. In April 2012, the government restructured the National Disaster Preparedness Central Committee (NDPCC) to create the Myanmar Disaster Preparedness Agency (MDPA), which is composed of 14 relevant ministries. Different ministries and stakeholders are using this opportunity to integrate disaster risk reduction in the planning process of their sectoral development plans. In the Philippines, the Disaster Risk Reduction and Management law provides an allocation of no less than 5% of its budget for disaster risk reduction management in all local government units. In Laos, the disaster risk reduction has been integrated into the current 7th National Social Economic Development Plan for 2011-2015 to ensure every step of the development and investment process is protected against disasters. The government has also approved the establishment of a Disaster Prevention Fund. In Vietnam, the National Committee on Climate Change (NCCC) was established in early 2012 to assist the government in devising immediate and long-term action plans, programs and strategies to cope with climate change and enhancing inter-sectoral coordination and planning (UNISDR, 2013b).

In addition to emergency broadcasting communication policies, it is critical that the media policies and legislative arrangements encourage an environment that promotes community dialogue for resilient society building. An enabling media and communication environment is an environment that promotes (i) the independence, diversity and plurality of the media, (ii) universal public access to a variety of communication media and channels including community media, (iii) a non-discriminatory regulatory environment for the broadcasting sector and strong media accountability systems and (iv) freedom of expression in which community members are able to voice their opinions and participate in public debates that advance sustainable development and disaster risk reduction (United Nations, 2011: 8). An enabling media and communications



Emergency warning broadcasting systems are critical to the early warning processes.



environment is an indicator of an enabling economic environment and stability which are both foundational aspects of a resilient community (UNISDR, 2013b: 5).

Technical communication systems

Disaster losses can be reduced greatly through early detection of hazards prior to impact and coordinated early warning. In recent years, there has been substantial improvement in the area of installation of early warning systems in Southeast Asia (UNISDR/UNESCAP, 2012). The overall decline in mortality rates during disasters in the region has been largely attributed to the improvement of early warning systems (UNISDR/UNESCAP, 2012). The Hyogo Framework for Action in Asia and the Pacific 2011-2013 outlines the country updates on progress made toward disaster risk reduction including evaluation of early warning systems. According to this report, the Philippines reported that it has an effective early warning system in place. Indonesia has reported the establishment of early warning systems for all key hazards, such as floods and extreme weather conditions. Vietnam has reported that it has a well-connected early warning system from central to local levels. In Cambodia and Laos, early warning information and effective weather forecasts are noted as being generated for rainfall, storms, typhoons and water levels along the main rivers and tributaries. Myanmar is reported to have an early warning system in place, but its reach to remote communities is limited (UNISDR, 2013b: 16).

Emergency warning broadcasting systems are critical to the early warning processes. In times of disaster, communication systems can experience connectivity failures due to traffic congestion, loss of power at key network centres, cellular transmission towers, fibre links or other intermediate processing points (ITU, 2013). In contrast to the volatile connectivity of non-broadcast media, terrestrial broadcasting remains comparatively reliable and stable (ITU, 2013). Emergency warning broadcasting systems utilise broadcasting facilities to alert people and allow them to prepare for an emergency (ABU, 2009: 6). The system's signals embedded in analogue television and radio broadcasts will automatically switch on the television and radio sets with receivers, issue an emergency bulletin and alert people to the impending hazard (ABU, 2009). In the case of digital broadcasting, the digital terrestrial telecasts, which can be sent to mobile phones, portable digital assistance units and other

mobile devices, may also play a role in enabling people to respond during emergencies (ABU, 2009). In remote areas or in situations when the broadcasting infrastructure is damaged, there are also the options to utilise radio-in-a-box units (UNESCO, 2006).

It is important to strengthen technical capacity to develop and maintain and continuously test broadcasting communication systems in the context of disasters. In particular, it is important that the broadcast technicians in Southeast Asia are equipped with the updated skills and knowledge on emergency warning systems so that they can continue to function during times of disaster (ReliefWeb, 2012). This process requires ongoing testing and improvement of the technical communication infrastructure before disasters and during emergency responses. It is also important that broadcast zones are expanded to enable stable and consistent information access and reach to remote communities in ways that are inclusive for the most marginalised or vulnerable (see Leoni and Radford, 2011).

Emergency communication network

The capacity of media needs to be understood in relation to its role as one of the key actors in the wider emergency communication network. The emergency communication network consists of various actors across the stages of disaster preparedness, response and recovery (Leoni and Radford, 2011: 16). Aside from local media institutions, the key actors in this network include the communities at risk or the affected communities, national and local level disaster management authorities, non-governmental

organisations (NGOs), international agencies, and professional emergency service providers. Emergency service providers include civil protection authorities, police, fire, ambulance, paramedic and emergency medicine services, disaster relief agencies such as Red Cross and Red Crescent societies, and specialised emergency units of electricity, transportation, communications and other related services organisations (UNISDR, 2009). It is important that the relationships between actors are marked by clearly defined roles in each specified stage of disaster risk reduction to enable smooth information flow. The relationships need to be revisited regularly and strengthened so that they exist not just formally but also in practice (Khalid, 2013).

The information environment during emergency response can be particularly complex. There can be blockages in information flow due to either lack of information or excessive information (Bharosa, Lee & Janssen, 2010). It is also a rapidly shifting space. In emergency situations, community members seek at first, not to communicate, but to be informed, so they may understand what is happening or about to happen, and assess whether and how they and their family and friends may be affected (ITU, 2013). However, immediately after the initial need for information, personal communication is attempted as they seek rapid contact with family members and friends (ITU, 2013). Inaccurate information or rumours can spread, which can be exacerbated by the amplifying effect of social media. Some information released by

response agencies at this time can be deemed to be more self promotion than necessary information for communities (Ride, 2014). In these circumstances, media can play a role in verifying information and bringing some order to the chaotic information space. Strong relationships among the key actors in the emergency communication network, including relationships of trust with the community, can either mitigate or promptly address these potential information blockages (Ride, 2014).

Content production

One of the most significant contributions the media can make to reduce disaster risks is to produce media content that leads to the building of resilient communities. The more the public is aware and are able to voice their concerns about the disaster risks, emergency response and recovery processes, the more likely the disaster losses can be mitigated (ReliefWeb, 2012). It is important that journalists, editors and media professionals are equipped with strong knowledge and skills to create content that serve the information needs of the community (Leoni and Radford, 2011).

PREPAREDNESS

At the stage of disaster preparedness, content can be produced to raise disaster risk awareness in the community. Some of the content production activities that can take place during this phase include:

- Investigating the disaster risks the community is exposed to
- Investigating the degree of disaster risk reduction measures undertaken by the authorities and the community
- Developing and updating contact lists with national and local meteorological departments, ministries and ministers involved in disaster risk reduction, civil protection authorities, and experts in urban risks, early warning systems, climate change, gender, environmental and development issues to enrich the disaster-related stories
- Updating statistics of natural hazards in the area and keeping the previous disaster stories alive to remind about lessons learnt and prevent 'collective forgetfulness'
- Covering stories about drills, preparedness exercises, education measures and other activities to inform the community about how they can lessen their vulnerabilities
- Reporting regularly on the social, economic and environmental factors that contribute to the community's vulnerabilities to disasters and highlighting the responsibilities of the government as well as that of the citizens
- Linking stories of environmental issues, poverty problems, urban planning and climate issues as disaster risk reduction issues
- Attending regular briefings related to disaster risk management and initiating public debates on disaster risk management strategies
- Commemorating the International Day for Disaster Risk Reduction on October 13.

(Source: Leoni and Radford, 2011: 88–89)

One of the most significant contributions the media can make to reduce disaster risks is to produce media content that leads to the building of resilient communities.

RESPONSE

When disasters occur, it is important that media content addresses questions of immediate needs, general questions about the disaster, as well as questions about structural elements, non-structural elements, preparedness and recovery processes, and questions on economic impact and responsibility.

Questions of immediate needs

- What are the conditions of the affected community? What are their immediate needs?
- Where are the areas and zones that are safe and unsafe for the community?
- What are the key health messages (including maternal health and child health)?
- Where are the relief centres, supplies of food, shelter and clean water?
- Where can people go to report missing family and friends?

General questions about the disaster

- Where and when did it occur?
- Why did it happen?
- What are the causes or the underlying factors that triggered it (poverty, climate change, environmental degradation, poorly planned urban growth)?
- Could it have been mitigated?
- To what extent were disaster risk management strategies in place?
- To what extent was the early warning system effective?
- How did the people respond?
- What are the conditions of the affected community? What are their immediate needs?
- What are the human losses (injuries, deaths, internal displacement)?

Questions about structural elements

- What is the level of damage and destruction to properties (eg: houses, hospitals, schools)?

- To what extent were properties designed and constructed to be resilient?
- Were there land management policies and did they integrate a multihazard approach?

Questions about non-structural elements

- How was the environment affected?
- Were there any activities or practices that contributed to the damage to the environment (eg: deforestation or certain land use practices)?
- Were there any natural buffers?
- What other non-structural measures were in place?

Questions about preparedness and recovery processes during emergency response

- What contingency plans were in place?
- What emergency supplies were stored in advance?
- Were they sufficient and were they distributed promptly and evenly?
- Who was most impacted? How were the poor, the disabled, the elderly, women and children affected?
- What is required to protect the most vulnerable group in the population?
- In what ways can it be rebuilt better?

Questions on economic impact and responsibility

- What was the economic impact?
- How much was allocated for disaster risk reduction?
- Was it sufficient and used wisely?
- What is the reconstruction budget?
- Who was in charge? Did they fulfill their responsibilities?

(Source: Leoni and Radford, 2011: 93–94)

RECOVERY AND RESTORATION

During the recovery and restoration processes, some of the content production activities may include:

- Highlighting how affected communities are coping in the aftermath, and what needs require ongoing support
- Covering stories of hope and featuring community champions in rehabilitation and collective healing processes
- Questioning the effectiveness of disaster risk reduction strategies or the lack thereof, such as the limitations of early warning, urban planning, education and public awareness, investment, financial resources and political will, and the performances of those responsible for disaster management
- Linking the issue of social vulnerability with gender issues: why women and girls are more negatively impacted by disasters than men and boys, and how women and girls have facilitated disaster risk mitigation
- Reflecting on the disaster in light of past disasters and assess whether and how lessons have been applied
- Investigating the long-term effects of the disaster
- Keeping the topic alive by including disaster risk reduction issues in cultural and social activities (current affairs, talk shows, soap operas, children's programs,
- Debating reconstruction processes and the ways in which disaster mitigation measures are being implemented.

(Source: Leoni and Radford, 2011: 89-90)

It is important that the content is produced in a way that is accessible to the community, such as utilising appropriate format and language(s). Moreover, participatory content production is encouraged to maximise community involvement in disaster risk awareness (UN, 2011: 3).

Organizational management

In order for the media to contribute to disaster risk reduction, it is vital that the media institutions themselves are resilient to disasters. In particular, those in management roles can play a significant part in ensuring that media activities are sustained and the wellbeing of media professionals is protected. It is important that each media institution has an internal policy about emergency response, which is regularly reviewed and checked through training and drill exercises (ReliefWeb, 2012: 24). It is important that the reporters are well-trained and equipped to cover stories, especially if it requires them to enter hazardous zones. Furthermore, as one of the first responders to disasters, reporters are exposed to traumatic incidents. It is important that there are support measures in place to address the post-trauma effects on journalists.

Research

One of the ways the media can increase its effectiveness in raising disaster risk awareness among the community is to strengthen its research and analysis skills to understand the disaster risks the community is exposed to, the community's existing levels of resilience its information needs and interests. (Bharosa, Lee & Janssen, 2010). Media can be more effective and relevant in communicating with the community after taking these issues into account. Strengthened research skills enable content production that is evidence-based, which can be more reliable and relevant. It is difficult to identify how the different components of disaster risk, such as hazards, exposure and vulnerability, interact to increase the total risk (UNISDR, 2009). Nevertheless, based on the knowledge of the hazards to date and the patterns of population and socio-economic development, disaster risks can be assessed and mapped in broad terms (ReliefWeb, 2012). Developing relationships with experts on disaster risk assessment and providing evidence-based information to the community in plain language can contribute significantly to the community's risk awareness. In addition, it is important that the media institutions are equipped with sound audience research skills to better understand

audience information needs, interests and communication patterns both under normal day-to-day circumstances and in times of crisis (Khalid, 2013). In considering the shifting media and communication environments, and the diversity in patterns of media access and consumption across age, gender and location, it is important local media adopt a systematic approach to research so that they are regularly updated about how best to engage with their audiences. (See Crowe, 2012).

KEY CONSIDERATIONS

Increasing the resilience of a community involves not only mitigating hazard impacts, but also tackling the root causes of vulnerability, such as poverty, poor governance, social and gender inequalities, inadequate health and education, poor regard for environmental sustainability and weak regional partnerships. In such a context, media capacity building can reap the most benefits when it is underpinned by C4D principles with considerations for gender and disability issues, as well as local relevance and scales of cooperation (UN, 2011).

Communication for Development (C4D)

C4D focuses directly on communication for achieving development outcomes such as promoting poverty reduction, gender equality, better health and education and good governance (United Nations, 2011). C4D is goal-oriented and aims to realise the Millennium Development Goals (MDGs), which align well with the strategic goals of reducing disaster vulnerabilities, set out in the Hyogo Framework for Action (UNDP, 2013). Media capacity building that is C4D-principled helps to identify the strategic roles that media plays in enhancing the relevance and effectiveness of resilience building. For example, it enables the role of media in public awareness activities to

highlight not only the specific exposure of disaster risks, but also its relation to contributing factors of vulnerability – such as poverty problems, poor urban infrastructure, inadequate public health, gender inequality, disability access and so forth.

Media capacity building in the C4D context places value on community dialogue. It is about 'seeking change at different levels, including listening, building trust, sharing knowledge and skills, building policies, debating and learning for sustained and meaningful change' (World Congress on Communication for Development, 2006, cited in United Nations, 2011: 1). Moreover, media capacity building that is C4D-principled treats the audiences not only as recipients of information, but also as active citizens and social agents who can contribute to the resilience building processes (UN, 2011: 3). Furthermore, it actively considers issues of gender and disability, values local relevance and operates across multiple scales of cooperation.

Gender and disability

Disasters do not discriminate, but socio-economic conditions can lead to different outcomes for demographically similar communities. In particular, disasters can reinforce gender inequality and the vulnerability of disabled persons, which can hinder development processes (UNISDR/UNDP/IUCN, 2009). Media capacity building that is sensitive to gender and disability issues not only facilitates better disaster risk reduction but also contributes to the long-term goals of socio-economic development.

Media capacity building that is gender-sensitive recognises that, due to social and cultural organisation of gender relations and the gender division of labour, men and women identify disaster risk differently and interact with risk information differently (UNISDR/UNDP/IUCN, 2009: 35; 65). Men and women have different vulnerability levels and different coping skills due to physical, sociocultural, economic and environmental factors¹.

¹ Studies have shown that women are more exposed to physical vulnerability than men due to more limited access to resources and opportunities, resulting in limited physical mobility (Cannon, 2002). Men and women have different sociocultural vulnerability because of different socially assigned roles (Neumayer and Plümpner, 2007). In many regions, women and girls lack skills (such as the ability to swim) to survive catastrophic conditions (Skutsch et al. 2007). In many parts of the world, women and girls have more limited literacy skills to understand public information related to disasters including early warning messages. After disasters, many girls need to drop out of school to help out with domestic chores. Moreover, women have poorer access to health services than men (Cannon, 2002). Economically, women are reported to have less access to financial and economic assets and resources needed to cope with hazard impacts. Over 95% of female-headed households in the Asian region are reported by the Asia Development Bank to be below the poverty line (UNISDR/UNDP/IUCN, 2009). Furthermore, women and men use and understand natural resources differently. This results in gender-differentiated impacts when access to natural resources is affected by disasters. These changes may significantly limit women's access and control over natural resources (e.g. land, water, cattle) and reduce their abilities to provide for their families (UNISDR/UNDP/IUCN, 2009).



In the event of emergency, only 20% said they could evacuate immediately without difficulty, and the remainder could only do so with a degree of difficulty. 6% of respondents said they would not be able to do so at all.

They also may play different roles during all phases of disaster preparedness and response. Media that produce gender-sensitive content on disaster risk reduction can increase the effectiveness of public awareness. Moreover, there is growing importance placed on approaching women, not as victims, but as social agents of change (UNISDR/UNESCAP, 2012). Women's involvement in information dissemination can increase the number and type of people informed because they tend to be connected to different social networks, often including children and the elderly, and they are more inclined to have specific communication strategies that consider the concerns and needs of these groups.

It is important that gender is actively considered, not only at the level of content production, but also at institutional and policy levels (UNISDR, 2013b). In the Asia Pacific region, the integration of gender issues into disaster risk reduction measures remains low. In particular, very few standard operating protocols for early warning, evacuation, and search and rescue operations adequately consider the special physical, health, psychosocial needs or capacities of women and girls (UNISDR, 2013b).

Opportunities exist for media to actively involve women in public debates about disaster risk reduction, as well as gaining greater insight into the information needs and communication patterns of women to enable effective public awareness about disaster risks (UNISDR/UNDP/IUCN, 2009).

Media capacity building that values disability issues can contribute greatly to building the resilience of disabled persons as well as tackling related poverty issues that are hindering development processes (Malteser International et al., 2013). According to the World Health Organisation, more than one billion people, or about 15% of the world's population, are estimated to live with some degree of disability (WHO, 2011). Each year, the number of people with disabilities is growing due to ageing populations and a global increase in chronic health conditions associated with disability, such as diabetes, cardiovascular diseases and mental illnesses (WHO, 2011). There is a clear link between disaster vulnerability, poverty and disability. Disaster vulnerability increases the chances of disability, poverty increases disaster vulnerability, and having a disability increases the chances of living in poverty (Disability Inclusive DRR Network, 2013). According to the United Nations International Strategy for Disaster Reduction (UNISDR) survey conducted on 5,700 people from 130 countries on the topic of how disabled persons and their care-givers cope during disasters, a majority of respondents noted that they have not been consulted on disaster management planning in their communities (UNISDR, 2013c). In the event of emergency, only 20% said they could evacuate immediately without difficulty, and the remainder could only do so with a degree of difficulty. 6% of respondents said they would not be able to do so at all (UNISDR, 2013c). People living with disability face various barriers in disasters. Types of impairment can include hearing and speech, blindness and vision, physical bodily restrictions as well as mental and intellectual impairments. Barriers can be visible or invisible, including physical and environmental barriers, policy and legislative barriers, attitudinal barriers and information barriers (Malteser International et al., 2013).

There are opportunities to build the capacity of media to be more inclusive of people living with disability, and as with gender, promote empowerment rather than portraying people as victims. Some examples include disability-sensitive emergency warning broadcasting systems, disability-sensitive content formats, community dialogue on disaster risk management and disabilities, and internal policies that provide sufficient support to staff and employees living with disabilities (Malteser International et al., 2013).



The local media are increasingly positioned within an emergency communication landscape ...

Local relevance

Local media are positioned in communication environments shaped by both emerging global trends and local contexts. In order to best serve the information needs of the community, it is important that media capacity building is positioned within locally specific communication environments, while also embracing emerging ICT techniques that are assessed as being useful to the community. (Malteser International et. al., 2013: 34).

Recently, there has been increased focus on capitalising on innovative ICTs to reduce disaster risks (UNISDR/UNESCAP, 2012; OCHA, 2013). Satellite images that enable near real-time Earth observations, RS, GIS, the use of web-based and mobile terminals, and big data gleaned from social media applications are some examples of ICTs and space applications that are demonstrating potential for significantly reducing disaster risks (UNISDR/UNESCAP: 104). They are seen as enabling more detailed and more rapid assessment of disaster risks that result in better disaster preparedness strategies and targeted aid delivery in times of emergencies.

The local media are increasingly positioned within an emergency communication landscape where many key actors use social media networks to coordinate mobilisation of resources. During the August 2012 floods in Manila, for example, social networking group Tweetup Manila aggregated and organised all the calls for help on Twitter to be relayed to emergency responders (OCHA, 2013: 9–10). A Facebook group called Flood Report Philippines shared updated information and instructions on how to safely navigate flooded streets, while The Metro Manila Development Authority sent out a stream of information on Twitter, which proved so useful that activists lobbied for the agency's daily tweet limit to be extended (OCHA, 2013: 9–10). The Department of Health activated the Government's Surveillance in Post-Extreme Emergencies and Disasters (SPEED) text message monitoring mechanism to track and respond to disease outbreaks and Google activated a dedicated crisis site with a person finder, emergency contact information, news, updates, consolidated maps and satellite imagery. The maps showed areas that were underwater and locations of relief centres (OCHA, 2013: 9–10). The Filipino wireless service provider called Smart set up free call stations in evacuation centres with battery-charging facilities, internet access, and free top-ups for

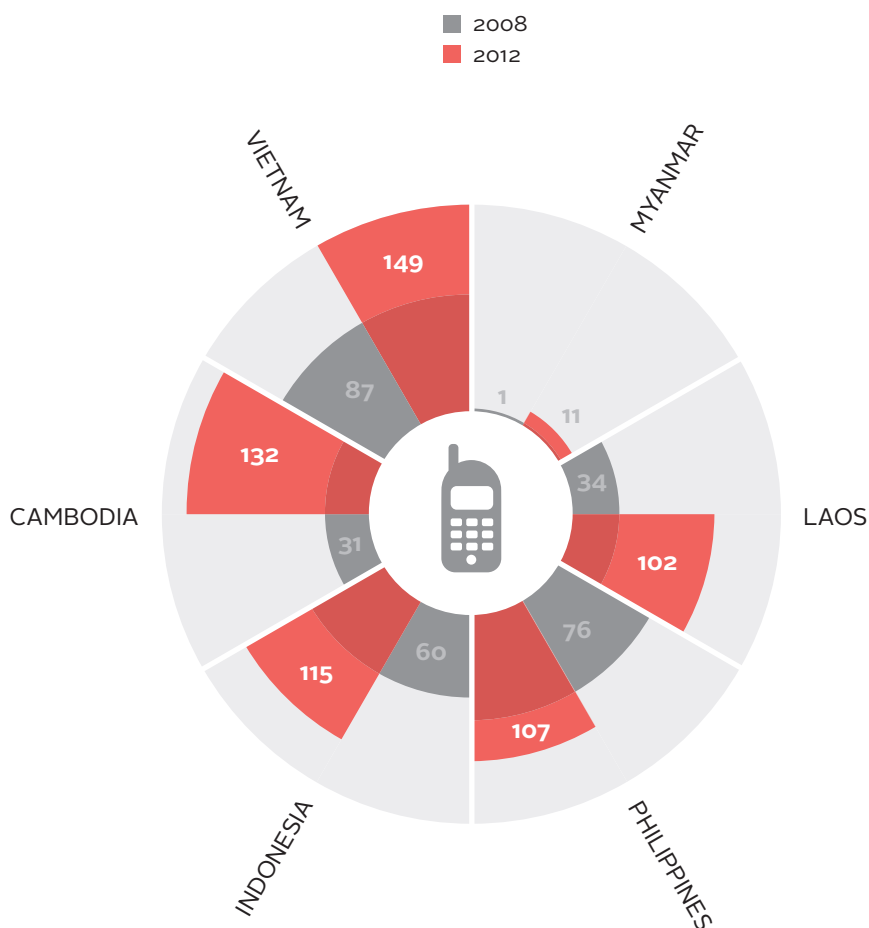


phones, highlighting that capacity of local media needs to be considered in light of such changing emergency communication environments. These examples highlight the emerging role that public/private partnerships can play in emergency broadcasting and planning. Recognising they have role to play, ICT are beginning to formalise these roles within corporate social responsibility policies.

The focus on ICTs in disasters arises against the backdrop of today's information landscape that is marked by the proliferation of mobile phones, exponential increase of internet access and the rise of digital social media (OCHA, 2013: 2). Globally, the number of mobile subscriptions is reported to exceed 6 billion (OCHA, 2013). In Southeast Asia, Vietnam, Cambodia, Indonesia, Philippines and Laos had reached more than 100 mobile subscriptions per 100 people by 2012 (ITU, 2014). Between 2008 and 2012 the penetration of mobile phones increased significantly. For example, Cambodia has tripled and Laos has doubled the number of mobile subscriptions, while Indonesia has increased by 92%, Vietnam by 71% and the Philippines by 40% (see Table 1). While Myanmar has significantly lower mobile subscription rates compared with its neighbours, some recent reports suggest that 49% of mobile internet users access the internet only via their phones, rather than through a personal computer (On Device Research, 2014). It is argued that people in hazard-prone developing societies are more likely to have access

Table 1: Increase in mobile subscriptions in Southeast Asia between 2008 and 2012

(Source: ITU, 2014)



to social media platforms through mobile phones than to content broadcast by television (OCHA, 2013: 12).

In some recent disasters, broadcast media have incorporated this trend in their disaster reporting by broadcasting selected social media content as news footage and disseminating updated information by airing crisis maps². New services such as Storyful.com have emerged to specialise in gathering and verifying social media content for news item use.

While the innovative use of ICT provides great potential to improve disaster communication, it generates new risks – such as information overload and problems of bias, accuracy, privacy, security and ethics (OCHA, 2013). Local media incorporating the use of social networks and space applications in their content production and distribution also need to be equipped with the capacity to address

these challenges. More importantly, integrating new uses of ICTs in disaster communication needs to be coupled with greater emphasis on local relevance (Slater, Keiko & Kindstrand, 2011). In order to discern the potential, and real, impacts of media and communication technologies on a community, it is important to understand what kinds of communication resources are available to them, if they understand all the ways in which these resources can be used, and in what kind of circumstances. (Hearn et al. 2009). For example, in Indonesia, in spite of falling rate of radio use against the rising uptake of the internet, social media and television-viewing, radio is considered the primary mode of communication in times of emergency (Infoasaid, 2012). In addition, other modes of emergency communication, such as issuing warnings via megaphones or updating information via paper noticeboards, can be

² In the 2011 Great Earthquake and Tsunami in Japan, and the 2013 regional floods in Czech, the television companies reported crowdsourced citizen reports to update the public about the unfolding disaster situations (Slater et al. 2011; Valuch, 2013).

equally valuable, especially in remote areas where access to the internet or broadcast content is limited. To be effective, the incorporation of emerging use of ICTs in building the capacity of media needs to be contextualised within locally particular communication environments (Slater, Keiko & Kindstrand, 2011).

Scales of cooperation

Most disaster risk management measures are planned and implemented with nation-states as the central nodes. However, disaster risks are not neatly contained in national borders or broadcast zones, and they are experienced and responded to differently by different groups of people in different regions within a country (Bharosa, Lee & Janssen, 2010). For example, Cambodia, Vietnam and Laos may share similar disaster risks as they are all exposed to the hazards that recur in the lower basin of the Mekong River, whereas Manila and Jakarta may share more similar disaster risks related to natural hazards in urban settings than with the other regions in the Philippines or Indonesia. Effective disaster risk reduction measures, therefore, require regional cooperation, both at supra-national level and sub-national level (See ASEAN, 2012).

In Southeast Asia, the establishment of supra-national organisations such as the Asian Disaster Preparedness Center (ADPC) and the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre) have facilitated the development of regional approaches to risk assessment and early warning systems (ASEAN, 2012). In addition, the Mekong River Commission, which was established in 1995 by the Mekong Agreement between the governments of Cambodia, Laos, Thailand and Vietnam, is also promoting disaster risk reduction at the lower basin of the river across the member countries. Links at sub-national levels are also being facilitated. For example, in Laos, under the Laos-Australia NGO Cooperation Agreement (LANGOCA), the Tools for District Risk Assessment and Establishment of Disaster Information System is reported to have improved information management to increase the effectiveness of both district and provincial administrations in disaster risk reduction planning as well as facilitating community responsive planning (UNISDR, 2013b: 17). The recently established Disaster Loss Database is also noted as providing a link between

... disaster risks are not neatly contained in national borders or broadcast zones, and they are experienced and responded to differently by different groups of people in different regions within a country.

national, provincial and district Disaster Management Offices. The tool is localised so it is available in the Lao language and the data collection format is adapted to the Laos context. Up to 2012, the Provincial Disaster Management Committees (PDMCs) in all provinces nationwide were trained in the use of this new tool (UNISDR, 2013b: 17).

There are opportunities to build the capacity of the media, taking into account the scales of cooperation at supra-national and sub-national levels. At supra-national levels, there are opportunities for media organisations to strengthen relationships by sharing knowledge and skills. This can include the development of broadcasting communication plans, the development and maintenance of technical communication infrastructure for better early warning system and better access, content production about shared disaster risks that can be adapted to local contexts, and exchange of knowledge and skills about audience research techniques (UNISDR, 2013b). At sub-national level, there are opportunities for local media to strengthen relationships with the key local actors in communication networks and increase each other's understanding of the information needs of the local community (Bharosa, Lee & Janssen, 2010). This can include strengthened relationships with the local authorities, local emergency providers, local community media and local civil society organisations specialising in issues of gender and disability. It can also include increased knowledge of the disaster risks the local community is exposed to and the communication patterns of various groups within the local community, differentiated by gender, age, ethnicity and type of location (such as rural or urban).

COMMUNICATION FOR RESILIENCE IN ACTION



Hazard impacts on women often have a rippling effect to other groups in the community, such as children and the elderly, as women often have caretaking responsibilities of these groups.

This section presents snapshots of media and communication initiatives that contributed to reducing disaster risks and building resilience in Southeast Asia.

Snapshot

PREPAREDNESS

**Raising disaster risk awareness:
Participatory soap opera radio program
involving Vietnamese women in the
Mekong Delta region**

Radio soap opera has been utilised to raise awareness about disaster risks related to floods and typhoons among women in the Mekong Delta region of Vietnam. This activity has been initiated as part of the program called 'Strengthening Women's Capacity In Disaster Risk Reduction And Climate Change Adaptation' led by the Vietnam Women's Union and supported by UN Women (Falth, 2012). The radio show, which was broadcast by Voice of Vietnam and has reportedly reached about 80% of households in the area, addressed issues ranging from scheduling farming practices and building solid housing, to coping with landslides and undertaking first aid. The radio soap opera was broadcast before and during the typhoon and flood seasons (UN Women, 2011).

Actively addressing gender issues in disaster risk awareness

The radio program actively recognised the gender issues in disaster risk reduction. It recognised that there is gender inequality in the community's level of vulnerability to disasters. For example, women tend to have fewer opportunities than men to mobilise resources for disaster preparedness, response and recovery. Hazard impacts on women often have a rippling effect to other groups in the community, such as children and the elderly, as women often have caretaking responsibilities of these groups. In addition, it acknowledged the gender differences in how disaster risk information is received and understood. According to a survey conducted by the World Agroforestry Centre (ICRAF) on gender differences in receiving climate change information in Vietnam, the sources of disaster risk information men accessed tended to be one-way communication, whereas women preferred more cooperative, two-way communication

(UN Women, 2011). Communication formats that are based on education, drama and entertainment, such as soap opera, have proven to be engaging ways for awareness-raising initiatives (de Fossard, 2005). Moreover, it approached women as active social agents of change, facilitating their participation in the decision-making process and recognising that their specific knowledge and skills can contribute to more effective disaster risk reduction measures.

Applying participatory content production

The radio program adopted participatory processes in producing the radio content. Women's real life situations were fed into the production of radio drama content. Women were also actively engaged, not only as spectators, but also as actors in the radio soap opera (Falth, 2012). In addition, the radio soap opera was used in group discussions to help women apply what they learnt from the radio shows to their own lives (Falth, 2012). The participatory processes involving women at the formative stage of content production as well as the post-production stage helped reinforce the radio messages.

Complementing radio program with other communication activities

The radio soap opera program was one of the key communication activities alongside other awareness-raising communication activities that assisted women in better understanding how they can prepare and cope when natural hazards occur. They include illustrated flyers and posters highlighting key messages, which were printed and distributed to institutions and households in communes (UN Women, 2011). In addition, women were also invited

to learn about climate change adaptation and disaster risk reduction through communication activities such as games, role-playing and simulation exercises, which took place during monthly meetings of commune women's clubs (UN Women, 2011). Throughout these communication activities further needs were identified that were fed into the future disaster risk awareness programs. For example, swimming was identified as a critical survival skill for women during floods, which resulted in plans for swimming classes to be incorporated in future disaster preparedness activities (Falth, 2012).

Potential for replication in similar contexts

The radio program initiative has the potential to be introduced in other local contexts that share similar vulnerability to disasters. For example, this radio soap

opera initiative is a replication of a radio novela called 'Tiempos de Huracanes' (Hurricane Season), which was proven to be effective in reaching more than 4 million women and men in Costa Rica, Honduras and Nicaragua (Falth, 2012). The radio shows were complemented by local group meetings, which engaged hundreds of thousands of women to discuss how they can specifically increase resilience in households and communities (Falth, 2012). The Nicaraguan radio soap opera scripts were translated into Vietnamese and localized to suit the local context of flood and typhoon preparedness in the Mekong Delta region of Vietnam. This suggests that the radio soap opera has the potential to be replicated to address gender and disaster vulnerability issues in other contexts, such as with women in Cambodia and Laos who live in the lower basin of Mekong River.

Snapshot

RESPONSE AND RECOVERY

Coordinated communication with affected communities : Creating information flows in 2013 Typhoon Haiyan (Yolanda) in the Philippines

On 8 November 2013, one of the strongest tropical cyclones ever recorded, Typhoon Haiyan (Yolanda) struck large parts of the central Philippines. Of the 14 million affected, 4 million were displaced, over 6,000 killed, and 5.9 million workers lost their sources of income and livelihoods (IRIN, 2014). More than 2.6 million of those affected were reported as having already been living below the poverty line (IRIN, 2014). Local media and communication infrastructures were destroyed on a massive scale, and in the affected areas, there was little or no access to mobile phone and internet services, nor to radio, television and newspapers. The disaster led to a large-scale humanitarian response with intensive coordination across a range of national and international

actors to enable communication with the affected community.

Coordinating Communication with Communities (CwC)

Immediately after Typhoon Haiyan, a working group called Communication with Communities (CwC) was set up. This arrangement was established previously by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) when Typhoon Bopha (Pablo) hit the Philippines in December 2012 (CDAC, 2013a). The arrangement consisted of OCHA working closely with the Filipino government departments, humanitarian aid agencies and national telecommunication companies to improve access



The devastating impact of the typhoon included the destruction of local media infrastructure.



to vital information for the affected communities and to ensure that their voices were heard and considered in the response (CDAC, 2013a: 2). By 18 November, OCHA commenced setting up CwC in partnership with the Philippines Information Agency (PIA), National Telecommunications Commission (NTC), Internews and First Response Radio (FRR) (CDAC, 2013b Report 3). By 20 November, OCHA had set up a CwC hub in Tacloban city, bringing together more than 25 organizations consisting of government, international and local responders and private sector (CDAC, 2013b Report 4). A CwC working group served as the central node through which information flows were created to enable communication with the affected community.

Mapping and Assessments

ICTs were utilized to map disaster risks and hazard impacts and assess the needs of the community. One day before the typhoon hit the Philippines, early hazard detection enabled the official deployment of Standby Task Force, a crisis mapping network, who then recruited volunteers from around the world to gather and assess social media data in real-time, which then fed into the assessments of United Nations Disaster Assessment and Coordination. (UNDAC) (Standby Task Force, 2013).

Twitter hashtags used during the initial response included #YolandaPH for media coverage of the storm, #ReliefPH for resource coordination, #RescuePH for urgent rescue, #FloodPH to report damage, #TracingPH to report missing people and #SafeNow for resolution information (Evon, 2013). Mapping and assessments were conducted by various organizations. For example, Internews assessed information needs and communication channels in Tacloban city, as well as an assessment of local media infrastructure losses in partnership with National Union of Journalists of the Philippines (NUJP) (CDAC, 2013b, Report 5). MapAction worked with Internews to map the operational conditions of radio stations (see Figure 1) (ReliefWeb, 2013; MapAction, 2013). GSMA, an association of mobile operators worldwide, mapped information regarding national telecommunication services on behalf of the emergency telecommunications sector, indicating where the network was down, where the free charging stations were and what was being offered in terms of free SMSs and calls (CDAC, 2013b Report 2).

Broadcasting Activities and Radio Equipment

The devastating impact of the typhoon included the destruction of local media infrastructure. Immediately after the typhoon hit, FRR acquired a license from the NTC to broadcast for 30 days on the frequency of 98.7FM. Internews shipped an emergency broadcast kit from the UK, consisting of Radio-in-a-Box and Newsroom-in-a-Box communication equipment, and Office-in-a-Box, which has a broadcast reach of 50km. (CDAC, 2013b, Report 2). By 20 November, Philippine Broadcasting Service (PBS) set up the first government humanitarian radio program in the affected area called “Radyo ng Bayan” (community radio) in Tacloban city. By 22 November, radio broadcasters, DYBL-DZRH and ABS-CBN (My Only Radio) had joined the broadcasting activity in Tacloban, while Internews secured temporary emergency broadcast license for three months for Leyte and Eastern Samar, another affected areas with little or no communication reach (CDAC, 2013b Report 5). By 28 November, Internews started live broadcasting from Guiuan (CDAC, 2013b Report 6). In spite of the commencement of radio broadcasts, the lack of radio transistors limited people from tuning in to listen to radio programmes. Based on the Multi-cluster Initial Rapid Assessment (MIRA) at the end of November, approximately 40% of the affected communities had access to the radio, less than 40% had access to mobile phones, 5% to television, and almost no one had access to newspapers or the internet. CwC identified the restoration of communication networks including mobile phone and



ICTs were utilized to map disaster risks and hazard impacts and assess the needs of the community.

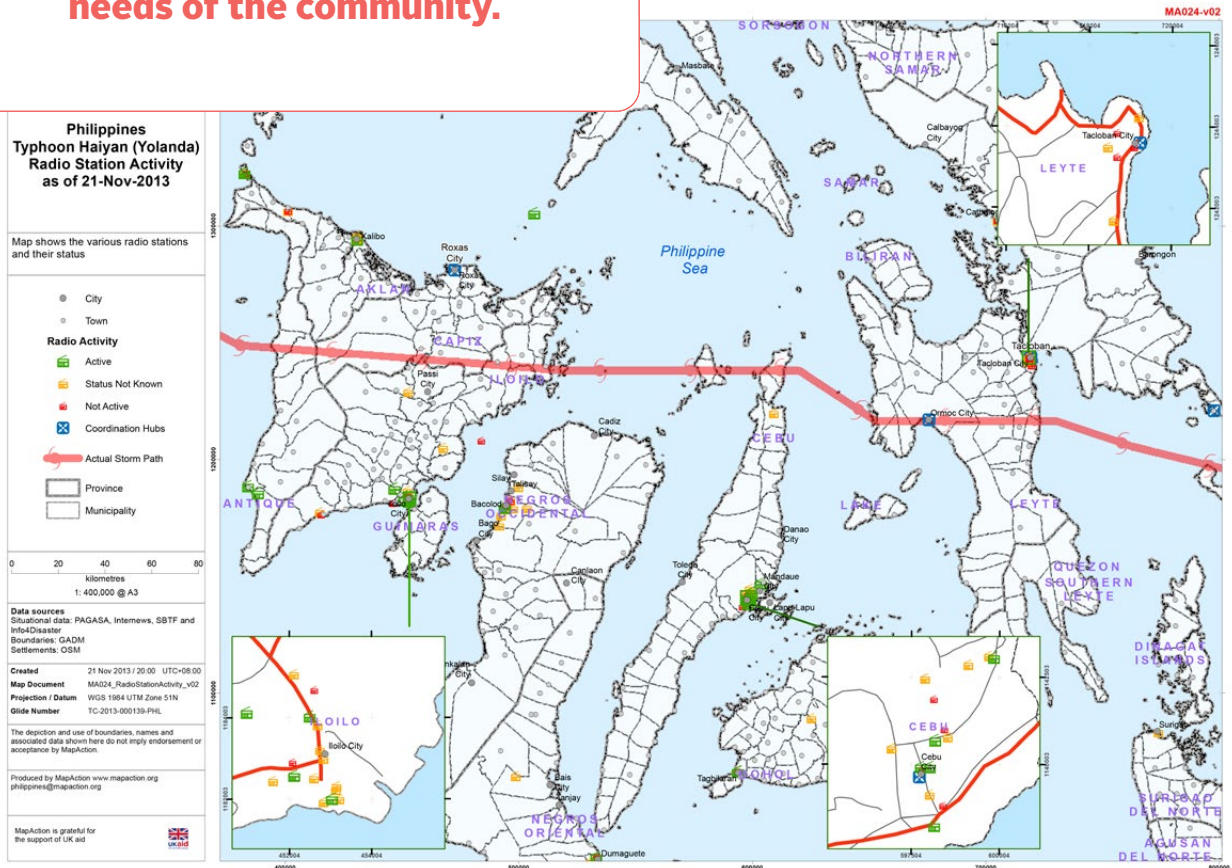


Figure 1: MapAction maps the operational status of radio, November 2013, the Philippines
(Source: MapAction, 2013)

radio to be a humanitarian priority. By February 2014, over 3,000 units of radio equipment, including solar-powered radios and wind-up radios, were distributed to the Philippines to aid communication with the affected communities (ReliefWeb, 2014). After a month, NUJP initiated a psychosocial support project for journalists in the affected areas to assist the local media to grieve and regain a sense of control over their lives (CDAC, 2013b Report 8).

Telecommunications

Immediately after the typhoon struck, a national mobile operator called SMART partnered with the Vodafone Network to establish an instant network in one of the affected areas, Borongan, Eastern Samar, to cover approximately 65,000 residents. The network could handle an estimated 1,000 SMS per minute and 50 simultaneous calls (CDAC, 2013b Report 3). Networks offered 25 free SMS

a day plus 3 international SMS between 13 and 17 November in the areas of Allan, Antique, Cadiz, Leyte, Northern Cebu, Samar and Tacloban City (CDAC, 2013b Report 2). By 20 November, Globe had restored 91% of telecommunications network in Cebu, 98% in Negros Occidental, 97% in Negros Oriental, 87% in Bohol, 75% in Southern Leyte, 75% in Northern Samar, 77% in Iloilo, and 61% in Antique (CDAC, 2013b: Report 4). In addition, SMART and DMPI initiated 'Libreng Tawag' (free calling) operations in Borongan using satellite services. In Tacloban city, the wireless company PLDT extended the Libreng Tawag stations to four different sites in the city. Furthermore, a mobile caching service began. PLDT and SMART deployed mobile ATMs, which were activated by Land Bank of the Philippines for the residents of Tacloban. SMART enabled international mobile donations across networks worldwide.

Snapshot

DELIVERING INFORMATION AS AID

BBC Lifeline Radio Project in Myanmar immediately after the 2008 Cyclone Nargis

On 2 May 2008, Cyclone Nargis hit Myanmar, crossing the country over two days (IFRC, 2011). 2.4 million people were estimated to have been affected, with 84,500 people killed, 53,800 missing and 37 townships significantly affected (IFRC, 2011). Three weeks after the cyclone, the government of Myanmar agreed to admit aid workers into the country to enable delivery of food and medical supplies. Shortly after, to provide critical information to the affected community, a radio program was set up by BBC Media Action with support from Irish Aid and Vodafone Group Foundation (BBC Media Action, 2012). On 2 June 2008, the program called “Kyanmarye ne Naung ye” (Living Today, Stronger Tomorrow) was launched on the BBC Burmese World Service, which had 8.5 million regular listeners. The six-minute program was broadcast three times per week with three repeats, and ended on 15 April 2009 after 135 programs (BBC Media Action, 2012). Considering the strict censorship controls in Myanmar at the time, the scale of media intervention was not considered possible on any broadcast platform inside Myanmar. The radio program had three objectives: to provide information on disease prevention and health promotion, to provide a sense of routine and normality through programs, and to improve the mental well-being of individuals and families. Examples of topics covered include: how to use a tarpaulin to reinforce shelter, how to care for livestock, how to capture rainwater and purify it, and urging parents to teach their children how to swim.

Produced and delivered from London

During this period, BBC was banned from operating inside Myanmar. The radio content was therefore produced in London. While remote content delivery

was a key constraint, it provided an opportunity for the radio content to be produced in a stable technical environment with immediate access to experienced program makers. Resources that were available in London included skilled staff, technical equipment, as well as in-depth knowledge of cultural, linguistic, political and operational contexts (BBC Media Action, 2012). Staff with local knowledge is critical so that information can be delivered in a manner that respects cultural and religious practices and is sensitive to culturally specific genres and formats that serve different purposes of messages such as factual, persuasive, reassuring and so forth. The project team remained in close contact with the various ‘clusters’ or technical working teams based inside Myanmar to formulate the program content.

Evolve information delivery as needs change

As disaster phases shift from immediate response to rehabilitation, so the needs of the affected community change. The radio program changed its format and content as the needs of the community evolved. For example, the information during response period included where to look for family members or loved ones, registration centres, medical support, food and access to practical items. When the aid agencies began moving into rehabilitation, the thematic remit of the content widened to cover not only health, but livelihood opportunities more broadly. Ideas and practices that were seen as practical, accessible and affordable were introduced through drama spots, voices from the Delta, expert interviews on the theme, dialogue between two presenters, followed by a reinforcement of the key learnings by the presenters (BBC Media Action, 2012). The program also revisited health many times,



As disaster phases shift from immediate response to rehabilitation, so the needs of the affected community change. The radio program changed its format and content as the needs of the community evolved.

discussing safe motherhood, female hygiene, and child health. To ensure appropriate content was being produced, the project team established mechanisms to respond actively to listeners' feedback.

Coordinate with key aid agencies

The radio program coordinated closely with key aid agencies to stay informed about the changing circumstances that would inform the formulation of content, to seek feedback about the content, and to engage them for interviews for content production. Being based in London, it was not feasible to conduct formative and impact research. To overcome this barrier, BBC Media Action remained in close contact with aid agencies for regular consultation. The organisations included ActionAid, Care, Christian Aid, Concern, Internews, International Rescue Committee, International Organisation for Migration, International Union for Conservation of Nature, OCHA, Save the Children, Tear Fund, UNICEF, UNDP, WHO, World Concern, World Vision and the World Food Program (BBC Media Action, 2012). Close contact with the key aid agencies enabled them to stay updated on the changing circumstances in Myanmar, to receive regular feedback on whether the content delivered accurate information about aid delivery services and to discern whether the content resonated with the needs of the affected community. Moreover, this has opened doors in conducting interviews with the local and international NGOs, as well as local government officials who initially refused to participate in the program (BBC Media Action, 2012).

ACRONYMS

ABC	Australian Broadcasting Corporation	NDPCC	National Disaster Preparedness Central Committee
ABC ID	Australian Broadcasting Corporation International Development	NGO	Non-governmental organisation
ADPC	Asian Disaster Preparedness Centre	NHK	Japan's public broadcaster
AEL	Annual economic losses	NTC	National Telecommunications Commission
AHA Centre	ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management	NUJP	National Union of Journalists of the Philippines
ASEAN	Association of Southeast Asian Nations	NYCC	National Committee on Climate Change
C4D	Communication for Development	OHCA	Office for the Coordination of Humanitarian Affairs
CwC	Communication with communities	PBS	Philippine Broadcasting Service
FRR	First Response Radio	PDMC	Provincial Disaster Management Committee
GDP	Gross domestic product	PIA	Philippines Information Agency
GIS	Geo-referenced information systems	RS	Remote sensing
ICRAF	World Agroforestry Centre	SPEED	Surveillance in Post-Extreme Emergencies and Disasters
ICT	Information communication technologies	UNDP	United Nations Development Program
LANGOCA	Laos-Australian NGO Cooperation Agreement	UNICEF	United Nations Children's Fund
MDG	Millennium Development Goals	UNISDR	United Nations International Strategy for Disaster Reduction
MDPA	Myanmar Disaster Preparedness Agency	WHO	World Health Organisation
MIRA	Multi-cluster Initial Rapid Assessment		
MRTV	Myanmar Radio and Television		

APPENDIX

Comprehensive list of key terms and concepts

- **Climate change** is the change in the climate that persists for decades or longer, which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere (IPCC, 2007; UNFCCC, 2014). Climate change is attributed to the increasing severity of various natural hazards including hydrometeorological hazards.
- **Climate change adaptation** is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Many disaster risk reduction measures can contribute directly to better adaptation (UNISDR, 2009).
- **Communication** is the exchange and construction of meanings between individuals, communities and societies through a common system of symbols. Communication enables the flow of ideas and information between social actors through a variety of means that influence knowledge, attitude and behavior of individuals and communities. The means of communication includes, but is not limited to, broadcast media such as radio and television, digital and electronic media, social media, mobile and personal media, film, theatre, drama and traditional story-telling.
- **Communication for Development (C4D)** is the concept and practice of developing communication to achieve sustainable development outcomes. The media capacity building needs to be underpinned by the principles and goals of sustainable development with emphasis on gender equality, disability and local relevance.
- Due to media convergence, many platforms carry both mass produced content and interpersonal communication, such as the practice of sharing a television program on mobile interface among friends (Castells, 2009). This has blurred the traditional categories of 'mass media' (to signify newspaper, television, radio and film) and 'new media' (to indicate the electronic and digital forms of media) to become more or less outdated. Nevertheless, it is important to distinguish between different media forms in context of disaster risk reduction:
 - Many broadcasters, particularly public service broadcasters, are self-mandated to broadcast emergency warnings and updates to the community when natural hazards occur.
- **Broadcasting** is the practice of producing audio and visual content and distributing it to the audiences of radio, television and the internet. The audiovisual content is packaged as programs, and transmitted through the air as radio waves from a transmitter to an antenna to a receiver. They can also be transmitted through computer networks locally and internationally. Broadcast stations can be linked in networks to broadcast common programming (Curtis, 2011). Increasingly, broadcasters create and distribute content so that audiences can browse, download or stream them on their mobile devices such as a smartphone, tablet or laptop computers through access to the internet via a wireless network.
- **Social media** are user-led media practices, formats and interfaces that can facilitate real-time interaction between individuals, communities and organisations on the web. Examples include Facebook, Twitter, blogs and unique interfaces created for specific missions. Social media allows information to be transmitted through networks, amplifying the depth that information penetrates and the speed by which it travels between individuals (OCHA, 2013).
- **User-generated content** (or user-led content and audience-generated content) is the media content produced and distributed by the 'end-users' through the Web 2.0 environment. Examples include audiovisual content of natural hazards filmed on mobile devices by a community member, audiovisual content created by community members to raise risk awareness, or open-source map of affected or vulnerable zones produced collaboratively by members of an affected community and/or an international community to assess hazard impacts or disaster risks.
- In recent years, there is growing attention on the use of ICTs in disaster risk reduction. **Crowdsourcing** is the practice of gathering information, often from social media applications, by a 'crowd' of people. In the context of disasters, crowdsourcing has been used to seek information directly from the affected community, and also to outsource information management tasks such as mapping and geo-tagging to a crowd of volunteers

who can live anywhere (OCHA, 2013). It has been used to validate information, map events, translate text and integrate data useful to humanitarian decision makers (OCHA, 2013).

- **Crisis mapping** is a process of crowdsourcing, visualising and analysing data from emergency situations, often in real time, on a dynamic, interactive map. Crowdsourcing and crisis mapping are attracting attention because they enable rapid, low-cost and fairly accurate analysis of complex situations.
- **Crowdseeding** is a more targeted approach whereby the professional disaster relief organisations collaborate with targeted and trained people to gather and share information. Information is often transmitted through SMS shortcodes, in which pre-agreed codes are used to relay critical information.
- **Disaster** is a serious disruption to the functioning of a community or a society that causes human, material, economic or environmental losses, which exceeds the ability of the affected community or society to cope using its own resources (UNISDR, 2009). Disaster is a result of the combination of hazards, vulnerability and inability to reduce the potential negative consequences of disaster risks (IFRC, 2014).
- **Disaster risk** is the potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period (UNISDR, 2009). The continuously present conditions of disaster risks result in disasters.
- **Disaster risk reduction** is the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters. It includes reducing exposure to hazards, lessening vulnerability of people and property, wise management of land and the environment, and improving preparedness for adverse events (UNISDR, 2009).
- **Early warning system** is the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organisations threatened by a hazard to prepare and act appropriately and in sufficient time to reduce the possibility of harm or loss (UNISDR, 2009). It integrates four main elements: the first element is risk knowledge, which provides essential information to set the priorities for mitigation and prevention strategies. Secondly, monitoring, analysis and forecasting of the hazards entails predicting capabilities that provide timely estimates of the potential risk faced by communities, economies and the environment. Thirdly, communication or dissemination of information

is needed to deliver warning messages to the potentially affected locations to alert local and regional governmental agencies and communities. The messages need to be reliable and simple enough to be understood instantaneously by the authorities and the public. The fourth element is local capabilities to respond, which involves coordination, good governance and appropriate action plans that are required for effectiveness (UNISDR, 2009).

- **Emergency broadcasting** is the provision of timely and accurate information about disasters via delivery platforms that are easily accessed by citizens. Emergency broadcasting goes beyond reportage to mean a planned approach to preparing communities for a major incident, providing essential information during an emergency and engaging with affected communities as they recover.
- **Exposure** refers to the condition of people, property, systems, or other elements present in hazard zones that are subject to potential losses (UNISDR, 2009). Measures of exposure can include the number or types of assets in an area.
- **Hazard** is a phenomenon or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR, 2009). Hazards originate from a variety of geological, meteorological, hydrological, oceanic, biological, and technological sources, often acting in combination.
- **Media** is critical to the communication processes of reducing disaster risks. The term media refers to all institutionalised structures, forms, formats and interfaces for producing, disseminating and receiving symbolic content.
- **Media capacity building** involves strengthening the various aspects of its operations, such as policy and legislations, technical communication infrastructures, relationships with other communication actors, content production skills and knowledge, organisational management structures and audience research skills.
- **Mitigation** is the limitation or lessening of the adverse impacts of hazards (UNISDR, 2009). Hazard impacts cannot be prevented fully but the scale of its impact can be lessened substantially by strategic actions. On the other hand, **prevention** is the outright avoidance of adverse impacts of hazards (UNISDR, 2009). Very often, complete elimination of disaster risks is not feasible and the term prevention points more towards the normative attitude or the culture of disaster risk reduction.
- **Mobile caching** refers to the use of mobile phones as digital wallets. It is attracting attention as faster and

more secure ways of delivering resources to the affected community as well as more accurate understanding of how those resources are used by people who can improve targeted delivery of aid resources (OCHA, 2013).

- **Natural hazards** are a subset of all hazards, among which **hydrometeorological hazard** is a process or phenomenon of atmospheric, hydrological or oceanographic nature that may cause losses and damages. They include tropical cyclones (also known as typhoons and hurricanes), thunderstorms, hailstorms, tornados, blizzards, heavy snowfall, avalanches, coastal storm surges, floods, drought, heat waves and cold spells.
- **Preparedness** is the measures taken to prepare for and reduce the effects of disasters (IFRC, 2014). It refers to the knowledge and capacities needed to effectively anticipate, respond to, and recover from the impacts of likely, imminent or current hazard events or conditions (UNISDR, 2009). In order to enable effective emergency management and achieve orderly transition from response to sustained recovery, these measures need to be developed with cooperation between governments, professional response and recovery organisations, communities and individuals. It involves activities such as disaster risk analysis, contingency planning, stockpiling of equipment and supplies, arrangements for coordination and evacuation, and related training. These measures must be supported by formal institutional, legal and budgetary capacities.
- **Public awareness** is crucial to community resilience so that actions can be taken individually or collectively to reduce exposure and vulnerability to hazards. Public awareness is facilitated via dissemination of information through channels such as media as well as establishment of communication networks, community participation and advocacy.
- **Recovery** is the restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors (UNISDR, 2009).
- **Rehabilitation and reconstruction** are tasks in the recovery stage that begin soon after the emergency phase has ended, and should be based on existing strategies and policies that facilitate clear institutional responsibilities for recovery action and public participation. High level public awareness and civic engagement is critical to create the opportunity for disaster risk reduction measures to be weaved into the new social fabric.
- **Resilience** is the capacity of a system, community or society exposed to hazards to cope with, adapt to and recover from the effects of a hazard in a timely and

efficient manner, often through the preservation and restoration of its essential basic structures and functions (UNISDR, 2009). The resilience of a community is determined by the degree to which the community has the necessary resources and capabilities to organise itself both prior to and during the times of need.

Such resources and capabilities can be physical or material, but they can also point to the ways in which a community is organised, or the knowledge, skills and attributes of individuals and organisations in the community (IFRC, 2014). Resilient communities are equipped with functioning, 'people-centered' early warning systems (sometimes referred to as 'end-to-end early warning systems').

- **Response** is the provision of emergency services and public assistance during or immediately after a disaster that help save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the affected people (UNISDR, 2009). It is sometimes associated with 'disaster relief' because of its predominant focus on immediate and short-term needs.
- **SMS (Short Message Service)** is the text-communication service component of phone, web or mobile communication systems, using standardised communications protocols that allow the exchange of short text messages between devices (OCHA, 2013). SMS communication has proven to be effective in reaching communities that are out of broadcast zones but are accessible via mobile devices.
- **Vulnerability** is the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (UNISDR, 2009). It also points to the diminished capacity of an individual or community to anticipate, cope, and recover from the impact of a hazard (IFRC, 2014). Vulnerability can arise from various physical, social, economic, and environmental factors. Examples include lack of risk awareness and lack of community dialogue that results in poor design and construction of buildings, inadequate protection of assets, limited official recognition of risks and preparedness measures, and disregard for sensible environmental management. Vulnerability is situational and dynamic. Human exposure to disaster risk can vary across gender, ethnicity, age, disability and other factors. Examples of potentially vulnerable groups include children, women (particularly those who are pregnant and nursing), widows, disabled persons, elderly people without family support, displaced populations and migrants who leave their habitual residences in collectives, and marginalised or destitute people in local populations (IFRC, 2014).

REFERENCES

- ABC (2013) *2013-2016 Strategic Plan*, accessed on August 20, 2014, <http://about.abc.net.au/wp-content/uploads/2013/07/ABCStrategicPLN2013-16.pdf>
- ASEAN (2012) *ASEAN Agreement on Disaster Management and Emergency Response: Work Programme for 2010-2015*, ASEAN, 1 November, accessed on May 21, 2014, <http://www.scribd.com/doc/111759996/ASEAN-Agreement-on-Disaster-Management-and-Emergency-Response-Work-Programme-for-2010-2015>
- ABU (2009) *Handbook on Emergency Warning Broadcast Systems*, Asia Pacific Broadcasting Union, June, accessed on May 20, 2014, http://www.abu.org.my/upload/EWBS_Handbook.pdf
- BBC Media Action (2012) 'Case Study - BBC Burma Lifeline Radio Project: "Living Today, Stronger Tomorrow"', prepared for CDAC Network Media and Tech Fair, March, accessed on May, 20, 2014, <http://www.alnap.org/resource/11382>
- Bharosa, Nitesh, JinKyu Lee and Marijn Janssen (2010) 'Challenges and Obstacles in Sharing and Coordinating Information During Multi-Agency Disaster Response: Propositions from Field Exercises', *Information Systems Frontiers*, 12(1): 49–65
- Cannon, Terry (2002) 'Gender and climate hazards in Bangladesh,' *Gender and Development*, 10(2): 45–50.
- Castells, Manuel (2009) *Communication Power*, Oxford; New York: Oxford University Press.
- CDAC Network (2011) *Communication is Aid an Infosaid animation* accessed on August 5, 2014 <http://www.cdacnetwork.org/i/20140106201815-wdtfo/>
- CDAC (2013a) *Typhoon Bopha Learning Review*, London; Manila: CDAC.
- CDAC (2013b) 'Typhoon Haiyan: Communicating with Communities Updates,' CDAC, accessed on May 20, 2014, <http://www.cdacnetwork.org/public/emergencies/typhoon-haiyan>
- Crowe, Adam (2012) *Disasters 2.0: The Application of Social Media Systems for Modern Emergency Management*, Boca Raton, FL: Taylor & Francis.
- Curtis, Anthony (2011) 'About Broadcast Media', University of North Carolina at Pembroke, accessed on May 20, 2014,
- de Fossard, Esta (2005) *Writing and Producing Radio Dramas: Communication for Behavior Change*, New Delhi; Thousand Oaks, CA: Sage Publications.
- Disability Inclusive DRR Network (2013) 'Disability is integral to the human condition', Disability Inclusive DRR Network, accessed on May 21, 2014, <http://www.didrrn.net/home/index.php/why/>
- Evon, Dan (2013) 'Typhoon Haiyan Hashtags: Survivors Turn to Twitter for Help', Social News Daily, 10 November, accessed on May 21, 2014.
- Falth, Anna (2012) 'Women in Disaster Preparedness in Viet Nam,' COP 18 Day 11, *Outreach*, 7 December, accessed on May 20, 2014.
- FAO (2011) 'Mekong Basin', Aquastat, United Nations Food and Agriculture Organization, accessed on May 20, 2014, <http://www.fao.org/nr/water/aquastat/basins/mekong/index.stm>
- Guha-Sapir, Debarati, Philippe Hoyois and Regina Below (2013) *Annual Disaster Statistical Review 2012: The Numbers and Trends*. Brussels: Centre for Research on the Epidemiology of Disasters.
- Hearn, Greg et al. (2009) *Action Research and New Media*, Cresskill, NJ: Hampton Press.
- Hirschman, Charles and Sabrina Bonaparte (2012) 'Population and Society in Southeast Asia: A Historical Perspective' pp. 1-37 in Linda Williams and Philip Guest, eds. *Demography of Southeast Asia*. Ithaca, NY: Southeast Asia Program, Cornell University.
- http://issuu.com/stakeholderforum/docs/outreach_cop18_day11_disasters <http://www.irinnews.org/report/100148/philippines-still-rebuilding-six-months-after-typhoon-s-visit>
- http://reliefweb.int/sites/reliefweb.int/files/resources/CwC-Cluster.Feb14_0.pdf
- <http://socialnewsdaily.com/19147/typhoon-haiyan-hashtags-survivors-turn-to-twitter-for-help/>
- <http://www.eastasiaforum.org/2013/03/08/disasters-in-southeast-asias-megacities-protecting-the-informal-sector/>
- http://www.gendercc.net/fileadmin/inhalte/Dokumente/UNFCCC_conferences/Gender_and_climate_change_COP10.pdf
- <http://www2.uncp.edu/home/acurtis/Courses/ResourcesForCourses/Broadcasting/BroadcastingWhatIsIt.html>
- IFRC (2011) 'Myanmar: Cyclone Nargis 2008 Facts and Figures,' International Federation of Red Cross and Red Crescent Societies, 3 May, accessed on May 20, 2014, <http://www.ifrc.org/en/news-and-media/news-stories/asia-pacific/myanmar/myanmar-cyclone-nargis-2008-facts-and-figures/>

- IFRC (2014) 'What is a Disaster?', International Federation of Red Cross and Red Crescent Societies, accessed on May 20, 2014. <http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/>
- Infoasaid (2012) 'Indonesia Loves TV And Twitter, But Radio Works In A Crisis,' 26 November, Infoasaid, accessed on May 20, 2014, <http://infoasaid.org/news/indonesia-loves-tv-and-twitter-radio-works-crisis>
- IPCC (2007) 'Glossary', Intergovernmental Panel on Climate Change Fourth Assessment Report, accessed on May 20, 2014, http://www.ipcc.ch/publications_and_data/ar4/wg2/en/annexessglossary-a-d.html
- IRIN (2014) 'Philippines Still Rebuilding Six Months After Typhoon's Visit', IRIN Humanitarian News and Analysis, 29 May, accessed on May 30, 2014.
- ITU (2013) 'Proposed Draft Report on the Importance of Terrestrial Broadcasting in Providing Emergency Information to the Public', Radiocommunication Study Groups, International Telecommunication Union, accessed on May 20, 2014, <http://www.itu.int/en/ITU-R/study-groups/workshops/RSG6-WSEBC-2013/Pages/default.aspx>
- ITU (2014) '2000-2012 Mobile-cellular subscriptions', ITU Statistics, accessed on May 23, 2014, <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>
- Jamil, Sofiah and Mushahid Ali (2013) 'Disasters in Southeast Asia's megacities: protecting the informal sector,' *East Asia Forum*, 8 March, accessed on May 20, 2014.
- Jones, Gavin W. (2013) *The Population of Southeast Asia*. Singapore: Asia Research Institute.
- Kalathil, Shanthi (2008). 'Natural Disasters: What Role for Information and Communication?', The World Bank, 13 May, accessed on August 4, 2014, <http://blogs.worldbank.org/publicsphere/natural-disasters-what-role-information-and-communication>
- Khalid, Salman (2013) 'Media Role in Disaster Management', *Pakistan Observer*, 11 December, accessed on August 5, 2014
- Kreft, Sönke and David Eckstein (2014) *Global Climate Risk Index 2014: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2012 and 1993 to 2012*. Bonn and Berlin: Germanwatch.
- Leoni, Brigitte and Tim Radford (2011) *Disaster Through A Different Lens: Behind Every Effect, There Is A Cause – A Guide For Journalists Covering Disaster Risk Reduction*, Geneva: United Nations International Strategy for Disaster Reduction.
- Malteser International et al. (2013) *Manual on Disability Inclusive Community Based Disaster Risk Management*. Danang, Vietnam: Malteser International.
- Mannix, Ian (2013) *Forewarned*, accessed 01 September, 2014 <http://www.forewarned.info/>
- MapAction (2013) 'Philippines Typhoon Haiyan (Yolanda) Radio Station Activity (as of 21-Nov-2013)', MapAction, 21 November, accessed on May 25, 2014, http://www.mapaction.org/deployments/mapdetail/3087.html?utm_source=twitterfeed&utm_medium=twitter
- Mendel, Toby (2000) *Public Service Broadcasting. A comparative Legal Survey for UNESCO Asia Pacific Institute for Broadcasting Development*, Kuala Lumpur, accessed on September 03, 2014, <http://www.unesco.org/webworld/publications/mendel/Japan.html>
- NCEA/MOF (2009) *National Sustainable Development Strategy for Myanmar*, accessed on May 20, 2014, <http://www.rrcap.ait.asia/nsds/uploadedfiles/file/Publication%201-NSDS%20Myanmar.pdf>
- Neumayer, E., and T. Plümpner (2007) 'The Gendered Nature Of Natural Disasters: The Impact Of Catastrophic Events On The Gender Gap In Life Expectancy, 1981–2002', *Annals of the Association of American Geographers*, 97(3): 551–566.
- OCHA (2013) *Humanitarianism in the Network Age*. OCHA Policy and Studies Series. New York: United Nations.
- ODI (2013) *The geography of poverty, disasters and climate extremes in 2030*, accessed October 21, 2014, <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8633.pdf>
- On Device Research (2014) *Myanmar the Final Frontier for The Mobile Internet*, accessed September 09, 2014, http://www.slideshare.net/OnDevice/myanmar-the-final-frontier-for-the-mobile-internet-36204561?redirected_from=save_on_embed
- Quintanilla, Jacobo and Lizzie Goodfriend (2011) *When Information Saves Lives: 2011 Humanitarian Annual Report*. London; Washington DC: Internews.
- ReliefWeb (2012) 'The Asia-Pacific Disaster Report 2012: Reducing Vulnerability and Exposure to Disasters', ReliefWeb 23 October, accessed on August 4, 2014, <http://reliefweb.int/report/world/asia-pacific-disaster-report-2012-reducing-vulnerability-and-exposure-disasters>
- ReliefWeb (2013) 'Philippines Typhoon Haiyan (Yolanda): Radio Stations in operation (06-Dec-2013)', ReliefWeb, 9 December, accessed on May 21, 2014, <http://reliefweb.int/map/philippines/philippines-typhoon-haiyan-yolanda-radio-stations-operation-06-dec-2013>

- ReliefWeb (2014) Communications with Communities: Response to Typhoon Haiyan (Yolanda), ReliefWeb, 14 February, accessed on May 21, 2014.
- Ride, Anouk (2014) 'Floods of Information, Drought of Listening – Communications in Honiara's Floods', Devpolicy Blog, 8 May, accessed on August 4, 2014, <http://devpolicy.org/floods-of-information-drought-of-listening-communications-in-honiaras-floods-20140508/>
- Skutsch, Margaret et al. (2004) 'Mainstreaming Gender Into the Climate Change Regime', COP 10 Buenos Aires, 14 December, accessed on May 20, 2014.
- Slater, David, Keiko Nishimura, Love Kindstrand (2011) 'Social Media, Information and Political Activism in Japan's 3.11 Crisis', *The Asia-Pacific Journal: Japan Focus*, accessed on May 21, 2014, <http://www.japanfocus.org/-nishimura-keiko/3762>
- Standby Task Force (2013) 'New SBTF Deployment for Typhoon Yolanda,' Standby Task Force, 7 November, accessed on May 20, 2014, <http://blog.standbytaskforce.com/2013/11/07/new-sbtf-deployment-for-typhoon-yolanda/>
- United Nations (2011) *Communication for Development: Strengthening the Effectiveness of the United Nations*. New York: United Nations.
- United Nations (2014) *The Universal Declaration of Human Rights, 1948*, accessed on May 20, 2014, <http://www.un.org/en/documents/udhr/index.shtml#a19>
- UNDP (2013) *Protecting Development from Disasters: UNDP's Support to the Hyogo Framework for Action*, New York: United Nations Development Fund.
- UNESCO (2006) 'UNESCO Helps ABU To Develop Low-Cost Mobile Broadcasting System', Communication and Information Resources, UNESCO, 5 February, accessed on May 21, 2014, http://portal.unesco.org/ci/en/ev.php-URL_ID=21931&URL_DO=DO_TOPIC&URL_SECTION=201.html
- UNFCCC (2014) 'Article 1: Definitions', United Nations Framework Convention on Climate Change, accessed on May 20, 2014, https://unfccc.int/essential_background/convention/background/items/2536.php
- UNICEF (2013) *UNICEF Communication For Development Support To Public Health Preparedness And Disaster Risk Reduction In East Asia And The Pacific: A Review*, Bangkok: UNICEF.
- UNISDR (2007) *Hyogo Framework for Action 2005-2015: Building The Resilience Of Nations And Communities For Disasters*. Geneva: United Nations International Strategy for Disaster Reduction.
- UNISDR (2009) 'Terminology in DRR', United Nations International Strategy for Disaster Reduction, accessed on May 20, 2014, <http://www.unisdr.org/we/inform/terminology>
- UNISDR (2010) *Protecting development gains: Asia Pacific disaster report 2010: reducing disaster vulnerability and building resilience in Asia and the Pacific*. Bangkok: Economic and Social Commission for Asia and the Pacific.
- UNISDR (2012) 'Floods deaths down but economic losses significant', The United Nations Office for Disaster Risk Reduction, 11 December, accessed on May 20, 2014, <http://www.unisdr.org/archive/30026>
- UNISDR/UNESCAP (2012) *The Asia-Pacific Disaster Report 2012: Reducing Vulnerability and Exposure to Disasters*. Geneva and Bangkok: International Strategy for Economic and Social Commission for Asia and the Pacific.
- UNISDR (2013a) *Asia Pacific Synthesis Report: Consultations on the Post-2015 Framework for Disaster Risk Reduction (HFA2)*, Geneva; Bangkok: United Nations International Strategy for Disaster Reduction.
- UNISDR (2013b) *The Hyogo Framework for Action in Asia and the Pacific 2011-2013*, Geneva; Bangkok: United Nations International Strategy for Disaster Reduction.
- UNISDR (2013c) 'Millions back "Disability is not Inability" message', United Nations International Strategy for Disaster Reduction, 28 October, accessed on May 20, 2014, <http://www.unisdr.org/archive/35293>
- UNISDR/UNDP/IUCN (2009) *Making Disaster Risk Reduction Gender-Sensitive: Policy and Practical Guidelines*. Geneva: United Nations International Strategy for Disaster Reduction, United Nations Development Fund and International Union for Conservation of Nature.
- UN Women (2011) 'Factsheet: Women and Natural Disasters in Viet Nam,' UN Women, October, accessed on May 20, 2014, http://www.unwomen-eseasia.org/Vietnam/docs/Factsheet_ClimateChangeOCT%202011.pdf
- Valuch, Jaroslav (2013) 'Power Of Crisis Crowdsourcing & Media Broadcasting – 3 Key Roles For Mapping Emergencies Live,' Ushahidi, accessed on May 23, 2014, <http://blog.ushahidi.com/2013/08/12/power-of-crisis-crowdsourcing-media-broadcasting-3-key-roles-for-mapping-emergencies-live/>
- World Bank (2012) *Advancing Disaster Risk Financing And Insurance In ASEAN Member States: Framework And Options For Implementation*. Washington, DC: World Bank.
- WHO (2011) *Summary: Word Disability Report*. Geneva: World Health Organization and World Bank.



Photography credits:

ABC: cover (centre, top right), inside front cover, p. 2, p.8, p.20, p.26, back cover

Shutterstock: cover (top left, bottom left, bottom right) p. 11, p.17, p.23

Getty Images: p.4, p.5

Further information:
www.abcinternationaldevelopment.net.au/research



International Development
Australian Broadcasting Corporation

**Australian
Aid** 