

Disaster Risk Reduction
Methods, Approaches and Practices

Rajib Shaw
Takako Izumi *Editors*

Civil Society Organization and Disaster Risk Reduction

The Asian Dilemma

 Springer

Disaster Risk Reduction

Methods, Approaches and Practices

For further volumes:
<http://www.springer.com/series/11575>

ABOUT THE SERIES

SCOPE OF THE SERIES

Disaster risk reduction is a process, which leads to the safety of community and nations. After the 2005 World Conference on Disaster Reduction, held in Kobe, Japan, the Hyogo Framework for Action (HFA) was adopted as a framework of risk reduction. The academic research and higher education in disaster risk reduction has made/is making gradual shift from pure basic research to applied, implementation oriented research. More emphasis is given on the multi-stakeholder collaboration and multi-disciplinary research. Emerging university networks in Asia, Europe, Africa and Americas have urged for the process-oriented research in disaster risk reduction field. Keeping this in mind, this new series will promote the outputs of action research on disaster risk reduction, which will be useful for a wider range of stakeholders including academicians, professionals, practitioners, and students and researchers in the related field. The series will focus on some of emerging needs in the risk reduction field, starting from climate change adaptation, urban ecosystem, coastal risk reduction, education for sustainable development, community based practices, risk communication, human security etc. Through academic review, this series will encourage young researchers and practitioners to analyze field practices, and link it to theory and policies with logic, data and evidences. Thus, the series emphasizes evidence based risk reduction methods, approaches and practices.

SERIES EDITOR

Rajib Shaw, Kyoto University, Japan

EDITORIAL ADVISORY GROUP

1. Ms. Margareta Wahlstorm, Special Representative of the Secretary General of the United Nations for the Disaster Risk Reduction, and head of UN ISDR (International Strategy for Disaster Reduction), Geneva, Switzerland
2. Dr. Juha Uitto, Deputy Director, Evaluation Office, UNDP (United Nations Development Programme), NY, USA
3. Professor Kaoru Takara, Disaster Prevention Research Institute (DPRI), Kyoto University, Kyoto, Japan
4. Professor Joy Jacqueline Pereira, University Kebansan Malaysia (UKM), Malaysia
5. Professor David Sanderson, Director, Centre for Development and Emergency Practice (CENDEP), Faculty of Technology, Design and Environment, Oxford Brookes University, Oxford Brookes University, Oxford, UK
6. Dr. Anshu Sharma, Board Member, SEEDS India, Delhi, India
7. Professor Ailsa Holloway, Director, Disaster Mitigation for Sustainable Livelihoods Programme, Stellenbosch University, South Africa
8. Professor Arnold Howitt, Kennedy School of Government, Harvard University, USA
9. Professor Fuad Mallick, Chair of Disaster Management Program, BRAC University, Dhaka, Bangladesh
10. Professor Jayant K Routray, Coordinator of Disaster Preparedness, Mitigation and Management Academic Program, Asian Institute of Technology, Pathumthani, Thailand

Rajib Shaw • Takako Izumi
Editors

Civil Society Organization and Disaster Risk Reduction

The Asian Dilemma

 Springer

Editors

Rajib Shaw
Graduate School of Global
Environmental Studies
Kyoto University
Kyoto, Japan

Takako Izumi
International Research Institute
of Disaster Science
Tohoku University
Sendai, Japan

ISSN 2196-4106

ISBN 978-4-431-54876-8

DOI 10.1007/978-4-431-54877-5

Springer Tokyo Heidelberg New York Dordrecht London

ISSN 2196-4114 (electronic)

ISBN 978-4-431-54877-5 (eBook)

Library of Congress Control Number: 2014933784

© Springer Japan 2014

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

The roles of civil society organizations (CSOs) in disaster risk reduction (DRR) have been discussed in the past several years at the global and national levels. Although most CSOs find the right opportunity to enter into the community through disaster relief and response, few nongovernmental organizations (NGOs) remain on a long-term recovery basis. Even fewer in number are those that work specifically on pre-disaster preparedness issues.

Asia, with its diversity, has exemplified the varying roles of CSOs in different countries. While south Asia has a long history of CSOs, in ASEAN countries (southeast Asia), the CSO is a relatively new stakeholder in risk reduction except in the Philippines. Various major disasters in the Asian region have provided entry points of CSOs in the risk reduction field.

In this context, the present volume analyzes the role of CSOs using the Hyogo Framework for Action (HFA), an action plan agreed by the United Nations member states in the Second World Conference on Disaster Reduction (WCDR), held in Kobe, Hyogo Prefecture, Japan, in 2005. HFA provides a holistic approach to risk reduction, and using this framework helps in understanding the roles of CSOs in sundry aspects of risk reduction.

This book has 15 chapters, the first being an overview and the last, an analysis. The remaining 13 chapters are divided according to the HFA priority areas: HFA1, Institutionalization (3 chapters); HFA2, Risk assessment (2 chapters); HFA3, Education and knowledge (2 chapters); HFA4, Underlying risk factors (4 chapters); and HFA5, Response and recovery (2 chapters).

The book is written for students, young researchers, and practitioners in the fields of disaster risk reduction and environmental studies. We hope that they will find the book useful and relevant to their work.

Kyoto, Japan
Sendai, Japan

Rajib Shaw
Takako Izumi

Contents

1	Civil Society and Disaster Risk Reduction: An Asian Overview	1
	Rajib Shaw and Takako Izumi	
2	Role of Civil Society Organizations in Policy and Advocacy in Risk Reduction	15
	Takako Izumi and Rajib Shaw	
3	Disaster Risk Reduction National Platform and Strategic National Action Plan in Afghanistan	29
	Takeshi Komino	
4	Policy and Advocacy: Role of Civil Society in Disaster Management Bill Processes in Indonesia	43
	Parlan Hening	
5	CSOs and the Challenges in Risk and Vulnerability Assessment	59
	Lorna Victoria, Loreine dela Cruz, and Benigno Balgos	
6	Risk and Vulnerability Assessment: Experience of Nepal	79
	Amod M. Dixit	
7	Civil Society and Knowledge, Education and Training in Risk Reduction	115
	Takako Izumi and Rajib Shaw	
8	Knowledge, Education and Training for Risk Reduction: Specific Case of Myanmar, Vietnam and Japan	135
	Yasutaka Ueda, Mitsuko Shikada, Eriko Matsumoto, Yuko Nakagawa, and Rajib Shaw	

9	Civil Society and Cross-Cutting Issues for Risk Reduction: Food Security, Health, Human Security, Environment and Microfinance	159
	Takako Izumi and Rajib Shaw	
10	Microfinance: Role of NGOs in DRR	177
	Gulsan Ara Parvin and Rajib Shaw	
11	Role of NGOs and CBOs in a Decentralized Mangrove Management Regime and Its Implications in Building Coastal Resilience in India	203
	Rajarshi DasGupta and Rajib Shaw	
12	Disability-Inclusive DRR: Information, Risk and Practical-Action	219
	Alex Robinson and Sae Kani	
13	Community-Based Response and Recovery: Role of Civil Societies	237
	Takako Izumi and Rajib Shaw	
14	Community Based Response and Recovery: Specific Issues	255
	Shivangi Chavda and Manu Gupta	
15	Opportunities and Challenges of Role of Civil Societies in Risk Reduction	285
	Rajib Shaw and Takako Izumi	

Contributors

Benigno Balgos University of the Philippines, Quezon City, Philippines

Shivangi Chavda SEEDS India, Delhi, India

Loreine dela Cruz University of the Philippines, Quezon City, Philippines

Rajarshi DasGupta Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan

Amod M. Dixit National Society for Earthquake Technology [NSET], Kathmandu, Nepal

Manu Gupta SEEDS India, Delhi, India

Parlan Hening Head of Board MPBI (Indonesian Society for Disaster Management), Director HFI (Humanitarian Forum Indonesia), Jln. Wachid Hasyim 2 Jakarta Pusat

Takako Izumi International Research Institute of Disaster Science, Tohoku University, Sendai, Japan

Sae Kani Malteser International, Tokyo, Japan

Takeshi Komino Church World Services-Asia Pacific, Bangkok, Thailand

Eriko Matsumoto SEEDS Asia, Kobe, Japan

Yuko Nakagawa SEEDS Asia, Kobe, Japan

Gulsan Ara Parvin Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan

Alex Robinson Arbeiter-Samariter-Bund Deutschland, Yogyakarta, Indonesia

Rajib Shaw Graduate School of Global Environmental Studies, Kyoto University,
Kyoto, Japan

Mitsuko Shikada SEEDS Asia, Kobe, Japan

Yasutaka Ueda SEEDS Asia, Kobe, Japan

Lorna Victoria University of the Philippines, Quezon City, Philippines

About the Editors

Rajib Shaw is a Professor in the Graduate School of Global Environmental Studies of Kyoto University, Japan. He worked closely with the local communities, NGOs, governments and international organization, including United Nations, especially in the Asian countries. He is currently the Chair of the United Nations Asia Regional Task Force for Urban Risk Reduction, and the President of Asian University Network of Environment and Disaster Management (AUEDM). His research interests are: community based disaster risk management, climate change adaptation, urban risk management, and disaster and environmental education. He has published several books in the field of disaster and environmental management. He is also the Chief Editor of Asian Journal of Environment and Disaster Management.

Takako Izumi is an Associate Professor in the International Research Institute of Disaster Science (IRIDeS), Tohoku University in Japan. She also serves as Programme Coordinator of the Multi-Hazards Programme under the Association of Pacific Lim Universities (APRU) that consists of 45 universities and academic institutes in the Pacific Lim. Her research interests include international and regional framework of disaster risk reduction, disaster risk reduction at local level, and role of civil society in disaster management. Previously, she worked for the UN Office for the Coordination of Humanitarian Affairs (UNOCHA) for the disaster response coordination in Asia and for one of the international NGOs in Malaysia as General Manager to oversee the programmes of disaster response and disaster risk reduction.

Chapter 1

Civil Society and Disaster Risk Reduction: An Asian Overview

Rajib Shaw and Takako Izumi

Abstract Civil society has different role in over time in different countries. There has been strong debate on expected role of civil society among social scientists. Civil society is often termed as NGO, NPO, voluntary organizations, community based organizations etc. All of them play important roles in disaster risk reduction. An analysis of Asian countries shows that the civil society has been differentially active in south Asia and southeast Asia. However, the common element is that the entry point of civil society is through post disaster relief, rescue, eventually turning to short, medium and long-term recovery. Some organizations turned those opportunities into long term development and risk reduction (in terms of pre-disaster preparedness) activities. Although there are sporadic successes of civil society role in stand-alone risk reduction activities, the post disaster scenario has changed the landscape of civil society movement in many countries, by facilitating their entry to serve the needs of the local communities. This chapter also summarizes the book outline, which is designed on the role of civil society as per the HFA (Hyogo Framework for Action) five priority areas.

Keywords Asia • Civil society • Communities • Post disaster recovery • Risk reduction • State cooperation

R. Shaw (✉)
Graduate School of Global Environmental Studies, Kyoto University,
Kyoto, Japan
e-mail: shaw.rajib.5u@kyoto-u.ac.jp

T. Izumi
International Research Institute of Disaster Science, Tohoku University,
Sendai, Japan
e-mail: izumi@irides.tohoku.ac.jp

1.1 Introduction

Disaster risk reduction has evolved over time. While back in 1960 and 1970s, disasters were considered as extreme events, 1980s, saw the strong pledge on pre-disaster preparedness, which led to the United Nations International Decade of Natural Disaster Reduction (1990–1999). However, the first half of the decade focused mainly on government actions, till the 1994 Yokohama Conference and the “*Yokohama Plan of Action for a Safer World*,” which was possibly the first official document agreed by the UN member states which strongly emphasized the role of communities and non-government organizations in the disaster risk reduction approaches (IDNDR 1994). The following year, in 1995, the world saw the devastation of the Great Hanshin Awaji Earthquake (popularly known as Kobe earthquake), which shook Japan, one of the most disaster-prone as well as prepared country. The aftermath of the disaster had a long lasting recovery process, and Japan’s concept of civil society or NGO’s involvement was changed quite drastically (Shaw and Goda 2004). While, traditionally, NGOs were not that dominant in Japan, or its role was more as a watchdog, the recovery process of Kobe earthquake saw a strong government–NGO collaboration, with strong inputs with professional excellence. This also boasted strongly the global as well as regional roles of civil society, both in the international, regional and national platforms and forum, and the wheel never went backward after this. Global and regional recognition of strong role of civil society in disaster risk reduction kept on increasing.

Traditionally, in several developing countries, especially in Asia, civil society movement has been very strong. South Asia has been a traditional place of professional civil society, and is home of some of the world’s largest civil society organizations. Bangladesh, India, Pakistan, Nepal, Sri Lanka has some of the largest civil society network, which has been active in different development work over more than 50 or 60 years. Several of NGOs in south Asia, who have been traditionally development oriented, have turned themselves into the disaster related activities after the major disasters in the region. A few professional NGOs have developed themselves with the sole motto of disaster risk reduction. Several of their activities have been recognized nationally and globally with gradual recognition of civil society role in disaster risk reduction.

Southeast Asia, with the exception of Philippines, was rather dormant on civil society’s role. However, last 10–15 years have seen significant growth of civil society in many Southeast Asian, especially ASEAN countries. Philippines has been the most dominant country in ASEAN to have a very pro-active and professional civil society, in terms of development and poverty reduction activities. Significant growth of civil society has been found in the countries like Indonesia, Thailand, Malaysia, Cambodia and Vietnam, many of them started from local governance or good governance perspectives, and gradually expanded their roles to other fields. In recent years, possibly over last 6–7 years, the civil society movement has percolated the

disaster risk reduction field in the ASEAN countries, except, as mentioned earlier, that of the Philippines, where several professional NGOs have been working and promoting disaster risk reduction over last 30–40 years.

With the above scenario, this chapter tries to give an overview of the role and status of the civil society organizations in the Asian context. With the definitions of civil society and related terminologies, the chapter will focus on the Asian context of role of civil society in disaster risk reduction. The chapter ends with a note on the book structure, outlining the key concept and components of the book.

1.2 Defining Civil Society Organizations (CSO)

The term civil society has a range of meanings in contemporary usage. It is sometimes considered to include the family and the private sphere, and referred to as the “third sector” of society, distinct from government and business (Wikipedia 2014a). It defines civil society as: (1) the aggregate of non-governmental organizations and institutions that manifest interests and will of citizens, or (2) individuals and organizations in a society which are independent of the government. As per Collins English Dictionary, sometimes the term is used in the more general sense of “the elements such as freedom of speech, an independent judiciary, etc., that makes up a democratic society”. Volunteering is often considered a defining characteristic of the organizations that constitute civil society, which in turn are often called *NGOs* (*non-government organization*), or *NPOs* (*non-profit organization*). Most authorities have in mind the realm of public participation in voluntary associations, trade unions and the like, but it is not necessary to belong to all of these to be a part of civil society.

There has been strong debate on the evolution on civil society and its concept in the western and eastern world. Khilnani (2001) has given a theoretical overview of the development of civil society, which mentioned a few characters like: (1) civil society is not best thought of as a substantive category, (2) necessity of association between civil society and a specific political form (e.g., liberal democracy), (3) civil society as most useful means of identifying a set of human capacities and moral, and (4) civil society as the notion of un-intendedness. Chatterjee (2001) described the term civil society for those characteristic institutions of modern associational life originating in western societies, which are based on equality, autonomy, freedom of entry and exit. Contract, deliberative procedures of decision-making, recognized rights and duties of members, and other such principles. He also mentioned that it cannot be denied that the history of modernity in non-western countries contains numerous examples of emergence of what could well be called civil society institutions, which nevertheless do not always conform to these principles.

However, the current chapter and this book do not go into the details of the social theory on civil society. Rather, it looks at the rational, practical and easy

to understand approach of civil society and its role in disaster risk reduction. In practical sense, the civil society can incorporate the non-government organizations (NGO), non-profit organizations (NPO), civic groups, community organizations, cooperatives, faith based organizations, clubs, cultural groups, voluntary organizations etc. Each of these has its own definitions and roles.

A non-government organization has been defined as any non-profit, voluntary citizen's group, which is organized on a local, national or international level (UN 2000). However, the diversity in task, goal and activities, strains any simple definition of NGO. It can be stated that the NGO include a wide range of groups, which act independent of government, and characterized by preliminary humanitarian activities, with focus on the citizen's need and demand (Shaw 2003). The term of NGO varies from county to country, e.g., while in the USA, it is often called as a "private voluntary organization", in the African countries, it is often termed as "voluntary development organization". Although the universities and research organizations may be non-governmental, this directive refers principally to the private organizations, that pursue activities to relieve suffering, promote the interest of poor, protect the environment, provide basic social services, or undertake community development (World Bank 1991). Following are the criteria of NGO, defined by the development banks (Causins 1991):

1. Non-profit making, voluntary service oriented organizations,
2. Organization of private individuals who believe in certain basic social principles,
3. Social development organization, assessing in empowerment of the people,
4. Independent of any external control with specific objectives or aims,
5. Independent, democratic and non-sectarian people's organization working for the empowerment of economic and/or socially marginalized group,
6. An organization not affiliated to political parties, generally engaged in aid and development and welfare of the community,
7. An organization committed to the root-cause of problems, trying to better the quality of life specifically to the needy people,
8. An organization established by and for the community without or with little interventions from the government,
9. An organization that is flexible and democratic in its organization and attempts to serve people without profit for itself.

There are different classifications of NGOs, based on their missions or levels of operations. The World Bank has classified them as per mission: Charitable NGOs, Service-oriented NGOs, Participatory NGOs, and Empowering NGOs. Whereas as per the operation, they can be classified as: Community based organizations, Citywide/district-wide organizations, National organization and international organizations (Sakya 2000). Besides, there is a classification of national and international NGOs, based on the field/area of activities. Also, there is another classification of NGOs from developed countries (having primary work area in the developing countries with specific expertise and knowledge), and NGOs from developing countries. In some countries like Philippine, NGOs are classified as

internationally-based resource NGO, internationally-affiliated NGO, national NGO, corporate-based NGO, province-based NGO, and community-based organizations (Luna 2000). Thus, it can be stated that the definition, and classification of NGO depends on the types of activities, mission, and geographic area of work.

A non-profit organization (NPO or not for profit organization or non commercial organization) is an organization that uses surplus revenues to achieve its goals rather than distributing them as profit or dividends. While not-for-profit organizations are permitted to generate surplus revenues, they must be retained by the organization for its self-preservation, expansion, or plans (Wikipedia 2014b). The other groups mentioned above like the civic groups or community based organizations are also considered as civil society. In several countries, there exist resident welfare society or resident association, which work closely with the local residents and communities. There also exist groups like women association, youth association, farmer or fisherman associations. These are also considered as civil society. Different countries have their faith-based organizations, based on specific religious or social groups, which also consist a crucial part of civil society.

Shaw (2003) proposed a different classification, which was specifically relevant to the disaster related issues. The classification had a major connotation to the Asian countries, where the NGO activities have been relatively strong, and continued for several years. The NGO activities were grouped into two major types: (1) Professional NGOs, which had specific professional expertise and knowledge and consisted of people from different professional background; and (2) Social NGOs, which were more related to the social and humanitarian activities. The social NGOs can also consist of professional people, but for the Professional NGOs, their work was defined by the professional expertise of the people in their group (like urban planning, architecture, engineers, earthquake safety etc.). Both these NGO can be divided into two further groups, national and international, based on their activities. It is to be noted that well-known international NGOs like Oxfam, Care, Red Cross, Save the Children comes to the social type NGOs in this current classification.

1.3 Asian Context of CSO in Disaster Risk Reduction

This section describes some of the recent examples of civil society involvement in disaster related activities in different Asian countries. At the onset, it needs be clarified that the civil society in most of the countries have been found to active mainly after the disaster, as a part of humanitarian responses. The key reasons are: (1) availability of resources, mainly financial after the disaster, (2) the need and demands to serve the affected communities, and (3) limited resources in parts of the governments, especially the local governments in the affected regions. Many NGOs and civil society bodies get their entry to the affected areas during the post disaster relief and rescue operation. Depending on the nature and scale of the disaster, some of these organizations stay back in the affected region for the short, medium and

long-term recovery. Even after the completion of the recovery process, some of the civil society organizations, especially the local and indigenous ones continue their activities for pre-disaster mitigation and risk reduction activities. Thus, the post disaster situation provides most of the opportunities for risk reduction activities in the communities. Although ideally the risk reduction activities should incorporate more civil society bodies before the disaster strikes, in most countries, there are very rather few formal mechanisms (in terms of regulation, legislation, funding and institutional reforms) for civil society involvement in pre-disaster risk reduction activities.

One of the classic examples of pre-disaster activities is that of NSET (National Society for Earthquake Technology)-Nepal, which has been active in pre-earthquake preparedness activities over close to 20 years. Starting from school retrofitting, and earthquake scenario creation activities in Kathmandu valley, the organization has provided a landmark example of involvement of different stakeholders, mobilizing resources, training professional and practitioners, developing knowledge products, influencing government policies, and making an impact at the local, national and global level. NSET's work can be considered as the textbook example of NGO/civil society involvement in pre-disaster scenario. The other classic example is from India, in the western part of Gujarat, in a district of Kutch. There, a group of NGOs (Kutch Nav Nirman Abhiyan: KNNA) have involved, mobilized, sensitized, and empowered local communities to work for drought risk reduction activities. This is especially challenging considering the invisible nature of the disaster. However, through lots of social mobilization, KNNA has been able to successfully motivate communities in rural areas to take pre-disaster activities (like structural measure to creating check-dams, non-structural measures like livelihood diversification, protecting animal stocks through fodder bank etc., making proper resource maps for the villages etc.). Their work has been institutionalized with the support from the district government through establishing the SETU (village knowledge centers) and enabling local people to the resource mobilization. The example of drought proofing planning through community participation has been disseminated to other parts of the country through different forum and working with other state governments of the country.

The other example of civil society organization is from Japan, with the establishment of *Bousai Fukushi Community* (popularly known as BOKOMI: Social welfare and disaster prevention committee) in the urban areas of Kobe, which was affected by the 1995 Great Hanshin Awaji Earthquake (Shaw 2014). This is essentially the involvement of local communities in disaster preparedness and related social activities (like health related activities in the local communities, outsourced by the local governments). This concept is considered as a multi-stakeholder involvement of the civil society, which is rooted internally in the community itself. The key part of the mechanism is the sustainability of the scheme, which generates its own internal as well external resources within and outside community, and serves the community's needs. The institutionalization of the process in the city government has also demonstrated a government-civil society model, which can be replicated in other countries, irrespective of the level of the economic development.

In contrast, there are classic examples of post disaster relief and recovery process. The landmark work of SEEDS India (a Delhi based NGO) after the 2001 Gujarat earthquake has proved a classic example of the owner driven reconstruction. Starting from the relief activities after the disaster, SEEDS has established the first contact with the local communities by creating a model house for the most needy people of the village, who is an aged widow, living alone by herself. Serving to the most needy people, SEEDS could establish the trust with the local communities, and demonstrated the earthquake safety features in the model house. The village reconstruction was done in a participatory planning process, with demonstration of locally applicable technology, and other needs. The key feature of the process was establishment of the mason association, which started with 20 trained masons, and gradually evolved to more than 450 masons over next 5 years. A close cooperation was established with the skill-training department of the state government, which provided the certificates to the trained masons, and a MOU (memorandum of understanding) was signed with the local construction companies to hire trained masons, which will enable the sustainability and application of acquired skills.

Similar post-disaster recovery activities have been observed in Sri Lanka, where an eco-village was established by Sarvodaya, the largest NGO network in the country. The eco-village was developed to accommodate the relocated communities from different villagers. The collective eco-activities in the communities (like waste composting, rain water harvesting, garden vegetables, eco-education in schools) have been found to be effective in binding the communities in relocated area. Analysis has shown (Abe et al. 2012) that the post disaster relocation can be sustainable, if it is linked to the local communities collective actions (here, environment and eco-actions). This activity is linked to other disaster preparedness activities, including early warning system, hazard mapping, resource mapping and safer village planning etc.

After the Kobe earthquake of 1995, a group called NGO Kobe started its voluntary activities, and initially focused on the temporary shelter issues. Immediately after the earthquake, the victims who lost their houses were mobilized to the elementary schools, where there was a shared life-style for almost 2 months. Government prepared temporary shelters with the cooperation of different voluntary organization. This NGO group was involved in different counseling activities, including the problems of the aged and disable people till 1998. In 1998, they formed this NGOs Kobe as an organization and coordination center for the NGO groups in Kobe and adjoining areas. Although there has been improved coordination between government and NGO, it is found that the NGOs, being independent organizations, rarely coordinate and share information. Thus, it is a significant achievement in the sense of cooperation and networking (Shaw 2003). To disseminate its experiences of the rehabilitation and reconstruction, the group has done work in different countries, in different disasters, including the major earthquakes of Turkey, Taiwan and India. After each major earthquake, the group makes fundraising efforts through its member organizations, and put that fund into the rehabilitation activity in the affected areas.

Post disaster activities are also classic opportunities to enhance civil society activities in many countries. After the 1999 central Vietnam historic flood, the country saw an influx of NGOs and CBOs (community based organizations), working in the relief and recovery activities, and gradually expanding their work in the pre-disaster preparedness. Mostly, they were the International NGOs (INGOs), who expanded their networks in the disaster related activities, from the traditional poverty reduction and/or social protection programs. Currently, there is a national NGO platform, which often interact with the national government and the international donor agencies, and often conduct joint need assessment after the major disasters. In many cases, these international NGOs and some emerging national NGOs work closely with the CBOs like farmer association, women association, and youth association etc. to enhance the outreach to the local communities.

After the Indian Ocean Tsunami of 2004, Aceh saw a huge influx of civil society actions. Indonesia, with a transition to decentralization, has been focusing on enhanced civil society activities in Post Surhato period from 1998 onward. The disaster management field saw tremendous increase of civil society actions in post disaster recovery in Aceh with different specialization from urban planning to safer housing to livelihood supports. This effort leads to different levels of innovations and eventually, the civil society played an important role on the formulation of disaster management law of the country. Also, the ministerial conference on disaster risk reduction in 2012 saw the largest number of civil society participation in Yogyakarta. Similar observations were also made in Myanmar after the 2008 Nargis Cyclone. In the strict military regime, where the civil society role was rather restricted, the huge demand of recovery process led the government to lift its restriction gradually, and made collaborative partnership with the civil society organizations. With their deep penetration to the local communities, the NGOs like METTA provided strong support to the government in the recovery process, especially in the remote community in the delta regions.

Another prominent example of enhancing role of civil society in strong state is that of China after the Wenchuan earthquake of 2008. For the first time, the NGO had de facto approval from county-level administrators to work locally, and its staff members were able to establish close relationships with rural schools, and gain the confidence of villages that recognized and appreciated the work they did (Menefee and Nordtveit 2012). Two important social changes happened in China in after the earthquake. First, a very important step was towards changing the legal system in the NGO sector even if the situation of NGOs seems to have regressed since the earthquake. It has been technically illegal to donate to NGOs, but donations were de facto acceptable after the earthquake, which was the first time the Chinese population has collectively donated important financial support to relief effort. Second, volunteering (a trend that was already building especially amongst university students) became a part of the socio-political discourse and NGOs will almost certainly play a role in expanding volunteer opportunities for Chinese citizens in the future. In fact, it appears that this is where many NGOs see the future of their growth.

1.4 Book Structure

With the above context of the role of civil society in disaster risk reduction in Asia, the book adopts the Hyogo Framework for Action (HFA) to develop the chapters. HFA talks about five priority areas, and the chapters in the book are somehow chosen to fit into this structure. Table 1.1 summarizes these chapters as per the HFA priorities. For each of the HFA priority, there is one general/overview section on identifying the roles of Civil society organizations in those sector, plus there are some specific examples.

Chapters 2–4 are on **HFA 1**. Chapter 2 describes the importance of political commitment in disaster risk reduction (DRR) is addressed as the first priority of the Hyogo Framework for Action (HFA). Primary responsibility on its implementation rests with states, however, there are many case studies of collaboration with the governments and Civil Society Organizations (CSOs) in order to develop or facilitate the institutional mechanism for DRR. Some progress has been made in some of the Asian countries by restructuring the government agencies and developing the national policies and regulation for DRR. This chapter will review how the policy and advocacy can make differences and progresses in the current DRR capacity and highlight the major issues that the DRR stakeholders are facing to improve the policy and advocacy. Chapter 3 describes the process of Strategic National Action Plan in Afghanistan, which aimed at peace and stable Development in the country, and has been drafted and presented in March 2011. This was among the first activities done by national DRR platform in Afghanistan, which was launched on February 28th 2010. The structure and strategy was very uniquely bottom-up approach with inclusion of central governmental buy-in.

Table 1.1 Outline of the chapters according to HFA priority areas

This chapter: overview and introduction of CSO's role in DRR				
HFA-1: <i>Institutionalization</i>	HFA-2: <i>Risk assessment</i>	HFA-3: <i>Education and knowledge</i>	HFA-4: <i>Underlying risk factors</i>	HFA-5: <i>Response and recovery</i>
Chapter 2: Policy in general	Chapter 5: Risk and vulnerability assessment	Chapter 7: Education in general	Chapter 9: Cross cutting issues in general	Chapter 13: Community based response
Chapter 3: Policy: Afghanistan	Chapter 6: Risk assessment in Nepal	Chapter 8: Education in Myanmar, Vietnam and Japan	Chapter 10: Micro-finance in Bangladesh	Chapter 14: Response and recovery in India
Chapter 4: Policy: Indonesia			Chapter 11: Ecosystem in India	
			Chapter 12: Disabilities	
Chapter 15: Key lessons and findings				

However, there were both successes and challenges. The chapter seeks to examine what went well and what needed further attention/improvement in terms of the impact of the activities as well as the sustainability side. Chapter 4 describes another example of role of CSO in development of disaster law in Indonesia. CSOs led by MPBI (Indonesian Society for Disaster Management) played a significant role especially in coordination between the Parliament and CSOs to advocate the need of the Disaster Management Law in Indonesia. As the result, in 2007, the Disaster Management Bill No. 24/2007 was enacted in Indonesia. This chapter highlights the contribution and involvement of CSOs to the policy development and reviews the process by sharing the case study of MPBI.

Chapters 5 and 6 are on **HFA 2**. Chapter 5 talks about the role of CSO in risk assessment. Civil society organizations have promoted and developed participatory approaches in risk assessment and risk reduction planning with at-risk communities. Participatory risk assessment (hazard, vulnerability, capacity, and people's perception of risk) unites the community with local government and other stakeholders in common understanding of the disaster risks in the locality. It is the sound basis for commitments, plans and actions of a wide range of short, medium, and long-term risk reduction at the community and local level. This chapter will elaborate on the developments of concepts and practice of participatory risk assessment and risk reduction planning as key components of community based disaster risk management. Chapter 6 presents the methods and lessons of successful cases of earthquake risk assessment and vulnerability reduction in Nepal where non-engineered constructions prevail, and implementation of building code suffers on one hand from low level of earthquake awareness among the creators of vulnerabilities and, on the other hand, a gradual decay of indigenous knowledge and wisdom on earthquake resistant constructions.

Chapters 7 and 8 are on **HFA 3**. Chapter 7 analyzes the role of CSO in education and knowledge related to DRR. There are various projects and programmes on disaster risk reduction (DRR) education conducted by Civil Society Organizations (CSOs) in Asia. The targets of these activities include different stakeholders such as government officials, CSOs, teachers, students, corporate sectors and communities. In this chapter, the case studies of DRR education programmes for different stakeholders are examined and the achievements and challenges in DRR education are analyzed. Chapter 8 attempts to clarify roles and challenges of CSOs in DRR education and training through case of projects in Myanmar, Vietnam and Japan conducted by SEEDS Asia, a Japan-based CSO, which focuses on (1) school-based activity, (2) training of trainers (ToT), (3) implementation with local officials.

Chapters 9–12 are on **HFA 4**. Chapter 9 focuses on cross cutting issues, mainly on underlying risk factors. Disaster risk reduction (DRR) requires to be discussed and considered in conjunction with cross cutting issues such as development, food security, environment, health, etc, and is not a single issue to be dealt with only among disaster managers. Disaster risks need to be managed across multiple sectors. This chapter highlights the major cross cutting issues related to DRR and analyzes how each cross cutting issue makes a difference and impact on

strengthening the DRR capacity. The roles of CSOs in cross cutting issues are also examined. Chapter 10 specifically talks on micro-finance and risk reduction. There are a number of Microfinance Institutions (MFIs), which operate development programs in almost every part of Bangladesh including coastal areas. The essential role of microfinance in poverty alleviation has been examined by several researchers. This chapter will cover the role of CSO in micro-finance, with specific focus on disaster risk reduction in Bangladesh. It is expected that the outcome of this research will give pragmatic guidance to the current efforts of MFIs and thus contribute to enhance the ability of coastal community to withstand against disasters, to prepare for disasters and to recover from disasters efficiently and promptly. Chapter 11 describes ecosystem and risk reduction. Mangrove forests are one of the critical coastal ecosystems that are increasing seen as an effective mean of climate change adaptation vis-à-vis disaster risk reduction in coastal areas. However, globally the very own existences of mangroves are extremely challenged due to unsustainable practices of forest exploitation, severe deforestation and increased demand for land despite of significant legislative protection. Many South & Southeast Asian countries have recently looked up to community based mangrove management as an ameliorative management. Likewise in India, Joint Mangrove Management or community-based co-management came into existence since late 1990s. One of the key components of Joint Mangrove management was the involvement of environmental and developmental NGOs/CBOs to facilitate community actions and spreading community awareness. While in many cases, NGO driven mangrove management provided satisfactory conservation, yet, there are certain issues that needs to be incorporated further into overall management. Under this backdrop, the chapter critically examines the role of national and international NGOs in the decentralized regime of mangrove management in India. Chapter 12 describes another important issue on disability education. The chapter draws on practitioner experience and research of implementing large-scale DRR education projects for people with disability between 2007 and 2012 in Indonesia. The current state of play regarding disability and DRR policy and an explanation for the lack of engagement by DRR actors in the field are outlined. The chapter argues that the vocabulary of participation and inclusion within DRR can only be meaningful, if supported by practical actions at the practitioner and policy-making.

Chapters 13 and 14 are on **HFA 5**. Chapter 13 describes on community based responses, the general issues of CSOs. Community members can be the first responders to disasters. Whether the initiatives of effective disaster response and recovery are carried out by communities or not depends on their response preparedness capacity and their community resilience. In this chapter, the definition of resilient community is reviewed and it is analyzed that how community resilience can contribute to better response and recovery and how community and Civil Society Organizations (CSOs) are working together to strengthen their preparedness capacity. Chapter 14 focuses on Indian example of community based recovery process. The chapter deals with the two projects set in the post disaster scenario of Kosi floods in year 2008, in State of Bihar, India. The chapter

depicts the experience of the authors, who have faced the challenges during its implementation, specifically while linking recovery to larger rehabilitation and mainstreaming DRR process in the developmental plans of the state. The chapter realizes the fact that while the key identified areas such as shelters and health were important, it was more important that these sectors were also assessed in light of the prevalent socio economic conditions, eco systems and governance. The chapter also lays emphasis on the need to strengthen the resilience of the communities through knowledge enhancement and training and capacity building.

Finally, Chapter 15 analyzes all the findings from the previous chapters, and will develop a framework of CSO involvement in DRR activities with focus on: (1) policy, advocacy, (2) knowledge, education and training, (3) risk and vulnerability assessment, (4) community based response recovery, and (5) cross cutting issues (micro-credit, climate change, disability etc.).

Acknowledgements The authors acknowledge support of different forum to gather the knowledge on disaster risk reduction, especially the role of civil society, which is highly acknowledged.

References

- Abe M, Shaw R, Takeuchi Y (2012) Can eco-village be a “*Build Back Better*” strategy after tsunami disaster? In: Environment disaster linkages. Emerald Publisher, Bingley, pp 257–283
- Causins W (1991) Non-governmental initiatives in ADB. The Urban Poor and Basic Services in Asia and the Pacific, Asian Development Bank, Manila
- Chatterjee P (2001) On civil and political societies in post-colonial democracies. In: Kaviraj S, Khilnani S (eds) Civil society: history and possibilities. Cambridge University Press, Cambridge, pp 165–178
- IDNDR (1994) Yokohama plan of action for a safer world. Accessed from http://www.unisdr.org/files/8241_doc6841contenido1.pdf. Accessed 23 Dec 2013
- Khilnani S (2001) The development of civil society. In: Kaviraj S, Khilnani S (eds) Civil society: history and possibilities. Cambridge University Press, Cambridge, pp 11–32
- Luna EM (2000) NGO natural disaster mitigation and preparedness: the Philippine case study, report for research project ‘NGO Natural Disaster Mitigation and Preparedness’, 46 pp
- Menefee T, Nordtveit BH (2012) Disaster, civil society and education in China: a case study of an independent non-government organization in the aftermath of the Wenchuan earthquake. *Int J Educ Dev* 3:600–607
- Sakya TM (2000) Role of NGOs in the development of non formal education in Nepal. *J Int Cooper Educ* 3(2):11–24
- Shaw R (2003) Role of non-government organizations in earthquake disaster management: as Asian perspective. *Regional Disaster Dialogue* 24(1):117–129
- Shaw R (2014) Kobe earthquake: turning point of community based risk reduction in Japan. In: Shaw R (ed) *Community Practices for disaster risk reduction in Japan*. Springer, Tokyo, pp 21–31
- Shaw R, Goda K (2004) From disaster to sustainable community planning and development: the Kobe experiences. *Disaster* 28(1):16–40

- UN (2000) NGOs and global policy-making. Available at <http://www.globalpolicy.org/ngos>. Accessed 30 Dec 2013
- Wikipedia (2014a) Accessed from http://en.wikipedia.org/wiki/Civil_society. Accessed 3 Jan 2014
- Wikipedia (2014b) Accessed from <http://en.wikipedia.org/wiki/Non-profit-organization>. Accessed 3 Jan 2014
- World Bank (1991) Nongovernmental organizations and civil society overview. Available at <http://docs.lib.duke.edu/igo/guides/ngo/define.html>. Accessed 23 Dec 2013

Chapter 2

Role of Civil Society Organizations in Policy and Advocacy in Risk Reduction

Takako Izumi and Rajib Shaw

Abstract There were major development in policy and advocacy in disaster risk reduction (DRR) at international, regional and national levels in the last decade. The Hyogo Framework for Action (HFA) was adopted in 2005 at the UN Conference on Disaster Reduction and the ASEAN Agreement on Disaster Management and Emergencies Response (AADMER) was ratified in 2009. Civil Society Organizations (CSOs) made a great contribution to advocating the gaps in implementation of the HFA between national and local levels on the Views from the Frontline (VFL) report and to bringing up these grassroots voices by the Asian Disaster Reduction and Response Network (ADRRN) to the higher level through the international and regional events. In such circumstance, the role and expectation on national and local CSOs in policy making process and its advocacy is increased, and the opportunity for them to bring up their voices and highlight their concerns is expanded.

Keywords Advocacy • Civil Society Organizations • Disaster risk reduction • Local level

2.1 Introduction

In the last decade, two major initiatives in policy and advocacy of disaster risk reduction (DRR) were taken at international and regional levels. One is the Hyogo Framework for Action (HFA) adopted by 168 countries at the United Nations

T. Izumi (✉)

International Research Institute of Disaster Science, Tohoku University, Sendai, Japan
e-mail: izumi@irides.tohoku.ac.jp

R. Shaw

Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: shaw.rajib.5u@kyoto-u.ac.jp

World Conference on Disaster Reduction (UNWCDR) held in Kobe, Japan in 2005. The second one is the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) ratified by all ten ASEAN member countries in 2009. The HFA provides a clear set of critical tasks that should be performed at the national, regional and international levels to ensure its implementation and follow-up. On the other hand, the AADMER is highlighted as the first legally-binding agreement that pushes the HFA agenda.

Towards 10 years after the HFA was adopted in 2005, more and more interests and attentions have been directed to DRR issues and the post-HFA after 2015. It was proved by the rapid increase of the number of the participants at the Global Platform for Disaster Reduction (GPDR) that is the largest international conference to discuss DRR issues. The total number of the participants in GPDR held in May 2013 was announced approximately 3,500 while the number of the participants at the first GPDR held in 2005 was 1,171. The stakeholders involved in DRR have been further diverse in the last few years with strong participation of private sectors and parliamentarians who have not been seen as traditional DRR actors earlier. Gailard (2010) highlights that the recent impact and attentions to climate change made a powerful influence on the paradigm shift to the DRR and vulnerability and other underlying causes-focus. At the same time, it is considered that several international sectoral agreements indirectly supported the need of DRR efforts, such as the Convention of Biological Diversity, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Convention on the Protection and Use of Transboundary Water courses and International Lakes (Water Convention) and the Ramsar Convention on Wetlands (Lolosa and Zodrow 2011).

Based on these international and regional frameworks and paradigm shift, there are initiatives and progresses by national governments in Asia to develop a new DRR related policy that emphasizes the importance of strengthening the DRR capacity of national and local governments. These frameworks played an important role to raise awareness and advocate the demand of DRR efforts especially by governments. In addition, Civil Society Organizations (CSOs) made a critical role to play to accelerate the process in cooperation with governments. This chapter, based on these two initiatives, examines the progress in the area of policy and advocacy in DRR, and the roles of CSOs in progressing in this area.

2.2 Hyogo Framework for Action

The Hyogo Framework for Action (HFA) addresses that DRR is a national and local priority with a strong institutional basis for implementation. In order to assess the progress of this priority, some indicators are suggested to achieve as follows by UNISDR (UNISDR 2005):

- A legal framework for DRR exists with explicit responsibilities defined for all levels for government

- A national multi-sectoral platform for DRR is operational
- A national policy framework for DRR exists that requires plans and activities at all administrative levels, from national to local levels
- Dedicated and adequate resources are available to implement DRR plans at all administrative levels

After 5 years of the adaptation of the HFA, the Mid-Term Review report was issued by UNISDR. The report analyzes that there have been certain progresses in the development of policy and legislation and in strengthening multi-sectoral institutional systems and platforms. For instance, the number of the national platforms officially recorded increased from 38 in 2007 to 73 in February 2011 (UNISDR 2011). Lolosa and Zodrow (2011) identify four elements that trigger the development of DRR legislation: major disasters, political shifts, engagement of particularly dynamic individuals, a well-educated and participative population.

The effectiveness of the national platforms was examined by Djalante (2012). It was concluded that the multi-stakeholder platforms play an increasingly important role in DRR, in particular, in improving coordination between multiple stakeholders working at different levels. The mechanism is a useful form of adaptive governance and creates a space for learning and sharing among different stakeholders. In the long run, such a platform needs to be strengthened with new alliances with local actors and governments, young people, children, CSOs as well as private sectors.

By 2011, 48 countries from all over the world reported substantial achievements in developing national policy and legislation for disaster management. Importantly, almost half are low or lower-middle income countries although most of national legislation for disaster management does not necessarily include DRR orientation (Pelling and Holloway 2006). On the other hand, the challenges in the decentralization of responsibilities and financial resources for DRR as well as the systematic involvement of communities in the development of strategic plans for DRR are addressed.

It will not be sufficient to evaluate the true progress of DRR only by the number of the policies and platforms developed. Amendola et al. (2008) addresses that the commitment and capacity of the government to implement policies and support platforms are rather important. In addition, the structure and composition of the platforms need to be strategic. The participation and involvement of practitioners in the different fields such as public policy makers at the national and community level, and community and CSO representatives is extremely important. Knowledge, regulations, codes, and other policy measures are of little use without effective implementation. The cases of Indonesia and the Philippines show the strong commitment by the governments in implementation of policies and those cases are shared in the later part of this chapter.

Other concerns in relation to policies are raised from different perspectives. Gailard (2010) addresses that in many countries, disaster and development policies and practices still reflect the influence of the characteristics of natural hazards, not reflecting the element of vulnerability, capacity and resilience. These policies are

Table 2.1 Overview of GAR and VFL

	Cycle	Publisher	Source	Objective
GAR	Biennial	UNISDR	Inputs and reporting by countries and organizations	It contributes to achieving the HFA through monitoring risk patterns and trends and progress in DRR while providing strategic policy guidance to countries and the international community
VFL	Biennial	GNDR	Interviews with local governments, CSOs and communities	It is to support and complement the HFA review process and to connect policy formulation at the international and national levels with the realities of policy execution at the local level

primarily geared towards the extreme dimension of only natural phenomena. Alexander (2002) also emphasizes that in many countries disaster policies are handled by the army or civil protection institutions, relying on military chains of command and treating climate-related and other natural hazards as enemies to fight against, not paying necessary attentions to the underlying causes.

The result of implementation and commitment of governments are analyzed in the Global Assessment Report (GAR) (Table 2.1) and the HFA mid-term review issued by UNISDR. The HFA mid-term review concluded that CSOs and community practitioners have increasingly become involved in supporting HFA implementation (UNISDR 2011). CSOs can provide a vehicle for bringing insights from the grassroots, a mechanism for the representation of popular views, and the potential for popular legitimacy and oversight (Pelling and Holloway 2006).

The development of the Views from the Frontline (VFL) report was initiated by the Global Network of Civil Society Organizations for Disaster Reduction (GNDR) in 2009. VFL is a research and learning project based on the views of over 7,000 local government officials, CSOs and community representatives from 47 countries (Table 2.1). It brought together to monitor the progress being made in implementing disaster reduction activities at the frontline. Over 400 organizations have conducted face-to-face interviews with 5,290 people. It made VFL the largest independent, global assessment of disaster reduction at the local level ever by providing “bottom-up” perspectives from the critical interface between local governments and at-risk communities. The VFL project was designed to support and complement the progress assessment in implementation of DRR at the national level in accordance with the HFA conducted by a national government (GNDR 2009). CSOs brought their collective voices from the grassroots in the HFA progress review report of VFL, and successfully identified the significant gaps between national and local DRR actions. It allowed comparisons to be made between the GAR national level findings and the views of people living and working at the grassroots where disasters strike.

The average score of the progress in the Priority 1 evaluated by national governments in 2009 is the highest among all the Priorities while the average

Fig. 2.1 Score of HFA progress (GNDR 2009)

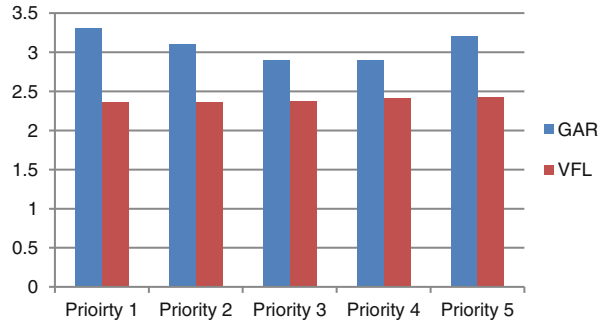
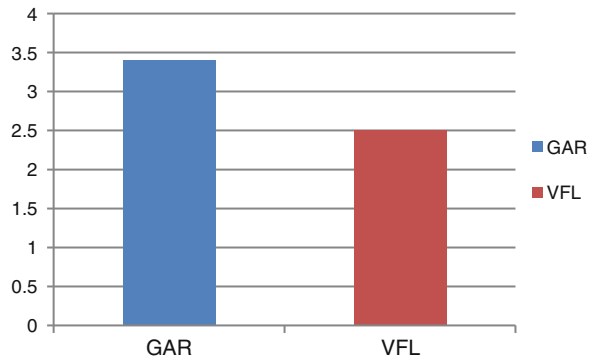


Fig. 2.2 Score of HFA progress in Priority 1 (GNDR 2011)



score in the Priority 1 evaluated by local stakeholders is the lowest (Fig. 2.1). The 2009 VFL report analyzed that “Nationally formulated DRR policies and plans are not generating widespread systemic change in local practices, and importantly, they are not engaging vulnerable and marginalized people as vital and active partners in building disaster-resilient communities” (GNDR 2009). As Amendola et al. (2008) points out, the main issue is that though many policies and regulations related to DRR have been developed at national level, the implementation of these frameworks at local level still requires further efforts and commitment.

Even in the VFL report issued in 2011, after 2 years from the last survey in 2009, the gap in the Priority 1 between national progress (measured by GAR at 3.4) and local progress (measured by VFL at 2.5) still persists (Fig. 2.2). The 2011 VFL report concluded that the reported progress at the national level does not automatically translate into effective disaster risk management at the local level (GNDR 2011). The same challenge was highlighted in the HFA mid-term review in 2011 that notable progress in setting up institutional structures and developing plans but much less on providing resources and local implementations (UNISDR 2011).

GNDR successfully addressed the gaps exist in implementation of legislation at national and local levels, and it is a significant contribution of CSOs in advocacy.

Three recommendations were included in the 2011 VFL report to enhance the implementation of the Priority 1:

1. Enhance inclusion and participation
2. Develop local capacity and capability
3. Enable greater accountability and transparency

In the Chair's summary issued at the Global Platform for Disaster Reduction held in May 2013, these three points were acknowledged as the actions that need to be further strengthened.

2.3 ASEAN Agreement on Disaster Management and Emergency Response

The ASEAN Agreement on Disaster Management and Emergency Response (AADMER) was agreed by the ASEAN members in 2005, however, it was December 2009 that it finally came into force. It is considered as an important step for the region since it is the first binding agreement on managing disasters regionally. ASEAN members committed themselves to take a more proactive approach to respond to emergencies through concerted national efforts and intensified regional and international cooperation. In addition, it required to carry out collaborative undertakings on disaster mitigation, prevention, preparedness not only on response and recovery. It focuses on DRR as well (ASEAN 2005).

This agreement was also promoted through the experiences of the Indian Ocean Tsunami in 2004, and built upon as the driving-force of the HFA which stresses the need to strengthen and when necessary develop coordinated regional approaches and create or upgrade regional policies, operational mechanisms, plans and communications systems to prepare for and ensure rapid and effective disaster responses (ASEAN 2005).

The agreement worked effectively: (1) in the response to the cyclone Nargis, (2) in the establishment of the AHA center, and (3) DRR projects supposed by ASEAN countries and secretariat. The ASEAN disaster management system was fully tested by Cyclone Nargis in Myanmar. This system was especially valuable because the government of Myanmar was reluctant to accept assistance from the UN and the World Bank. ASEAN was able to act as a bridge between Myanmar and the international community in the Post-Nargis Joint Assessment and in coordinating international assistance on recovery and reconstruction (UNISDR and UNESCAP 2010). It became a good practice and case study to review the major role of a regional organization and how they can play a critical role in coordination between international and national levels as a mediator in disaster preparedness and response. Morada (2011) and Gleason (2011) analyze that ASEAN's relationship with the government allowed it to play the role of non-political mediator between the government and the international community. ASEAN played an important role

to materialize the Tripartite Core Group (TCG) by ASEAN, the Myanmar government, and the UN in the response and recovery phases. The coalition made possible to launch the Post-Nargis Recovery and Preparedness Plan and contributed to strengthen the DRR initiatives in the country. Di Floristella (2013) also examines that the case of the cyclone Nargis confronted ASEAN with the opportunity to put into place the mechanisms set down under the AADMER and also showed ASEAN increasing its capacity of a collective response to a major disaster to provide for the internal security of its community. The mechanisms and tools under the AADMER were indeed tested and used in a real situation.

On the other hand, there are some concerns shared in terms of operational capacity of the ASEAN. Wang (2013) addresses that each country still has a strong focus on their national interest and only if it is damaged, the members are willing to devote themselves into emergency management collaboration. They even attempt to combine national interest and collective interest into management plan of disaster unity.

The ASEAN Co-ordinating Center for Humanitarian Assistance (AHA Center) was established in Jakarta, Indonesia and commenced in November in 2011. The agreement stated that “the AHA Center shall be established for the purpose of facilitating co-operation and co-ordination among the Parties, and with relevant United Nations and international organizations, in promoting regional collaboration” (ASEAN 2005). Since it has been only one and half years after its establishment, it is not suitable to assess the value of its establishment, however, it endeavors to receive and consolidate data as analyzed and recommended by the National Focal Points and serve as the office that facilitates the coordination among countries.

The concept of AADMER has been disseminated at local level through the efforts and contributions by CSOs. AADMER emphasizes the need of the involvement of “all stakeholders including local communities, non-governmental organizations and private enterprises, utilizing, among others, community-based disaster preparedness and early response approaches” in order to mainstream DRR efforts into sustainable development policies, planning and programming at all levels (ASEAN 2005). The AADMER Partnership Group (APG) was formed in 2009 to translate these principles of civil society engagement into practice by seven international NGOs, namely Oxfam GB, Plan international, Save the Children, HelpAge, ChildFund, World Vision and MERCY Malaysia. APG aims to support the ASEAN secretariat on two issues: reducing infant mortality and strengthening ASEAN’s humanitarian response and DRR strategies (ODI 2011). Although all the APG members are international NGOs, they try to collaborate with various CSOs in terms of organizing a training program and national workshops. APG aims to help further increase CSOs’ capacity to engage in implementing DRR projects in conjunction with the framework of AADMER and its concept. For 2012–2013, the project by APG will be conducted in Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines and Vietnam. The components of the projects include raising awareness of government and CSOs on AADMER, national DRR policies, strengthening the capacity of CSOs to utilize AADMER to inform DRR policies

and programmes, and enhancing the partnerships between ASEAN Member States and CSOs in implementing AADMER (ODI 2011).

Through the collaboration with ASEAN and the leadership of the APG, CSOs have been included in the regional framework as a crucial partner to implement AADMER and are expected the role of raising awareness and include the most vulnerable groups into DRR efforts. CSOs have become a strong driving force to put the regional policy framework into practice at local level.

2.4 Advocacy by a Regional CSO Network

CSOs play an important role in advocacy in policy and decision making processes. The Asian Disaster Reduction and Response Network (ADRRN) consists of more than 45 national and local organizations in Asia and the Pacific, and aims to raise the relevant concerns of CSOs to the larger community of CSOs globally through various international forums and platforms. The Network utilizes the international and regional events such as the Global Platform for DRR (GPDR) and the Asian Ministerial Conference on DRR (AMCDRR) for their advocacy work. ADRRN issued the plenary statement at GPDR in 2009. The point emphasized in the statement was “focused energy on education for disaster prevention through traditional knowledge”. The need of such education was reflected in the Chair’s summary of GPDR. It is not possible to justify that the importance of education was included in the summary due to the ADRRN’s statement, however, it showed that the point advocated by the Network has been a common goal among all the stakeholders.

Another advocacy opportunity to the Network was AMCDRR. The Network organized a technical session “Public awareness and education for DRR” in AMCDRR held in Malaysia in 2008. Their major recommendations were (1) mainstreaming DRR education in both formal and informal education and (2) committing to inclusive DRR education actively involving most vulnerable groups such as women, children, elderly and persons with disabilities. The recommendations were submitted to the Round-Table discussion at the Ministerial level and both points were included in the final recommendations submitted from the Ministries to the final declaration issued at the Asian Governments (AMCDRR 2009; ADRRN 2008). Although it is not clear whether these two points were included in the declaration due to the recommendations brought up by ADRRN, it proved that the direction and principles of ADRRN are facing to the same direction of other crucial stakeholders.

ADRRN also formed the Civil Society Task Force under the UNISDR Asia Partnership in 2011 and its mandate is to work as regional monitoring mechanism for progress made on commitments by stakeholders on DRR in Asia (ADRRN 2011). Through this Task Force, ADRRN managed to expand its network indirectly among CSOs at different level, not only the national and local CSOs, but also the international CSOs and other non-ADRRN member CSOs. Through this

task force, ADRRN put a great contribution to develop the statement of CSOs for the 5th AMCDRR as a part of the Yogyakarta Declaration. The statement referred to the VFL report and emphasized that a significant gap between national and local level action. It also concluded with the recommendations to all the AMCDRR participants to:

- (a) Reach out to all communities affected by both small and large scale disasters and address the underlying risk factors,
- (b) Enable and influence view points, policies, practices, and structures that facilitates local level implementation of DRR initiatives in a sustainable manner, and
- (c) Actively monitor the outcomes of the 5th AMCDRR.

2.5 National Initiative of Legislation: Case of the Philippines

In February 2010, the Republic Act (RA 10121) or the Philippines Disaster Risk Reduction and Management Act (DRRMA) of 2010 was enacted. The law acknowledged the need to adopt DRR and management approach that is holistic, comprehensive, integrated and proactive in lessening the socio-economic and environmental impacts of disasters including climate change, to promote the involvement and participation of all sectors and all stakeholders concerned at all levels and especially the local community (Government of Philippines 2010). In June 2010, Executive Order No. 888 was signed, adopting the strategic National Action Plan (SNAP) for the years 2009–2019. The SNAP serves as the road map for the Philippines to strategically implement DRR programs and projects both at the national and local levels. In addition, Administrative Order No. 1 was also issued directing the local government units (LGU) to adopt and use the DRR guidelines to enhance natural DRR efforts in the local development planning process (Israel and Briones 2012).

As shown in the case of Indonesia, CSOs played an important role in planning and implementing the law. Many CSOs are actively involved in advocacy for influencing national and local government units in their programme as well as in decision-making (Luna 2001). Polack et al (2010) emphasizes that CSOs are in a strong position in the Philippines and can take both single issues forward to higher levels of governments and represent local voices in national policy processes.

There were legislative bills on DRR filed in 1998 and while none were passed into law, these bills did help to move thinking towards preparedness and risk reduction as opposed to the principal focus of response (Christian Aid 2000). The DRR network of the Philippines (DRRNet)—a network of more than 300 institutions and individuals—was convened in 2008 to advocate for more national and local commitment to DRR and for law reforms. DRRNet targeted key DRR champions in congress to advocate for these non-negotiable to be incorporated

into the drafts of the new law. Brower and Magno (2011) discusses that the role and works of the DRRNet was significant in advocating for a DRR emphasis in pending disaster management bills in Congress. The Network eventually encompassed a membership of some 300 CSOs, communities, practitioners and advocates for the HFA and community-based disaster risk management practices. Their major activities included crafting of the legislation, participating in public hearings, conducting research for evidence-based presentations, conducting community education and awareness sessions, and providing media briefings.

Their contribution was also highlighted in the 2013 VFL report. “The HFA declaration in 2005, the presence of DRR champions in government, the consolidation of a loose network of community-based organizations, NGOs, academic institutions, faith-based groups and individuals into the DRRNet in 2008, and DRR policy dialogues which engaged grassroots community representatives, all built the impetus for the passage of the Philippine DRRMA in 2010” (GNDR 2013).

2.6 Conclusions

It is often considered that CSOs originally have strength in advocacy, and it is indisputable that CSOs have been successful at bringing new issues to higher level. CSOs have a variety of means available to influence, alter or reorient a country’s policies (Christoplos et al 2001). Gemmill and Bamidele-Izu (2002) identifies the major roles of CSOs in general: (1) information collection and dissemination, (2) policy development consultation, (3) policy implementation, (4) assessment and monitoring, (5) advocacy. In the field of disaster management, Korten (1990) analyzes the major roles of CSOs have been more and more shifted from response-oriented to development-oriented as the result of the focuses in disaster management have been directed the pre-disaster phase. Three major categories of works of CSOs were identified: (a) relief and welfare, (b) local self-reliance, and (c) sustainable systems development. The work by the first generation includes the direct delivery of services to meet an immediate needs for food, healthcare or shelter. Local self-reliance, on the other hand, includes the involvement of CSOs in capacity development with the intent that benefits would be sustained beyond the period of CSO assistance. It focuses on developing the capacities of the people to better meet their own needs through self-reliant local action. Systems development include the involvement in the larger institutional and policy context affecting and in participation in the process of policy formation by governments and multilateral organizations.

Clark (1995) also argues the roles and tasks of CSOs have changed. Originally, the initial role of CSOs was “supply side” such as relief, food provision etc. However, recently the role of “demand side” was more prominent. CSOs are expected to represent the voice of the weak and help them organize in their communities to achieve a more powerful voice in the making of decisions and the allocating of resources. The moving from supply-side to demand-side activities

requires developing new skills, partnerships and ways of working in order to help communities articulate their concerns and preferences, to maneuver into a negotiating position with official bodies. This means that CSOs need the capacity development of their own knowledge and skills to fulfill the demand of their support. If CSOs were not able to reach that level, their works to be provided may not match the needs and the value of their works may be limited. At earlier stage, the roles of demand side were expected to be conducted rather by Northern CSOs. Nyamugasira (1998) examines that Southern CSOs more effectively hear and represent the authentic voices of the poor, while Northern CSOs are better able to articulate their concerns to governments, multinational corporations, and global institutions.

However, the recent initiatives and efforts by national and local CSOs in Asia and the Pacific proved that the southern CSOs even can pursue the roles in both hearing the voices and addressing the needs and concerns to higher level. CSOs that participate in the VFL project and ADRRN are national and local CSOs and have made a great contribution in advocacy and policy planning. ADRRN made a success in highlighting the needs and concerns at the grassroots level through the international and regional platforms such as the Global Platform for DRR and the Asian Ministerial Conference on DRR. The VFL report succeeded to address the gap in the DRR progresses between national and local levels, and to obtain the attentions to the DRR capacity and progress at local level. These tremendous achievements were made by the networks of national and local CSOs and their contributions should not be minimized.

In addition, the discussion on the HFA 2 (the revised HFA discussed at the UN World Conference on DRR in March 2015 in Sendai, Japan) is currently very active. In this process, CSOs have a crucial responsibility to emphasize the importance of local actions in DRR for the next decade. Seven areas have been identified as important in Asia and the Pacific for further discussion and exploration in the region. The seven areas include:

1. Building community resilience
2. Sustainable development, climate change and DRR integration
3. Local level action
4. Women as a force in resilience building, gender equity in DRR
5. Reducing exposure/underlying risk factors
6. Strengthening risk governance and accountability
7. Incentivizing DRR in the private sector.

Out of seven key areas, two of them clearly pointed out the focus on the local levels—building community resilience and local level action. Furthermore, the emphasis on the role of women in DRR is addressed. It is clearly observed the shift of their viewpoint and intention from national to local level. In such circumstance, the role and expectation on national and local CSOs will be increased. The opportunity for them to bring up their voices and highlight their concerns and to contribute to the policy making process and its advocacy will be expanded.

References

- ADRRN (2008) Recommendations to the 3rd AMCDRR from HLRT 6. Unpublished internal document. ADRRN, Kuala Lumpur
- ADRRN (2008, 2009, 2010, 2011) ADRRN annual report. Unpublished internal documents. ADRRN, Kuala Lumpur
- Alexander D (2002) From civil defense to civil protection and back again. *Disaster Prevent Manag* 11(3):209–213
- AMCDRR (2009) Conference report: multi-stakeholder partnership for Disaster Risk Reduction from national to local. National Security Council, Government of Malaysia and Southeast Asia Disaster Prevention Research Institute, University Kebangsaan Malaysia (SEADPRI-UKM)
- Amendola A, Linnerooth-Bayer J, Okada N, Shi P (2008) Towards integrated disaster risk management: case studies and trends from Asia. *Nat Hazards* 44:163–168
- ASEAN (2005) ASEAN agreement on disaster management and emergency response
- Brower RS, Magno FA (2011) A Third Way in the Philippines: voluntary organizing for a new disaster management paradigm. *Int Rev Public Adm* 16(1):31–50
- Clark J (1995) The state, popular participation, and the voluntary sector. *World Dev* 23(4):593–601
- Christian Aid (2000) Partnering for resilience: reducing disaster risks through effective partnership
- Christoplos I, Mitchell J, Liljelund A (2001) Re-framing risk: the changing context of disaster mitigation and preparedness. *Disasters* 25(3):185–198
- Di Floristella AP (2013) Are non-traditional security challenges leading regional organizations towards greater convergence? *Asia Euro J* 11:21–38
- Djalante R (2012) Adaptive governance and resilience: the role of multi-stakeholder platforms in disaster risk reduction. *Nat Hazards Earth Syst Sci* 12(9):2923–2942
- Gailard JC (2010) Vulnerability, capacity and resilience: perspectives for climate and development policy. *J Int Dev* 22:218–232
- Gemmill B, Bamidele-Izu A (2002) The role of NGOs and civil society in global environmental governance. In: Esty D, Ivanova MH (eds) *Global environmental governance: options and opportunities*. Yale Center for Environmental Law and Policy, pp 77–100
- Gleason M (2011) ASEAN's engagement in countries affected by conflict and crisis. In: Sherman J, Gleason M, Sidhu WPS, Jones B (eds) *Engagement on development and security: new actors*. New York University, New Debates
- GNDR (2009) Views from the Frontline: a local perspective of progress towards implementation of the Hyogo Framework for Action
- GNDR (2011) Views from the Frontline: local reports of progress on implementing the Hyogo Framework for Action
- GNDR (2013) Views from the Frontline: beyond 2015
- Government of Philippines (2010) Republic Act No. 101211
- Israel DC, Briones RM (2012) Impacts of natural disasters on agriculture, food security, and natural resources and environment in the Philippines. In: Sawada Y, Oum S (eds) *Economic and welfare impacts of disasters in East Asia and policy responses*. ERIA Research Project Report 2011-8. ERIA, Jakarta, pp 547–593
- Korten DC (1990) *Getting to the 21st century: voluntary development action and the global agenda*. Kumarian Press, West Hartford
- Lolosa S, Zodrow I (2011) Global assessment report on DRR: DRR legislation as a basis for effective adaptation. UNISDR
- Luna EM (2001) Disaster mitigation and preparedness: the case of NGOs in the Philippines. *Disasters* 25(3):216–226
- Morada N (2011) The role of regional and subregional arrangements in strengthening the responsibility to protect: ASEAN and the ARF. The role of regional and subregional arrangements in strengthening the responsibility to protect. The Stanley Foundation
- Nyamugasira W (1998) NGOs and advocacy: how well are the poor represented? *Dev Pract* 8(3):297–308

ODI (2011) Humanitarian exchange 50. Humanitarian Practice Network

Pelling M, Holloway A (2006) Legislation for mainstreaming disaster risk reduction. Tearfund

Polack E, Luna EM, Dator-Bercilla J (2010) Accountability for disaster risk reduction: lessons from the Philippines. CDG Working Paper 2

UNISDR (2005) Words into action: a guide for implementing the Hyogo Framework for Action 2005–2015. United Nations

UNISDR and UNESCAP (2010) Protecting development gains. The Asia Pacific Disaster Report

UNISDR (2011) Hyogo framework for action 2005–2015: mid-term review 2010–2011. United Nations

Wang J (2013) Post-disaster cross-national mutual aid in natural hazards: case analysis from sociology of disaster and disaster politics perspectives. *Nat Hazards* 66:413–438

Chapter 3

Disaster Risk Reduction National Platform and Strategic National Action Plan in Afghanistan

Takeshi Komino

Abstract On February 28th 2010, Afghanistan launched its first National Platform for Disaster Risk Reduction. This Platform was established with bottom-up approach which ensured representation from various stakeholders were in place while keeping the central function to be coordinated by the country's mandated agency, Afghanistan National Disaster Management Authority. One of the first activities undertaken by the Platform was to establish Strategic National Action Plan for Disaster Risk Reduction for Afghanistan. This Strategic National Action Plan is focusing on DRR with the link with peace building and a stable development. The SNAP has six objectives—with three under each goal. To attain the six objectives, the Action Plan consists of seven major programmes/projects that serve to link the related on-going and future actions/activities within the Afghanistan National Development Strategy framework. The main factor of success for establishment of the National DRR Platform and SNAP was its participatory approach which enabled DRR Platform members to feel there is “mutual benefit” by participating in the coronation structure and its future plan. SNAP is 93 page document which articulates specific projects under each specific objectives, and implementation is expected to be conducted by the National DRR Platform members; a motivation factor indeed to be part of the process.

Despite above successes, there were also challenges. The first challenge was how to create enabling environment to implement SNAP, in financial sense. As all members of DRR Platform were fully engaged in establishing SNAP, the fundraising aspect was left for several agencies to handle. The lesson from this challenge would be that fundraising is done simultaneously as the establishment of the plan because after plan is made, environment needs to be there to actually implement it. Additionally, there are lessons to be learnt from organizational perspective. Ensuring continuity in momentum and facilitation would require

T. Komino (✉)
Church World Services-Asia Pacific, Bangkok, Thailand
e-mail: takeshiKomino@gmail.com

continued investment from coordinating organization in terms of financial, human resource, and general dedication by the organization's senior management.

The world is moving towards putting more emphasis on DRR. To ensure that the next phase of international DRR framework (HFA2) achieve the intended results, underlying risk factors need to be tackled with strategic partnership among different parts of the society. For this, example of bottom-up approach to coordinate DRR efforts in Afghanistan can be a reference to establish such strategic partnerships in the region.

Keywords Afghanistan • Afghanistan National Disaster Management Authority • Disaster risk reduction • Disaster risk reduction platform • Strategic National Action Plan

3.1 Introduction

The importance of DRR cannot be overstated as Afghanistan is a land-locked country which is prone to various types of disasters, both natural and human-made. As per Afghanistan National Disaster Management Authority (ANDMA) (2011), common natural hazards in Afghanistan include earthquakes, flood, drought, landslide, sandstorm, avalanche, locus attack. Natural hazards continue to wreak havoc to many communities bringing them potential conditions to developing extensive risks (Table 3.1). Extensive risks are risks that are widespread and associated with the exposure of dispersed populations to repeated and persistent hazard conditions of low or moderate intensity; they may eventually lead to debilitating disaster impacts. In the midst of activities related to the formulation of the Strategic National Action Plan for Disaster Risk Reduction: Towards Peace and Stable Development (SNAP), floods killed 120 people, injured 200 others, destroyed hundreds of houses, and washed away thousands of hectares of farmland in 14 of the country's 34 provinces in May 2010. Earthquake, flood, mudslides,

Table 3.1 Top 10 disasters in Afghanistan between 1900 and 2010

Disaster	Date	No. of total affected
Drought	May 2000	2,580,000
Drought	July 2006	1,900,000
Mass movement wet	13 January 2006	300,000
Drought	5 October 2008	280,000
Flood	July 1978	271,684
Flood	January 1972	250,000
Epidemic	January 2002	200,000
Storm	5 January 2008	170,684
Flood	June 1988	161,000
Earthquake (seismic activity)	30 May 1998	116,935

Source: [EM-DAT](#): The OFDA/CRED International Disaster Database. Université Catholique de Louvain, Brussels, Belgium. www.em-dat.net

snow melt, glacial melt, drought, dust storm, extreme weather events are among the major threats that can jeopardize gains made over the last few years. Recovering from an extended drought believed to have started in 1969, and reaching a critical state during 1997–2002. Hazard events potentially expose the poor to loss of livelihood; those communities that experience repeated losses may hinder recovery. Poverty and unemployment, as a 2009 study showed, are perceived by respondents in 14 provinces as the major driving factor of conflict. Disasters may drive people more and more to poverty, which creates a seedbed for discontent and eventually conflict.

In such challenging environment in the field of disaster management, there was a need to establish a focal agency within the Afghan government; ANDMA. Considering such a disaster prone environment, mitigation measures as well as coordination during emergency situation is extremely important for the country. ANDMA is a government body which is mandated to coordinate all disaster-related activities within the country along with key line Ministries, civil society, and international community. It is under 2nd vice president, and recognition of importance of the function of this institution/mandate is widely acknowledged. Historically speaking, it was established in 1971, with the help of United Nations Disaster Response Office (UNDRO), and approval of national commission for disaster management with more than 20 Ministries followed the establishment. It possesses functions such as coordinator/facilitator of national disaster management commission, as well as vital information hub called National Emergency Operation Center (NEOC).

In addition to the natural disasters, there are numerous human-made disasters in Afghanistan which include suicide bombings, continuous conflicts, and unexploded ordinance. The volatile context of Afghanistan presents tremendous challenges to achieving peace and resilient development in the country. As it deals with reconstruction and recovery, Afghanistan is still constantly faced by emergencies, conflict and disasters. These pose a constant threat to any plan and the Millennium Development Goals (MDGs). Afghan government, with support from the international community has been struggling to bring normalcy to the lives of men, women and children and rebuild society and its institutions through the promotion of viable livelihoods, reliable health services, equal access to education, improvement of women's status, and the provision of other basic needs such as shelter, safe water and sanitation.

Given such context, Afghanistan's first National Disaster Risk Reduction (DRR) Platform was launched February 28th 2010. A National Platform for DRR is a nationally owned and nationally led forum or committee for advocacy, coordination, analysis and advice on DRR (UNISDR 2008). Usually, the National Platform for DRR has following objectives (UNISDR 2007):

- To serve as a coordination mechanism to enhance multi-stakeholder collaboration and coordination for the sustainability of DRR activities through a consultative and participatory process in line with the implementation of the HFA;
- To foster an enabling environment for developing a culture of prevention, through advocacy of and awareness-raising on DRR and the necessity and

importance of integrating DRR into development policies, planning and programmes; and

- To facilitate the integration of DRR into national policies, planning and programmes in various development sectors as well as into international or bilateral development aid policies and programmes.

The launching event was held at Intercontinental Hotel in Kabul Afghanistan on February 28th 2010, with over 200 participants. Initially, the event was planned in January, but due to number of security incidents, the event was forced to be postponed to above date. The launching of this platform was both symbolic and significant as it brought many different stakeholders together, which was the emphasis by Hyogo Framework for Action (HFA)'s Priority Action 1: ensuring that disaster risk reduction DRR is a national and a local priority with a strong institutional basis for implementation.¹ This DRR Platform was participated by over 65 organizations including government agencies, non-governmental organizations, civil society organizations, external support agencies (or international donor agencies), private sector and academic institutes.

Church World Service-Pakistan/Afghanistan (CWS-P/A) was serving as a focal agency in establishing of the National DRR Platform, with the aim for enhance coordination among the DR stakeholders for effective programming in the country. Its role started when it took on the role of National Coordinating Organization (NCO) for global civil society action research on the progress of HFA in 2009, called Views from the Frontline (VFL). Surveys were conducted to three broad categories of target groups which are local government officials, civil society organizations, and community representatives covering 13 Provinces in the country. The survey result from Afghanistan clearly showed urgency for action in coherent manner considering that Afghanistan is prone to many disasters including drought, floods, earthquakes, avalanches, etc. Average score on each of the key priorities were lower than 2 on a scale of 5 indicating poor understanding of disaster risks and how to tackle them at local grassroots level. As recommendations arising out of this survey result, the project team recommended the following:

- There needs to be a strong consensus among relevant stakeholders on where we are heading to, where we stand currently, and what are way forward with clear responsibility breakdown.
- ANDMA, as officially mandated institution for disaster management coordination, needs to enhance its coordination structure on DRR and disaster response.
- ANDMA needs to work closely with international community and civil society to enhance the country's systems and practices.
- Central government based in Kabul should play more role in letting their staff (based in Provinces) know about "how to make their communities resilient to disasters"; ANDMA can play facilitation role in this.

¹ For summary of HFA, please refer to <http://www.unisdr.org/we/inform/publications/8720>.

The result of VFL in 2009 gave urgency to Afghanistan's disaster environment which without coordinated efforts, no progress will be made. Thus, the creation of National DRR Platform was suggested, and implemented.

3.2 Afghanistan's First National DRR Platform and SNAP

The Significance of this Platform was the bottom up approach rather than top-down in which most agencies were used to when dealing with policy issues in Afghanistan. Empirical evidence shows that ownership across the disaster system in a country plays a key role in implementation of key policies. In Colombia, for example, decentralization of decision-making power represents "a turning-point in the country", which promoted and boosted the efforts in reducing disaster risks, and such committed DRR actions at local level escalated to the national level (UNISDR 2008). The case from Madagascar shows that multi-stakeholders involvement and ownership led to widely represented constituencies on evacuation and various types of drills (UNISDR 2008), and such outreach on population with different methods of mobilization techniques compliment the implementation of policies set at the central level. The importance of local level participation cannot be overstated as it is also clear from the case of Sri Lanka that communities, even when affected (by disasters), are still the first line of defence against disasters if they are well prepared (UNISDR 2008).

With such bottom-up approach, it focused on coordination of DRR actors in the country with central management role within ANDMA, which is the key Government agency mandated to coordinate disaster management in Afghanistan. As it took this bottom-up approach, coordination was seen to be need-based instead of being told what to do. With this, as opposed to past practice, DRR project ideas can be generated from the Afghanistan stakeholders themselves and no longer be donor-driven. Figure 3.1 was drawn during the initial discussion of scope and modality of the national DRR Platform, and it ensures that ANDMA is put at the center of all stakeholders with each stakeholder contributing with its unique strength and value addition.

The effectiveness of the National DRR Platform, from the experience, depends on whether coordinating agency can ensure that below:

- Enhances coordination—the coordinating structure allows all stakeholders to be kept in loop, and that key decisions are made jointly, or with proper consultations.
- Improves quality of programs—by sharing variety of information, coordination leaders to collaboration where stakeholders are able to share their success and best practices which enhances overall quality of DRR programs in the country.
- Enhances visibility—by ensuring that each stakeholder becoming a champion and giving such credit, coordination structure also gives chance of enhancing visibility for the participants, which then lead to high participation rate.

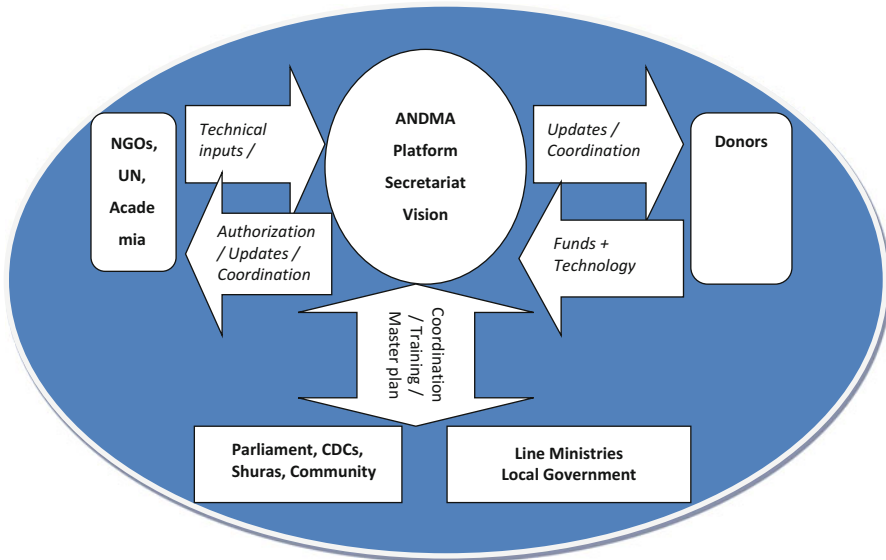


Fig. 3.1 DRR platform structure

After the official launch of the National DRR Platform, the first activity the Platform undertook was establishing Strategic National Action Plan: Towards Peace and Stable Development (SNAP). In principle, SNAP is a strategic direction and plan of action for reducing disaster risks and adapting to climate change, that is drawn through consultations among key stakeholders at all levels and built upon gains and lessons learned from disaster experiences in the country. Also the DRR interface with the peace building efforts is a latent force in national building. With this in mind, institutional capacity development at national and sub-national levels must proceed as the populace are kept out of harm's way, motivated and equipped by their own preparedness and with capable support from government and its partners. It is worth noting that funding to establish SNAP came solely within the National DRR Platform which can also be considered as an indicator for proactive participation by member agencies. Figure 3.2 shows areas of DRR activity by Platform members as reported in the DRR Database.

The SNAP document has been drafted and presented in March 2011. In order to formulate the SNAP, the results of the consultations through the multi-stakeholder workshop on the HFA during the period from February to November 2010 formed as the basis of the DRR strategic actions. SNAP's focuses were to (Table 3.2):

- Build upon existing DRR capacity building strategies and plans
- Seek benchmarks for the Afghanistan National Development Strategy (ANDS) along the lines of HFA
- Supplement to the National Disaster Management Plan (NDMP)
- Be agreed upon by all stakeholders involved in the National DRR Platform

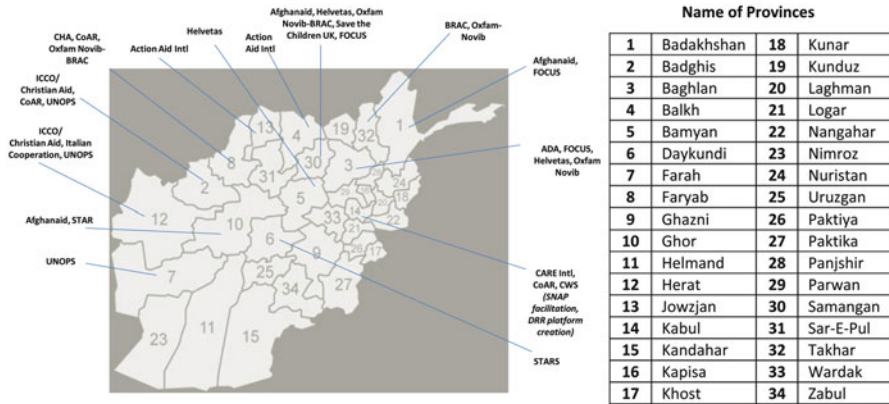


Fig. 3.2 Map of DRR activities by platform members

3.3 Brief Description of SNAP² (Goal, Objectives, Main Headers)

Focusing on DRR concerns that link with peace building and a stable development, the SNAP has six objectives—with three under each goal. To attain the six objectives, the Action Plan consists of seven major programmes/projects that serve to link the related on-going and future actions/activities within the ANDS framework. Having a 5 year span (2011–2015), it extends beyond the period of the current ANDS and can therefore provide future direction in certain areas, especially where little has been done.

Below is a summary of goals and specific objectives of SNAP document (excerpts from Strategic National Action Plan (SNAP) for Disaster Risk Reduction: Towards Peace and Stable Development).

Goal 1—Linkages enhancing social protection and inclusiveness towards social mobilization: focus on institutional and organizational mechanisms (both formal and informal) as well as capacity development which may include use of appropriate technology or hardware; outcomes serve to achieve multiple and/or generic functions that indicate good governance.

- Strategic Objective 1: To possess a stronger, comprehensive and contextualized mechanism for disaster management; **National Disaster Risk Reduction Capacity Building Programme (Timeline: 2011–2015):** *Improved co-ordination and knowledge sharing among all stakeholders at all levels; enhanced capacity among focal points in government agencies, local government, National DRR Platform members and ANDMA.*

²To download full SNAP document, please refer to <http://afg.humanitarianresponse.info/sites/default/files/SNAP-Final-version.pdf>.

Table 3.2 Chronology of events—Afghanistan national DRR platform

Date	Event	Outputs
2009		
March–April	Implementation of Views from the Frontline (VFL) 2009 survey	13 provinces (27 districts) covered in just 1 month with participation from 9 agencies (ADA, CCA, CHA/OHRD, CoAR, CWS-P/A, Helvetas, NPO, SC-S/N, STARS)
April 22nd, 23rd	Views from the Front-Line: National Consultative Workshop	VFL survey results shared and following keywords are re-emphasized: <ul style="list-style-type: none"> • <i>Enhance coordination mechanisms</i> • <i>Awareness raising/capacity building on disaster management</i> • <i>Integration of DRR into development programs</i> • <i>Strategic budget allocation</i> • <i>Strategic technology transfer and usage</i> • <i>Gender perspective/inclusive planning</i>
May 19th	Completion of National Report from VFL 2009	Country report finalized and sent to Global Network Secretariat to be included in the global report
June 3rd	Consultative meeting at ANDMA	Idea sharing on how to enhance coordination and what are mechanisms that can help have been held
June 15th–19th	Global Platform in Geneva	“VFL report moved agenda quite considerably”—by Margreta Wahlstrom, 40 country report has been presented by Global Network
October 4th	Consultative meeting towards National DRR Platform	Concept of DRR Platform shared with discussion on mechanics of how to formulate the multi-stakeholder coalition in Afghanistan
October 5th	Official letter from ANDMA to UN/ISDR	Letter has been written to UN/ISDR HQ on intention to established DRR Platform
November 23rd	Letter of support from ESCAP to ANDMA	UN/ESCAP in Bangkok has sent official letter to ANDMA to assist Afghanistan’s DRR efforts by providing technical expertise by DRR advisor in Bangkok
2010		
January 8th	Letter from UN/ISDR to UNRC in Afghanistan	UN/ISDR Bangkok has asked involvement and support from UN country team for DRR Platform and SNAP
January 25th–27th	London conference by Global Network	Afghanistan case highlighted as one of the most successful cases in HFA local monitoring and multi-stakeholder efforts to tackle HFA achievements. Margreta Wahlstrom also pledged her support towards Afghanistan’s efforts

(continued)

Table 3.2 (continued)

Date	Event	Outputs
February 28th	Launch of Afghanistan National DRR Platform	Afghanistan's first national DRR Platform launched and officially recognized by UN/ISDR
March 10th	DRR Platform consultative meeting	Discussion on way forward and stocktaking of DRR projects in country started (database continuously updated)
March 24th–26th	ISDR Partnership Meeting in Bangkok	ANDMA represented in ISDR Partnership meeting held in Bangkok along with government representatives from other countries in the Asia/Pacific region
March 25th	Official letter from ANDMA to ESCAP	ANDMA replied to previously sent ESCAP's support offering letter indicating support towards SNAP would be useful
April 7th	Official letter from ESCAP to ANDMA	ESCAP officially replied assuring to meet the demands of ANDMA in provision of technical support for SNAP
April–September	Fundraising and Detailed Planning for SNAP	Reasonable amount of funds raised to start SNAP process, and concept note, TOR's have been agreed with UN/ISDR as well as contractual process
September–	SNAP project started	Consultant identified and hired, and official process of SNAP started with inclusion of UN/ISDR, UN/ESCAP. UNDP in the process along with ANDMA and DRR Platform members (all funds are contributed by DRR Platform members) with key documents review
October 17th–21st	First multi-stakeholder consultative sessions for SNAP	Consultative sessions with ANDMA, NGOs, UN, line Ministries took place and mission report drafted
November 22nd, 23rd, 24th	Multi-stakeholder consultation on HFA and SNAP	Milestone consultation workshop held for ANDMA provincial heads (with local representatives from some line Ministries), and members of DRR Platform
November 28th	Meeting with ANDMA, VFL 2011 start-up session	Support from ANDMA obtained, VFL 2011 started
December 15th	Finalization of SNAP draft 1, administration of VFL 2011	SNAP draft prepared
December 15th–31st	Circulation of SNAP draft for comments and finalization, administration of VFL 2011	SNAP draft circulated for comments
2011		
March	Official Launch of SNAP	Official launch of SNAP and presentation of VFL 2011 results

- Strategic Objective 2: To enhance knowledge sharing among all stakeholders at all levels; **National Disaster Risk Reduction Information Management Initiative (Timeline: 2011–2015)**: *Adequate data and information support to DRR stakeholders through a working information network, communication mechanisms and improved quality assurance system.* **Research and Evaluation Programme (Timeline: 2011–2015)**: *Acceptable decision making support with baseline conditions established, progress in DRR monitored, knowledge base built and results utilized.*
- Strategic Objective 3: To strengthen the early warning system that is based on sound vulnerability and capacity assessments; **National Early Warning System (Timeline: 2011–2015)**: *Enhanced preparedness through a people-centered early warning system and supported by capable scientific, technological and media institutions.*

Goal 2—Disaster risk reduction in peace-building and stable development: focus on mainstreaming and yielding positive multi-sectoral and multidisciplinary collaboration in different forms such as better information sharing, integration of DRR into regular functions through risk management, and effective role sharing and partnerships.

- Strategic Objective 4: To raise public awareness of disaster risk reduction nationwide; **National Disaster Risk Reduction Awareness Campaign (Timeline: 2011–mid-2013)**: *Increased awareness about DRR of various target groups in a step-by-step manner using appropriate approaches and communication media thus motivating stakeholders to mitigate and prepare for disasters.*
- Strategic Objective 5: To strengthen community resilience using means to reduce the underlying factors of risk; **Building Communities through Disaster Resilience (Timeline: 2011–mid 2013)**: *Potential social capital to deal with disasters built in selected with capacity to learn and adapt to disaster and climate-related risks with support from multi-sectoral, inter- and intra-governmental team.*
- Strategic Objective 6: To enhance disaster preparedness capacities in government at different levels. **Preparedness for Effective Response (Timeline: 2011–2015)**: *Enhanced effectiveness in responding to disasters with most emergency preparedness components such as drills, stockpiles, contingency plans, emergency fund and coordination mechanisms in place.*

Essentially, SNAP is a “road map” for reducing losses from natural hazards and climate change, including losses in human lives and property, socio-cultural and economic assets, and environment and natural resource capital. As a process, SNAP aims to develop a comprehensive disaster risk reduction strategy and implementation plan for the country through multi-stakeholder consultation. And as a plan, it indicates the strategic objectives and vision of the country for the next 10 years in consonance with the strategic goals of the HFA. It also presents the priority programs and projects which the Government together with key stakeholders shall undertake to attain the objectives. Finally, as its added value, the SNAP serves

as a basis for risk reduction and risk management investments and embodies the commitment of the Government and its partner stakeholders to building the resilience of the communities of Afghanistan to disasters and climate change.

3.4 Lessons Learnt

The main factor of success for establishment of the National DRR Platform and SNAP was its participatory approach which enabled DRR Platform members to feel there is “mutual benefit” by participating in the coronation structure and its future plan. SNAP is 93 page document which articulates specific projects under each specific objectives, and implementation is expected to be conducted by the National DRR Platform members; a motivation factor indeed to be part of the process. Such element was easier to achieve in this case as it was truly a bottom-up coordination structure which resulted from civil society’s very nature of its bottom-up, participatory manner in their approach to humanitarian and development assistance.

One good example of eagerness to participate by the DRR Platform members can be drawn from the fact that pretty much all activities of the Platform was funded by the members without any outside support. Such internal funding has enabled successful launching event of the Platform as well as to cover expenses for SNAP.

In order to facilitate such vast group representing different stakeholders, CWS ensured several principles in order to keep the momentum going. The first principle was the speed of facilitation. For example, the minute of the DRR Platform meeting was disseminated on the same day as the meeting, and database of the DRR Platform (who is doing what, where) was updated real-time when DRR Platform members submitted the data, and the communication from CWS to the Platform members were frequent. The second principle was to continuous show the clear target/milestone. For example, Views from the Frontline study which aimed to evaluate the progress of implementation of HFA was commissioned together with DRR Platform members in 2009, 2011, and 2013, and the report from Afghanistan was always feeding into global DRR discussion at the Global Platform for DRR which is held in Geneva every 2 years. The official launch of DRR Platform as well as establishing SNAP was also among the milestone for DRR Platform members.

Despite above successes, there were also challenges. The first challenge was how to create enabling environment to implement SNAP, in financial sense. As all members of DRR Platform were fully engaged in establishing the plan (SNAP), the fundraising aspect was left for several agencies to handle. At first, it seemed that things are moving forward in identifying the potential funding scheme, but due to inconsistent follow-up and informal agreement of these few agencies involved in the fundraising, the follow-up activities were not taken up in consistent manner (Fig. 3.3).

The lesson from this challenge would be that fundraising is done simultaneously as the establishment of the plan because after plan is made, environment needs to be there to actually implement it. However, if it is not clear who does this fundraising,

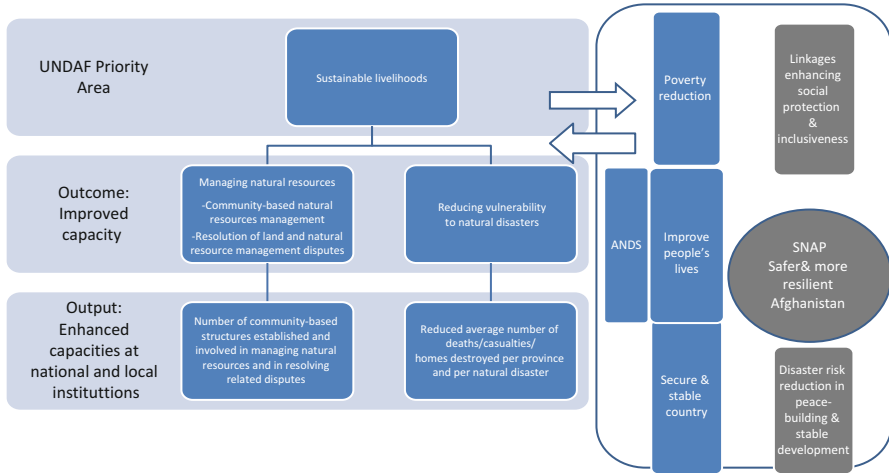


Fig. 3.3 SNAP and other relevant policies in Afghanistan

the result would not be achieved. Therefore, specific task force comprised of variety of stakeholders, including NGOs, UN, and the government, was needed to accomplish this. For example, Fig. 3.3 shows where SNAP was intended to be positioned in Afghanistan’s development strategy and plans though it did not materialize.

Additionally, there are lessons to be learnt from organizational perspective. Ensuring continuity in momentum and facilitation would require continued investment from coordinating organization in terms of financial, human resource, and general dedication by the organization’s senior management. The coordinating activities need to be continued with strong financial back-up, staff management needs to be taken into account the high staff turn-over rate in country, and commitment to endure the very nature of fast pace in planning, but slow pace in implementation with fundraising challenges.

In sum, Afghanistan’s challenge to its disaster management has enhanced drastically with such coordinating structure and strategic plan in place, which ANDMA is strongly following up and coordinating Afghanistan’s DRR stakeholders towards its goal: safer and more resilient Afghanistan. However, the challenge still remains and ANDMA would require continued dedicated commitment from NGOs, UN, and donor agencies to fulfil its mandate. The recent Istanbul process may provide further support for this, and it is hoped that such international support mechanism continue to contribute to DRR advancement efforts by stakeholders in Afghanistan.

The world is moving towards putting more emphasis on DRR. The Chair’s summary from the Fourth Session of Global Platform for DRR (2013) indicates that there was consistent call that DRR should be recognized in any international development goal. In January 2005, in Kobe, Japan, 168 Member States of the United Nations adopted the Hyogo Framework for Action (HFA) which is a key

framework for implementing disaster risk reduction within the overall goal of building the resilience of nations and communities to disasters. The HFA aims to achieve a substantial reduction of disaster losses by 2015—both in lives, and in the social, economic, and environmental assets of communities and countries. This HFA also emphasize that in order to achieve results in the DRR efforts, inclusion of communities is a must. The Priority of Action 4 of HFA (tackling the underlying risk factor) was the least achieved so far since the inception of HFA from 2005, and Global Assessment Report (United Nations 2013) indicates that the results from national self-assessments of progress against the HFA confirm countries' previously reported challenges, particularly in addressing the underlying drivers of risk. To ensure that the next phase of international DRR framework (HFA2) achieve the intended results, underlying risk factors need to be tackled with strategic partnership among different parts of the society. For this, example of bottom-up approach to coordinate DRR efforts in Afghanistan can be a reference to establish such strategic partnerships in the region.

Lastly, as part of recommendation from the civil society for HFA2, CWS, together with Global Network of CSOs for Disaster Reduction (GNDR) have put following five recommendations (2013):

1. Recognise the impact of everyday disasters on lives, livelihoods and assets
2. Prioritise the most at-risk, poorest and marginalised people
3. Tackle the underlying causes of people's vulnerability to disasters
4. Mobilise political commitment by focusing on rights, responsibilities and accountabilities
5. Promote partnerships and public participation

These are based on the experience of GNDR members, such as the one from CWS in Afghanistan, which are considered critical factors for advancing DRR efforts further in this ever disaster prone region.

References

- Afghanistan National Disaster Management Authority (2011) Strategic National Action Plan (SNAP) for Disaster Risk Reduction: Towards Peace and Stable Development
Chair's Summary (2013) Fourth Session of the Global Platform for DRR, Geneva, Switzerland
EM-DAT (2011) The OFDA/CRED International Disaster Database. Université Catholique de Louvain, Brussels, Belgium. www.em-dat.net
Global Network of CSOs for Disaster Reduction (2013) Views from the Frontline: beyond 2015 – recommendations for a post-2015 disaster risk reduction framework to strengthen the resilience of communities to all hazards
United Nations (2013) Global Assessment Report on disaster risk reduction
UNISDR (2007) Guidelines National Platform for disaster risk reduction
UNISDR (2008) Towards national resilience: good practices of national platforms for disaster risk reduction

Chapter 4

Policy and Advocacy: Role of Civil Society in Disaster Management Bill Processes in Indonesia

Parlan Hening

Abstract The earthquake and tsunami on 26 December 2004 which hit Nangroe Aceh Darussalam and the earthquake in Nias Island, Simeuleu and Banyak on 28 March 2005, have given rise to a wave of sympathy, assistance, services, funding and efforts as manifestation of humanitarian (A White Paper for Legislative Reform, 2005). From these experiences, it became clear that a sound basic policy to regulate the functions and roles of various parties in managing disasters is necessary. The Indonesian Society for Disaster Management (MPBI) initiated to work with the government to reform its disaster management legislation by taking the lead and strengthening the partnership with various stakeholders. This movement was eventually further developed and a forum known as the Coalition for Disaster Management Law Drafting was formed. The supports from the civil society were tremendous in every aspects of the process. The joint works included drafting the disaster management bill, raising awareness and advocacy, and building networking with various parties that consist of the government, UN, INGOs, Red Cross and Universities. Among others, the involvement and contribution of MPBI was prominent as the main actor in drafting of disaster management law.

The Law has made great impacts on several aspects of disaster management in Indonesia including the paradigm shift from disaster response to disaster risk reduction, DRR mainstreaming into development, reformation of disaster management.

Keywords Civil society • Disaster Management Bill number 2004 year 2007 • Disaster risk reduction • Indonesia

P. Hening (✉)

Head of Board MPBI (Indonesian Society for Disaster Management), Director HFI (Humanitarian Forum Indonesia), Jln. Wachid Hasyim 2 Jakarta Pusat
e-mail: hening_parlan@yahoo.com

4.1 Introduction

Indonesia has a unique environment in terms of the geographic location and the geological condition and is prone not just to earthquake and tsunami, but also to flood, drought, landslide, volcano eruption and hurricane. In addition, there are other potential threats such as the tropical disease pandemic based on the climatology condition of Indonesia. Furthermore, the country is experiencing rapid and massive environment and ecosystem changes as part of the consequences of economic development that leads to exploitation of natural resources and ignorance on the ecosystem and natural reserve. In every year, Indonesia losses 8,645,000 acres of its natural forests due to legal and illegal deforestation. It led to the natural environment and ecosystem damages and triggered the increasing of its vulnerability to disasters. From 1998 to 2003, the official record shows that 647 disaster events happened in Indonesia and 85 % of them were flood and landslide due to the impact of over excess and unplanned development.

There was some limitation of disaster management capacity in Indonesia due to the slow process of disaster management by the government, and the weakness in policy, coordination, and leadership. Meanwhile, at the field level, disaster management was seen as partial, sectorial and separate issue that was still oriented to response to be dealt with by the government and charity foundations and was considered as the physical and relief activities on the voluntary basis. However, this situation was changed based on the policy implementation of decentralization and it gave a great opportunity to civil society organizations to be further involved in disaster management system. Decentralization is mainly targeting the local governments and optimizes its basic service to the communities. In addition, it makes possible to manage the resources and disaster risks based on the characteristic of local context (Nie and Verba 1975).

In general, the local government officials are not obliged to provide services and protection to the communities, therefore, in case of emergencies, the local government tends to act slow and expect responses from the central government to manage the situation. The situation will get more complicated due to lack of coordination between the government agencies if disaster happens across provinces. It hindered rapid and effective response process. Therefore, the disaster management law that should encourage or obligated the local government to invest for the community protection is crucial.

This chapter is dedicated to share the drafting process of the Disaster Management Law in Indonesia that provides the people of Indonesia with protection and safety. A series of disaster events in Indonesia were eye-opening to leaders, political elites, community members and others to learn what is happening, how it is happened and how to deal with these disaster events. The drafting of Disaster Management Law is one of the ways in answering the questions above on how to deal with disasters in the form of public policy. The policy itself is based on the Constitute, therefore, the country is responsible for complying with the law to protect its nations and the people in Indonesia.

4.2 History of Policy Development of Disaster Management in Indonesia

The process of the institutionalization of disaster management in Indonesia can be divided into two periods: the New Government Era in 1966–1998 and the Reformation Era from 1999 until now.

4.2.1 *Indonesia New Government Era (1966–1998)*

The reports were issued by the different ministries on the response to the disasters occurred in 1996:

1. Report by Minister of Social/Head Staff of Natural Disaster IDPs Number M.S III-2-23 on 9 April 1966 on the natural disaster that happened in East Java and West Java,
2. Report by Minister of Home Affairs on 6 April 1966 on the flood in East Java and the eruption of Mount Kelud,
3. Report by the West Java Governor on 13 February 1966 on the landslide in Cianjur District.

Since 1966, the government started to announce these events as disasters, and the recognition that the government has a responsibility to alleviate the suffering of people and rehabilitate from the damages. Therefore, the Minister of Finance was appointed to manage the rehabilitation, and the Vice Minister of Social Politic as the Chief to lead disaster management. Meanwhile, the Minister of Social was appointed as the Vice Chief in the local level management under the direction of the First Level Governor or Head of Region. As for the progress, the government establish the Centre of Natural Disaster Judicial Agency or known as BP2BA. In regards to the increasing of the intensity of disaster, such as landslide, flood, and volcano eruption, the government reviewed the Presidential Regulation Number 256 Year 1966 on the BP2BA and the Cabinet Presidium Decree Number 14/U/Kep/1/1967 on the Structure and Tasks of the Natural Disaster Management Coordination Team. This agency was renewed as based on the Republic of Indonesia Presidential Decree Number 28 Year 1979 on the National Natural Disaster Management Coordination Agency or known as BAKORNAS Natural Disaster Management. This agency is base in the central and directly responsible to the President.

At the province and district, this agency is known as the Natural Disaster Coordination Task Force or known as SATKORLAK Natural Disaster Management, this non-structure organization was base in the I and II Level of the Region that was assigned to draft the policy also provide guideline or policy direction, also coordinate integrated disaster management; controlling the implementation of the natural disaster management program in line with the general policy of the government; and provide direction on the policy lines that operated by the SATKORLAK Natural Disaster Management, in order to manage the natural disaster preventively, repressively and rehabilitate.

4.2.2 Indonesia Reformation Era (1998–2013)

In the next phase, it came to be realized that disasters are continuously happening and were not caused only by the natural factors, but rather by the human factors. No matter whether it was caused by the natural or human factors, the damage, confusion and chaos that resulted from such events must be managed and handled rapidly, accurately, and coordinated through all the phases of prevention, lifesaving, rehabilitation and reconstruction. Therefore, it was considered necessary to review the tasks, function and structure as well as the National Coordination Secretariat for Disaster Management developed by the Republic of Indonesia Presidential Decree Number 106 Year 1999 on National Disaster Management Coordination Agency. A few years later, this agency was re-structured as based on the Republic of Indonesia Presidential Decree Number 3 Year 2001 on the National Coordination Agency for Disaster Management and IDPs, and newly developed as BAKORNAS PBP which is a coordination agency for disaster management and IDPs and was put under and direct responsibility of the President. The activities that were managed by this agency included prevention, mitigation, saving lives, rehabilitation and reconstruction. The BAKORNAS PBP consisted of a Chairman who is the Vice President, Mr. Jusuf Kalla. This agency had 12 ministries as its members, including the Military General, Police Force and Governors in the disaster area affected.

BAKORNAS PBP was again restructured due to the government's awareness that it is necessary to integrate the efforts in all the phases of "pre", "during" and "after" disaster strikes including prevention, preparedness, response and recovery. Therefore, the BAKORNAS PBP that was legalized by the Presidential Decree Number 3 Year 2001 was reformed as BAKORNAS PB based on the Presidential Decree Number 111 Year 2001/the Presidential Regulation Number 83 Year 2005 on the National Coordination Agency for Disaster Management.

BAKORNAS PB is under the direct responsibility of the President. This agency is chaired by the Vice President and Coordinating Minister for People Welfare. Meanwhile, the Minister of Home Affairs was appointed as the Vice Chair, and other members consisted of Minister of Finance, Minister of Energy and Mineral Resources, Minister of Transportation, Minister of Public Works, Minister of Health, Minister of Social, Minister of Communication and Information, Military General, Head of Police Force, Head of Indonesia Red Cross, and the Secretary of ex Officio of BAKORNAS PB. The difference between BAKORNAS PB and BAKORNAS PBP was the exclusiveness of Minister of Environment and the inclusiveness of the Red Cross. At this period, the autonomy was improved due to the appointed of the Minister of Home Affairs assigned to coordinate the activities in disaster management and response at the province and district/city levels.

4.3 Historical Background of the Disaster Management Law Number 24 Year 2007

The earthquake and tsunami that happened on 26 December 2004 in Nangroe Aceh Darussalam and the earthquake in Nias Island, Simeuleu and Banyak on 28 March 2005 required massive response and relief works and human resource. Due to this catastrophic event, 14 out of 21 districts in Aceh were affected, 130,736 were killed, and 37,063 people were missing and over than 500,000 people were displaced. After this earthquake and tsunami in Aceh, there were also additional disaster events in Indonesia including the earthquake and tsunami in West Java 2006, the earthquake in Yogyakarta 2006, the earthquake in West Sumatera 2007 and 2009, the earthquake and tsunami in Mentawai 2010, the Merapi Volcano eruption 2010, the Jakarta Flood 2013, and the earthquake in Aceh 2013.

In the preamble of the Nation Law 1945, it is mandated that the purpose of forming the Republic of Indonesia is to protect all nations and Indonesia descendants. Yet, at that time the disaster management capacity in Indonesia has not been yet optimized and its development was slow. In addition, the disaster management was seen as partial, sectorial and separate issue and focused on the response that was done by the government through providing the physical aid. The lessons-learnt from major disaster event was that Indonesia requires to develop a legal framework that institutionalizes the function and role of the government and various stakeholders in disaster management. In this way, it is possible to reduce the gaps in the disaster management capacity between the government and other stakeholders and to make clear the coordination mechanism that leads to effective response. The law was seen as the solution to various problems, including coordination weakness, miscommunication, ineffective response that was sectorial and fragmented.

Besides the trigger by the tsunamis that hit Aceh and Nias, the Disaster Management Law was also drafted based on the concern of the weakness in disaster management (Fig. 4.1). When a disaster happens, the response by the local government was slow and depended on the central government. In case the disaster hit a wider area across multiple provinces and districts, the situation became worse. The lack of coordination among various sectors also affected the response and recovery process.

The Disaster Management Law Number 24 Year 2007 was originally developed based on the initiatives of the Civil Society Organizations (CSOs) and it was initiated at the VIII Commission Meeting with the Minister of Social. At the meeting, the Minister of Social stated that the legislative process led by the government will take time, therefore it was encouraged to have the initiative from the People Representative. It was then followed up through VIII Commission Panel Meeting on 15 February 2005 on the Working Committee on the Law of Disaster Management, the Joint Meeting between the VIII Commission, IX, X and the Minister of Social, Minister of Religion Affairs, Minister of Health, Minister of National Education and Minister of Culture and Tourism on 2 March 2005. Finally, it was agreed to finalize the draft and make it the Law.

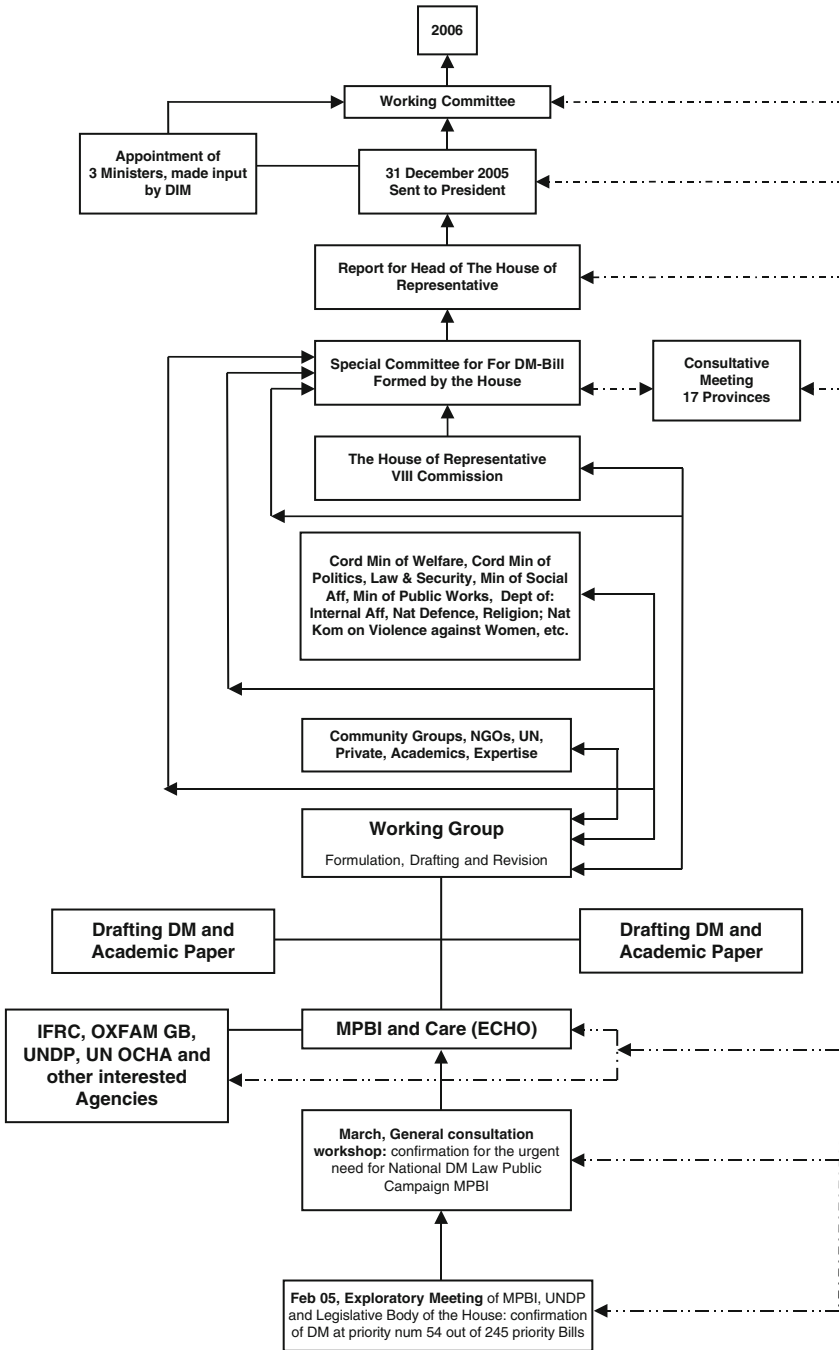


Fig. 4.1 Historical of disaster management law drafting process

At the same time with the meeting above, there was a meeting between MPBI, UNDP and the Head of Legislative of People Representative, AS Hikam. At the meeting, AS Hikam stated that Disaster Management Law was in the priority 287, yet this priority can be upgraded to higher level if there was support from the communities. Based on this information, further discussion on the draft of the Disaster Management Law was made by various NGOs and it was coordinated by MPBI and the Coalition for the Disaster Management Law Drafting. The discussion was initiated with 17 members including MPBI, JKLPK, WALHI, LIPI, UNDP, UN OCHA, Department of Health, Department of Coastal and Fisheries, STKS, BAKORNAS, Care International, Oxfam GB, and others. The secretariat of this coalition was put under MPBI. On 5 March 2005, the Coalition for the Disaster Management Law Drafting invited all actors that work in disaster management at national and local levels to obtain the information on the importance of the Disaster Management Law in Indonesia and to discuss how to develop the joint commitment to the drafting process.

The VIII Commission has the mandate of disaster management and often had a discussion with the Coalition on the Disaster Management Law. The draft discussed and developed by the Coalition was submitted to the parliament, and the draft from the civil societies was agreed as the selected draft to be discussed further. On 9 May 2005, MPBI with the Coalition gave the final draft which was the 7th revision to the President, as based on the letter Number 0235/MPBI/V/2005 on the Delivery of the Academic Script and DM Law Draft. Beside the President, MPBI also sent its draft to the Secretary of Cabinet, Coordinating Minister for People Welfare, and several other departments (Department of Social, Department of Health, Department of Coastal and Fisheries), and to BAKORNAS, International Societies, members of Coalition and other communities that needed the draft.

The letter that was sent to the President was responded by the Secretary of the State, Yusril Ihza Mahendra on 18 May 2005 with the replied letter Number B. 303/M.Sesneg/5/2005 stated that the President has received the Academic Script and the draft of the Disaster Management Law, and the Secretary of the State handed the letter to the Minister for Law and Human Rights for further study and follow up actions. The same letter also came from the Secretary of Cabinet, Mr. Sudi Silalahi in his letter as based on letter Number B-218/Seskab/5/2005 that was sent to MPBI. On 31 May 2005, the Parliament Meeting decided to set up the Special Committee for the Disaster Management Law that consisted of various parties including the F-PG (Fraksi Partai Golkar), F-PDIP (Fraksi Partai Demokrasi Indonesia Perjuangan), F-PPP (Fraksi Partai Persatuan Pembangunan), F-PAN (Fraksi Partai Amanat Bangsa), F-PKB (Fraksi partai Kebangsaan Bangsa), F-PD (Fraksi Partai democrat), F-PKS (Fraksi Partai Keadilan Sejahtera, F-BPD (Fraksi Partai Bintang Pelopor Demokrasi), F-PBR (Fraksi Partai Bintang Reformasi), and F-PDS (Fraksi Partai Damai Sejahtera).

The draft was discussed and completed by the Committee through People Representative Mechanism on 26 December 2005. The draft of the Disaster Management Law was then sent to the Head of the Committee, Ms Aisyah Baidhawi, then forwarded to the Chair of People Representative, Agung Laksono. The Chair

Table 4.1 The structure of disaster management law

Chapter I	General overview	Chapter VIII	Funding and relief management
Chapter II	Basis, foundation and purpose	Chapter IX	Monitoring
Chapter III	Responsibility and authorities	Chapter X	Conflict resolve
Chapter IV	Institutionalization	Chapter XI	Penal sanctions
Chapter V	Rights and obligations of communities	Chapter XII	Transitional provisions
Chapter VI	The role of private sectors and international societies	Chapter XIII	Closure
Chapter VII	Disaster management		

of People Representative then sent the draft to the Indonesia President on 31 December 2005, for further response.

Through the President Letter Number R.11/Pres/01/2006 on 27 January 2006, the President appointed three High Level Officials: Minister of Law and Regulation, Minister of Public Works, and Minister of Social. These three ministers were assigned to coordinate several departments in order to respond to the Disaster Management Law that was came from the People Representative. The respond was given in the form of Problem Inventory List, or it was known as DIM (*Inventory Problem List/Daftar Inventarisasi Masalah*). From 79 articles that were delivered by the People Representative, the government responded by given 487 DIM, which means that all wording in the Law were questioned by the government. It was shown that there were different perspectives between the People Representative and the government. In the further discussion, the Special Committee set up Working Committee, which was a committee that consist of half of the Special Committee members added with the government representatives.

This committee then worked for improvement and revision of the Law until it was approved by the Meeting on 29 March 2007 and legalized by the government as law Number 24 Year 2007 on Disaster Management on April 2007. The Law consist of 85 articles with 13 chapters as following (Table 4.1).

The Disaster Management Law includes the following items:

1. *Paradigm Shift*

- From response to risk management. This is a radical paradigm shift. At the beginning, the disaster management was seen as the response, but it has to more focus on the risk management.
- Decentralization of the authority. The local government is considered to create and share welfare and ensure protection.
- From the government's responsibility to the joint community matters. All aspects of disaster management including policy, institutionalization, coordination and mechanism should involve the wider community participation and private sectors.

2. *Policy Aspect*

It is a precondition for the effectiveness of direction and political commitment that is reflected in good policy, whether in the constituent, laws, local regulation, or executive policy and sectorial component. It is mentioned in several articles, including: Chapter III-Responsibility and Authorities in article 5–9.

3. *Institutional Aspect*

This part stated the authorities and roles of the government components in managing disasters including the establishment of the National Disaster Management Agency and Local Disaster Management Agency. This institutionalization is mentioned in Chapter IV-Institutional in article 10–25.

4. *Implementation Aspects*

This part emphasized the division of the activities based on disaster management cycle as it is regulated in the Chapter VII-Implementation of Disaster Management in article 31–59.

5. *People's Rights and Obligations*

This Law regulated the people's rights and obligations in disaster management as mentioned in Chapter V-People's Rights and Obligation article 26 and 27.

6. *The Role of Private Sectors and International Societies*

This Law also reflected how disaster management can be brought to public, particularly for the private sectors. In addition, the roles of international communities in disaster management was emphasized. It is reflected in the Chapter VI-Role of private Sectors and International Societies in articles 28, 29, and 30.

7. *Relief Management*

Through this Law, the relief activities are managed and coordinated by an authorized entity accordingly, without ignoring good intentions and community participation. The basis for this is accountability and transparency as mentioned in Chapter VIII-Funding and Relief article 60–70.

8. *Monitoring*

The function of monitoring need to be done through the entire disaster management activity such as monitoring the threat and hazard, monitoring the process of developing policy, environment conservation spatial planning and financial planning. It is mentioned in article 71–73.

4.4 Current Disaster Management Structure at National and Local Level

The Law Number 24 Year 2007 on Disaster Management clearly regulated the responsibility of implementation of disaster management:

- (a) The implementation of disaster management is the responsibility and authority of the central and local government that is planned, integrated, coordinated and holistically done;

- (b) The implementation of disaster management in response phase in operated fully by the BNPB and BPBD;
- (c) The implementation of disaster management is operated by focusing on the communities' rights in gaining the basic needs, social protection, education and skills in disaster management, also participate in decision making;
- (d) The implementation of disaster management is operated by providing an wider opportunity for private sector and international societies;
- (e) The monitoring on disaster management activity is done by the central government, local government and communities in each phase of disaster in order to avoid any deviancy in the spending of disaster management fund;
- (f) The government is responsible in reducing disaster risk and integrating disaster risk reduction with development program that is implemented.

Beside Disaster Management law Number 4 Year 2007, there are other regulations that are part of the institutional reformation of disaster management as follows:

1. The Presidential Regulation Number 8 Year 2008 on National Disaster Management Agency;
2. The Minister Home Affairs Regulation Number 46 Year 2008 on the Organization Guideline and Work Management of National Disaster Management Agency;
3. The Head of BNPB Regulation Number 3 Year 2008 on the Establishment of Local Disaster Management.

Referring to these regulations, the formal institution has been set in the central government, which is National Disaster Management Agency (BNPB) as the replacement of BAKORNAS PB as based on the Presidential Regulation Number 8 Year 2008. The steering unit consists of ten members that are represented by the Echelon 1 official and nine professional community members. By the existing of the steering unit in the BNPB, it became possible to include different stakeholders in disaster management implementation (Figs. 4.2 and 4.3).

At the local government level, the institutionalisation of disaster management is based on the Minister of Home Affairs Regulation Number 46 Year 2008 and the Head of BNPB Regulation Number 3 Year 2008. The BPBD Province and BPBD District/City replaced the role of SATKORLAK which was rather served as ad hoc basis (Figs. 4.4 and 4.5). Currently, there are 33 BPBDs Province that have been established and 399 out of 497 district/cities in Indonesia have established their disaster management agency or BPBD. The establishment of both province and district/city BPBD is facilitated by the Department of Home Affairs.

Despite the fact that Indonesia already has set its disaster management agency at national and local level, not all the roles and responsibilities by BPBD are well carried out due to the limited human resources with the sufficient capacity and knowledge of DRR and the lack of budget allocated to BPBD.

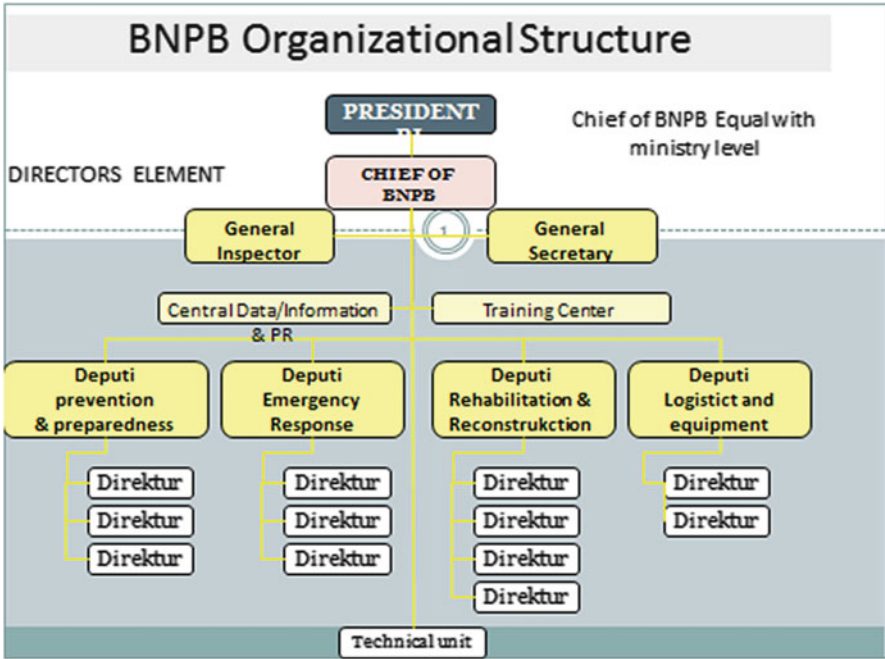


Fig. 4.2 The structure of National Disaster Management Agency (BNPB)

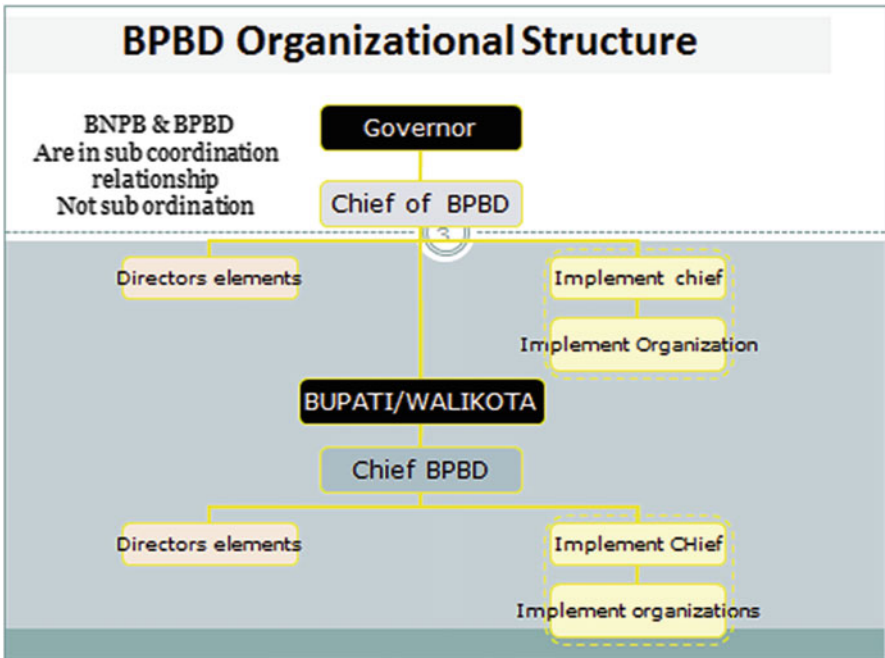


Fig. 4.3 The structure of Sub-National Disaster Management Agency (BPBD)

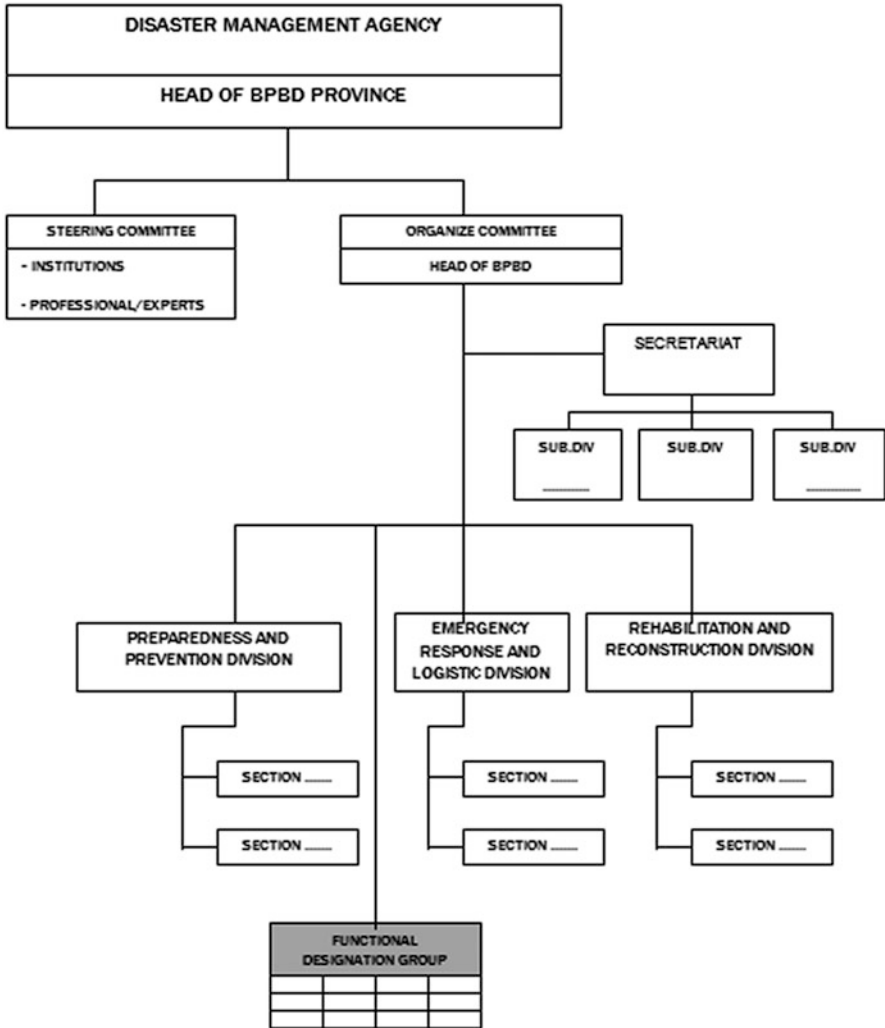


Fig. 4.4 The structure of Province Disaster Management Agency (BPBD Province)

4.5 The Role of CSOs in Policy Development and Advocacy: Case Studies of MPBI

CSOs have a role to ensure that the policy and advocacy in disaster management is well implemented. MPBI is actively involved in the consultative process in drafting the Disaster Management Law. MPBI took the role in coordinating and supporting the Coalition for Law Drafting that has representatives of various agencies. To monitor the issue related to vulnerable groups and gender, the National

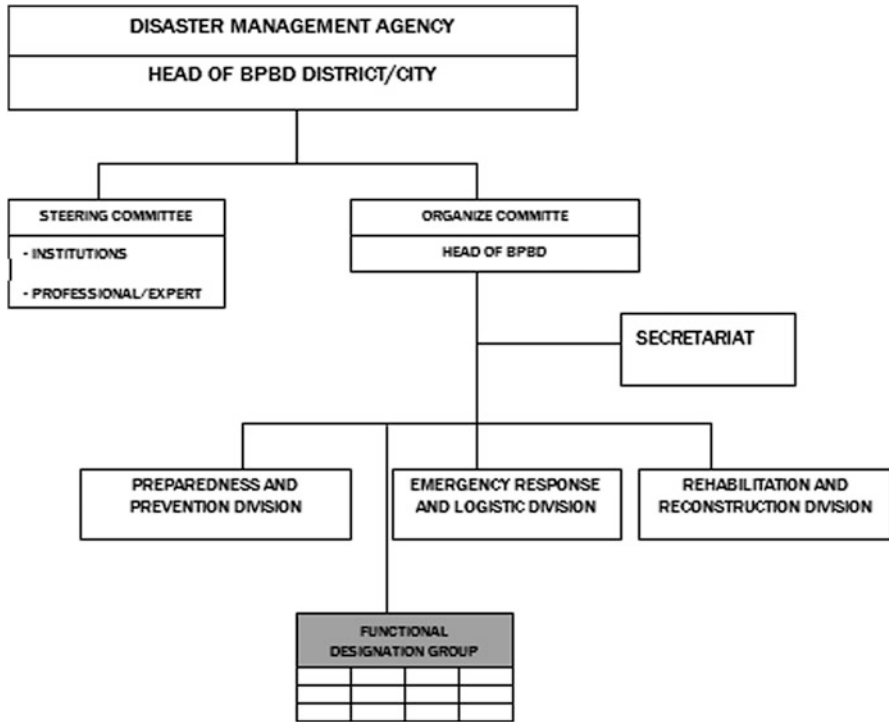


Fig. 4.5 The structure of Municipality Disaster Management Agency (BPBD District/City)

Commission for Women, the National Commission for Children, the Women Solidarity, Kehati, JKLPK and others took the lead. MPBI facilitated the discussion with these groups to bring up their inputs on the rights of the vulnerable groups to higher level to enable to be included in the Disaster Management Law. The same process was also taken to facilitate the interests of other groups including environment, religion, military, disaster mitigation, and many more. MPBI also influenced the international societies in ensuring them to give their supports to advocating disaster management. In the case of drafting Disaster Management Law, MPBI managed to get the support from UN Agencies including OCHA and UNDP, also INGOs such as CARE and OXFAM. These agencies gave their support in succeeding the process of the Disaster Management Law drafting by providing their technical assistances, funding, and also disseminating the information to a wider audience.

The success of MPBI in gaining supports from various organizations in policy development and advocacy of the Disaster Management Law drafting became a good lessons-learnt for other agencies. Establishing a partnership and joint collaboration is very effective to conduct the advocacy and address their voices on the common concerns. It is crucial to ensure the rights of the communities of fulfilling

their basic needs and the protection and safety in each disaster management phase, not just develop a law from the aspects only of disaster management. Another best practice of MPBI was to accelerate the community participation in the DRR initiatives as suggested in the Disaster Management Law. More joint and collaborative works in the DRR activities were found in Indonesia from Aceh to Papua. These initiatives were well documented and shared at global level.

MPBI took a lead of sharing experiences and lessons-learned as well as disseminating the Community based Disaster Risk Management (CBDRM) practice in Indonesia to wider public societies through the National Conference on CBDRM. The conference has been organized annually since 2005, and it produced many outputs including capturing various CBDRM activities from the field, formulating method and framework, producing CBDRM guidebook, and promoting accountability to the Disaster Management Law. All of these contributions also led to the advocacy and policy development that resulted in the development of BNPB Regulation Number 1 Year 2012 on the General Guideline of Village Disaster Resilience that captures the concept of CDBRM.

In the implementation process of the laws, CSOs can play a significant role by providing the technical assistance to the governments. However, it can be a challenge to CSOs due to lack of the funding and the authority. The Disaster Management Law is a national legal product, therefore, without strong advocacy and socialization to the sub-national and local levels, it will not be implemented through the whole country. Therefore, it requires having a strong decentralized regulatory and institutional setting to be able to be adapted at all levels.

In addition to BPBD, there was a local initiative to develop the DRR forum at local level in either province and or/district/city level. The DRR forum was developed in several provinces such as in Yogyakarta, West Sumatera, West Java and Jakarta. This forum consists of various CSOs/NGOs and assists the government in the implementation of disaster management at sub-national and local level as referring to the Disaster Management Law. The national DRR forum has already existed as a National Platform for DRR or PLANAS PRB since November 2008. It consist of government agencies, non-government agencies, international donor, mass media, universities, and private sectors, is one of the example of a multi-stakeholder DRR forum. PLANAS PRB is assisting the government in advocating DRR at all levels as well as in planning and implementing the DRR activities.

The establishment of PLANAS PRB in Indonesia has received attention and appreciation from UN ISDR (United Nations on International Strategy in Disaster Reduction) during the 2nd Global Platform Meeting in Geneva, Swiss in June 2009. The platform has a challenge in coordinating with other forum at vertical or horizontal level, maintaining the active involvement and participation of various stakeholders, and ensuring that its program priority is to mainstreaming DRR into national development plan. Without the involvement of the CSOs/NGOs, it would be difficult for the government to improve its work and to ensure the implementation of the Disaster Management Law at all levels.

4.6 Challenges and Opportunities

Indonesia made a progress in disaster management based on the support by various entities and it was recognized internationally by receiving the DRR Champion Award by UNISDR. Furthermore in 2012, Indonesia also hosted the 5th AMCDRR (Asian Ministerial Conference on Community Based Disaster Risk Reduction) and contributed to providing the platform of further discussing the DRR issues and facilitating the opportunity. However, Indonesia still has a number of challenges in DRR as stated in the HFA Indonesia Country Reporting Period 2011–2013:

Priority 1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.

1. Lack of understanding of the essence of risk reduction concept in hazard-prone districts and cities.
2. Lack of capacity, commitment and consistency in developing strong DRR regulatory and policy environment in the regions.

Priority 2: Identify, assess and monitor disaster risks and enhance early warning.

1. Lack of technical capacity in most Local Disaster Management Agencies (BPBD) in conducting risk analysis; lack of financial resources and detailed data at the district/city level, particularly for regions in Eastern Indonesia.
2. At the local level, the challenge is more on the budget, human resources and lack of technical know-how.

Priority 3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels.

1. To provide disaster-related information to people living in remote areas, except through television and radio networks that have relatively covered all parts of the country.
2. Cultural obstacle that many people are not proactive in seeking information about the risks they are facing.
3. Lack of coordination between the relevant institutions from the central level down to the district/city level and among concerned agencies from the national down to the local levels.

Priority 4: Reduce the underlying risk factors.

1. Decentralization and lack of transparency and accountability.

Priority 5: Strengthen disaster preparedness for effective response at all levels.

1. To enhance these preparedness measures include the lack of resources (human, expertise, budget, equipment, facilities, etc) at the local level due to absence of clear regulations that govern disaster budget at the national and local levels.

In general, the challenges related to the Disaster Management Law is to synchronize and harmonize disaster related-laws and regulations between different sectoral agencies and different government levels. Also it is crucial to strengthen the capacity of BPBD to understand the policy and regulatory issues.

4.7 Conclusion

The process of developing the Disaster Management Law in Indonesia took nearly three years. The process was supported by the communities and the partnership with various organizations through the joint collaboration for advocacy and policy development. Despite the fact that Indonesia has well settled its policy and regulatory for the implementation of disaster management, at the local level, there are still some challenges and gaps that are found and need to be improved. In most cases, coordination is the key to improve the situation.

MPBI is one of the strong entities that lead the success in advocacy and policy development such as the Disaster Management Law in Indonesia. Its strong membership and networking provides CSOs with gaining the opportunity of collaboration and partnering with various organizations and of supporting the governments' works in disaster management.

References

Nie NH, Verba S (1975) Handbook of Political Science. Addison-Wesley Publishing Company, Florida, hal. 1

Chapter 5

CSOs and the Challenges in Risk and Vulnerability Assessment

Lorna Victoria, Loreine dela Cruz, and Benigno Balgos

Abstract Civil society organizations (CSOs) continuously promote and develop participatory approaches in risk assessment and reduction planning in vulnerable communities. Participatory risk assessments (hazard, vulnerability, capacity, and people's perception of risk) unite the community with local government and other stakeholders in common understanding of the disaster risks in the locality. It serves as the sound basis for commitments, plans and actions of a wide range of short, medium, and long-term risk reduction at the community and local level. This chapter looks into the developments of concepts and practice of risk and vulnerability assessment. Also, it underscores the issues and challenges faced by CSOs in undertaking risk and vulnerability assessments.

Keywords Civil society organizations • Hazard • Participatory risk assessment • Vulnerability

5.1 Introduction

As early as 1980s, civil society organizations (CSOs) have been advocating for proactive approach in disaster risk reduction and management. In fact, when the landscape of disaster risk reduction and management was dominated by reactive/emergency response framework, addressing the immediate needs, and technical solutions, CSOs called for vulnerability reduction and capacity building of communities and vulnerable groups toward enhanced preparedness and resilience. Consequently, CSOs are actively involved in the discourse on disaster management and in developing its concepts, framework, processes and tools. In its engagements,

L. Victoria • L. dela Cruz • B. Balgos (✉)
University of the Philippines, Quezon City, Philippines
e-mail: ninoybalgos@gmail.com

evidence-based experiences became the substantial inputs of CSOs in assessing local level situations and proposing appropriate solutions to disaster situations.

CSOs took on the perspective that disasters were unresolved problems arising from the very processes of development (Wisner et al. 2012; Gaillard 2012) instead of looking at disasters as isolated events, which require relief and response. Consequently, natural hazards may only result in a disaster if they occurred in a community with vulnerable conditions. Wisner et al. (2012) argue that it is not only hazards that cause disaster, but also political, economic, and social factors, which structures the lives of different groups of people in a society. Over the years, in grappling for an alternative approach to managing disasters, CSOs took a similar path and a standpoint in viewing disasters as closely associated with unsustainable development pattern.

The CSOs have joined the progressive academics, social scientists and researchers in closer understanding of the causal factors and processes of vulnerability. In hindsight, CSOs deem that non-structural solutions to understanding the problem are paramount. This is in essence veering away from merely focusing on understanding hazards, physical vulnerability and structural measures to mitigate damage and loss, but more importantly, CSOs consider the inherent capacities of communities to reduce disaster risks that they faced.

This chapter deals with the issues and challenges on risk and vulnerability assessment through looking at the engagement of CSOs in the region. The chapter is organized in four parts. Initially, the discussion of risk and vulnerability assessment with emphasis on concept development including processes and tools. The paper will then proceed to presenting CSO-led initiatives on risk and vulnerability assessment. Towards the last part, general issues and concerns will be drawn from CSO engagement on risk and vulnerability assessment.

5.2 Risk and Vulnerability Assessment: Concept, Processes, and Tools

Risk and vulnerability are defined in different ways. The understanding of the two concepts evolved over time due to efforts and initiatives in reducing disaster damage and loss brought about by interactions of natural and human-induced hazards.

Disaster risk (DR) is a function of *hazard* (H), *exposure* (E) of the elements at risk (location of people, social and economic assets in hazard-prone areas subject to potential losses), and *human vulnerability* (V) (UN ESCAP 2012). That said, measures on disaster risk reduction are expected to reduce the exposure and vulnerability to disaster risk leading to safety and resilience. Concurrently, community-based approaches had simplified the concept of DR, which merges the element of *exposure* with the *hazard* and *vulnerability*, while highlighting

people's capacity (C): $DR = H \times V/C$ or $DR = H \times V - C$. This simple formula has been utilised to better understand how to reduce vulnerability and increase capacity, more particularly at the community level.

5.2.1 Risk and Vulnerability Assessment Concepts: Hazard, Vulnerability, and Capacity

A *hazard* is a dangerous phenomenon 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. Communities may be exposed both to natural and human-induced hazards. Natural hazards have different types which include: *hydro meteorological hazards* (i.e. cyclone, flooding, storm surge or heat wave), *geological hazards* (i.e. earthquake, volcanic eruption, tsunami, landslide), *biological hazards* (i.e. epidemics and insect infestation), *technological hazards* (i.e. technological, industrial and transport accidents and infrastructure failure), and *environmental hazards* (i.e. pollution, desertification and deforestation). While conflict is considered to be a human-induced hazard, which threatens many communities, CSOs see this as not being addressed by the existing framework of the Hyogo Framework for Action.

Concurrently, the UN International Strategy for Disaster Reduction (2009) defines *vulnerability* as the characteristics of a community, system or asset that make it susceptible to the damaging effects of a hazard. There are various aspects of vulnerability arising from various physical, social, economic, and environmental factors. Vulnerability is embedded in a particular community as “the conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards” (UNISDR 2004). Vulnerability is a set of prevailing and long-term factors, conditions and weaknesses which adversely affects the ability of individuals, households, organizations and the community to protect itself, cope with or recover from the damaging effects of a disaster. It is present in the community or society even before the disaster happened. It is this concept that it is already present even before the disaster happened, that explains why certain groups of people are more or less at risk. The physical exposure is a given, the number of people located in areas where hazardous events occur combined with the frequency of the hazard events which make the people in these areas susceptible to risk, more or less.

There are other dimensions of vulnerability—material, social, economic, cultural and environmental factors and conditions or weakness or problems in the community or society which can cause damage or loss from hazards. These factors include: (1) poverty and lack of access and control over resources; (2) conflict within the community or with local authorities; (3) lack of knowledge and skills on preparedness and protective measures; and, (4) attitude of helplessness and dependence. And the greater the physical exposure, the greater the loss of lives such as in areas where earthquakes, landslides or flooding occur.

Capacity on the other hand, is the combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve disaster risk reduction and management objectives (UNISDR 2009). Capacities are the resources, skills, coping strategies, and strengths possessed by individuals, families, and the community which enable them to prevent, mitigate, prepare for, and withstand hazards. When material resources are limited, local skills, traditional wisdom, knowledge and practices, organizations and institutions, attitudes and values are important capacities. Other examples of capacity are local knowledge, ownership of land, safe building design and construction, adequate income, savings, adequate food sources, family and community support in times of crises, responsive local government, enabling legislation, and community organizations. Therefore, in order to reduce disaster risk, even with the presence of a hazard, vulnerability should be reduced and people's capacity should be recognized, built upon and strengthened. The disaster risk reduction and management process is expected to progressively achieve individual, household and community safety, resilience and protection. The process can also contribute to the advancement of development gains.

Using the results of risk assessment (hazard assessment, vulnerability assessment, capacity assessment, understanding people's perception of their disaster risk) at the local and community level, a wide range of risk reduction, specifically prevention, mitigation and preparedness measures, interventions, activities, projects and programs are identified and worked out.

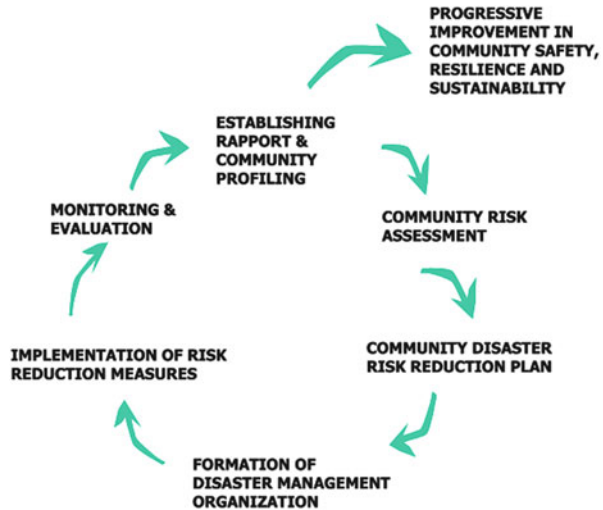
5.2.2 Risk and Vulnerability Assessment Process

Risk assessment is the sound basis for disaster risk reduction planning. On the basis of the plan, appropriate and adequate preparedness, mitigation and prevention measures are implemented by the community with other stakeholders for safety and resilience. Risk assessment is the counterpart of situational analysis in any project development process. In the process of risk assessment, the community and various stakeholders achieve a common understanding of disaster risks in the locality.

Although steps vary from community contexts and organizational mandates, the process for community and local disaster risk reduction can be generalized as follows (see Fig. 5.1):

1. Initiating the process. This is linking and building rapport with the community;
2. Community Profiling. Gaining an initial understanding of the disaster situation and orientation on CBDRM;
3. Community Risk Assessment. Undertaking participatory assessment of hazards, vulnerabilities, capacities and people's perception of risks;
4. Formulation of Disaster Risk Reduction Plan. Identifying appropriate mitigation and preparedness measures including public awareness, training and education;
5. Formation and/or Strengthening of Community Disaster Risk Management Organization. Organizing and mobilizing the community, building their

Fig. 5.1 Risk and vulnerability assessment process



capability in community based disaster preparedness and mitigation; forming community disaster volunteer teams and disaster management committee/s within existing community organization;

6. Implementation of short, medium, and long-term risk reduction measures, activities, projects and programs. Implementing strategies and mechanisms including organizational and institutional strengthening;
7. Monitoring and Evaluation. Improving continuously the disaster risk reduction and management plan, including documenting and disseminating good practices for replication; and,
8. Progressing towards safety, resilience and community development.

Aside from providing the needed information and having a common understanding on hazards, vulnerabilities, capacities and people’s perception of risk, other purposes of risk assessment include: (a) contributes to community’s awareness of threats they did not know before; (b) provides information which can be used in situational analysis for community development program purposes; and, (c) provides baseline data or indicators to measure changes in people’s vulnerability and capacity over time.

5.2.3 Risk and Vulnerability Assessment Tools

CSOs use several tools in carrying out risk and vulnerability assessments. The following highlight some of the tools utilized:

First, hazard and resource map. In mapping, areas at risk are identified from specific hazards and the vulnerable members of community and/or *barangay* or village.



Fig. 5.2 Participatory 3-dimensional map, The Philippines

Moreover, available resources are also identified that could be used by the *barangay* people in disaster risk reduction and management (Fig. 5.2). There are important questions that need to be answered when conducting hazard and resource mapping. Such include: (a) what are the hazards that put the community at risk? (b) what places/zones in the *barangay* that are at risk? (c) what community infrastructures or critical facilities are exposed to risks? (d) who are the most vulnerable to risks and will likely need assistance? (e) why are they at risk? (f) what resources can be found in the *barangay*? and (g) who have access and control over the available resources? What resources are at risk?

Second, disaster timeline. In going through the disaster timeline, significant disaster events are learned that occur in the *barangay*. Also, impacts and lessons learnt from the disaster events are identified. In this tool, the key questions asked are: (a) what were the significant disaster events that happened or are happening in the *barangay*? (b) when did they happen? (c) what were the impacts caused by the disaster events to the social, economic and infrastructure sectors? and, (d) what were the lessons learnt from disaster events?

Third, DRRM experiences and coping strategies. The goal of tackling this is to lay down the existing DRRM activities of families, communities, NGOs, municipal and city governments. It also aims to identify if there are present activities which are geared toward adaptation.

Fourth, evacuation matrix. This aims to learn the process of evacuation that people in their respective areas do in times of disaster events. It also identifies challenges

and issues that need to be addressed to facilitate proper and timely evacuation. The following common questions are asked in undertaking this: (a) where do people evacuate (public and private structures)? (b) are there identified pick-up points? (c) who leads and manages the evacuation process? (d) how long do they stay in the evacuation area? (e) what are the challenges, issues and problems which people encounter when they evacuate? (f) during their stay in the evacuation area? (g) upon return to their homes? and, (h) arrival in the relocation site, if this is necessary.

5.3 CSO and Risk and Vulnerability Assessments

Disaster risk can be reduced through proactive approach such as structural and non-structural mitigation and prevention activities. To determine disaster risks, there is a need for hazards, vulnerabilities and capacities of a particular community to be critically analysed and assessed. Likewise, it is imperative to consider how communities are differentially impacted by disasters as well as how they perceive their risk scenarios. As observed, governments responded unprecedentedly to the Hyogo Framework for Action through the prioritization of risk reduction at the national level.

In connection to this, CSOs advocated and mobilized communities toward greater understanding of their disaster risks as well as working out doable disaster risk management solutions in relation to preparedness, mitigation and prevention. The good/sound practices at the community level as a result of the engagement of various CSOs at the ground level became the basis for learning and contextualized replication to other communities. More pointedly, CSOs have assisted communities to look into factors, conditions and root causes of vulnerable conditions. In addition, CSOs help communities to uncover and value their coping capacities and local resources as critical building blocks in risk reduction for without these capacities, communities will be dependent solely on external assistance.

Moreover, CSOs have adapted the broad categories and factors in vulnerability assessment developed by Anderson and Woodrow (1989) (see Table 5.1), namely: (a) physical/material: the environmental, productive resources, skills, infrastructure, basic services existing in the community that enable (capacity) or hinder (vulnerability) it to prepare for, mitigate, withstand or recover from a disaster; (b) social/organizational: aspects cover the manner society is organized, its internal conflicts and how it manages them, including family structures, and governance; and, (c) attitudinal/motivational: how people in society view themselves and their ability to affect their environment and change.

Concomitantly, CSOs, particularly in South Asia, subscribe to the Sustainable Livelihood Framework. This framework provides an analytical structure to facilitate broad and systematic understanding of the various factors that cause poverty—whether these are shocks and adverse trends, a basic lack of assets or poorly functioning institutions and policies—and investigates the relations among these to constrain or enhance livelihood opportunities. The same framework offers a way

Table 5.1 Capacity vulnerability assessment (CVA) categories and factors

Physical/material
<ul style="list-style-type: none"> • Location and type of building materials • Economic activities: means of livelihood, production and other skills, land, water, animals, capital, other means of production (access and control) • Infrastructure and services: roads, health facilities, schools, electricity, communications, transport, housing, etc. • Human capital: population, mortality, diseases, nutritional status, literacy, numbers literacy, poverty levels • Environment factors: air, water, soil quality, forestation, erosion, waste management, etc.
Social/organizational
<ul style="list-style-type: none"> • Family structures (weak/strong) • Leadership qualities and structures • Legislation • Administrative structures and Institutional arrangements • Decision-making structures (who is left out, who is in, effectiveness) • Participation levels • Divisions and conflicts: ethnic, class, caste, religion, ideology, political groups, language groups, and structures for mediating conflicts • Degree of justice, equality, access to political process • Community organizations: formal, informal, traditional, governmental, progressive relationship to government, administrative structures • Isolation or connectedness
Motivational/attitudinal
<ul style="list-style-type: none"> • Attitude towards change • Sense of ability to affect their world, environment, get things done • Initiative • Faith, determination, fighting spirit • Religious beliefs, ideology • Fatalism, hopelessness, despondency, discouragement • Dependent/independent (self-reliant) • Consciousness, awareness • Cohesiveness, unity, solidarity, cooperation • Orientation towards past, present, future

of assessing how organizations, policies, institutions, cultural norms shape livelihoods, both by determining who gains access to which type of asset, and defining what range of livelihood strategies are open and attractive to people.

In the same way, international non-government organizations use the Disaster Crunch Model and its counterpart Pressure and Release Model that includes the Vulnerability and Capacity Assessment and Participatory Assessment of Disaster Risk. The Disaster Crunch Model illustrates that vulnerability (pressure) which is rooted in socio-economic and political processes has to be addressed (released) for disaster risk reduction. The Model shows the relationship of hazards and a complex condition of vulnerabilities (in a situation of low capacity) in causing a disaster. The Disaster Release Model shows the strategies for reduction of vulnerabilities. The outcome will be “safe” as opposed to “unsafe conditions”, “resilient or capable communities” as opposed to “vulnerable communities” and “sustainable livelihoods” as opposed to “unsustainable livelihoods”.

5.4 CSO-Initiated Risk and Vulnerability Assessments

CSOs have likewise initiated risk and vulnerability assessment activities. The following underscore some of these initiatives.

5.4.1 *Strengthening Communities Through Participatory Approach*

CSOs have worked for the participation of communities in the whole process of disaster risk reduction. For instance, the Center for Disaster Preparedness, an NGO in the Philippines, implemented a community-based disaster risk reduction project in Barangay Banaba in San Mateo, Rizal. The said community was heavily affected by Typhoon Ketsana and Parma that struck the country in September 2009. The project initiated by the NGO covers risk assessment and risk reduction planning, to strengthen their capacity and achieve resiliency of the community. Similarly, tools have been developed in risk assessment to foster participation of various groups within the community, specifically, to involve vulnerable groups such as the poor, women, children, and the elderly (Fig. 5.3).



Fig. 5.3 Child-oriented participatory risk assessment and planning, The Philippines

5.4.2 *Participatory Local and Community Risk Assessment*

CSOs refer to risk assessment undertaken with communities focusing not on hazard alone but on vulnerabilities and capacities and the participatory process to engage communities in the process. These include the Participatory Capacities and Vulnerabilities Assessment PCVA (Oxfam), Participatory Vulnerability and Capacity Assessment PVCA (Christian Aid), Participatory Assessment of Disaster Risk (Tearfund), and Hazard Vulnerability Capacity Assessment (Citizens' Disaster Response Center in the Philippines).

Although the International Federation of Red Cross and Red Crescent Societies (IFRCRCS) uses merely VCA, it adheres to Sheryl Arnstein's ladder of Participation Framework in its Vulnerability and Capacity Assessment. Arnstein's typology of eight levels on a ladder of citizen (community) participation to illustrate the quality of participation to aspire and work for. Citizen Participation is equated with empowerment of the have-nots, "it is the redistribution of power—that enables the have-not citizens, presently excluded from the political and economic processes to be deliberately included in the future". Each rung of the ladder corresponds to the extent of citizens' power in determining plans and programs. Manipulation and therapy of "participants" by power holders are actually forms of non-participation (levels 1 and 2, respectively). Level 3 (informing), level 4 (consultation), and level 5 (placation) are forms of "tokenism" by the "haves" towards the "have-nots", where the have-nots have a voice in the process but still do not make decisions. Citizen power increases in the last three levels (6–8) of citizen participation—partnership, delegated power and citizen control.

A similar 7-level scheme of participation is embraced by many CSOs engaged in development work (Table 5.2). This was later adopted in disaster risk management: passive participation, participation in information giving, participation by consultation, participation for material incentives, functional participation, interactive participation and self-mobilization. Participatory tools used in working with communities in development programming have been initially adapted in risk assessment with communities. This was adapted in what is now being used as Community risk assessment that has four basic components namely, *hazard assessment*, *vulnerability assessment*, *capacity assessment*, and *people's perception of risk*.

5.4.2.1 Hazard Assessment

Hazard assessment involves the identification and understanding of hazards or threats which may damage the community and locality. Hazard assessment looks into the disaster history—what disasters have been experienced in the past—as well as other hazards or threats which the community may not be aware of. Hazard assessment also involves the study of the nature and behavior of hazards or threats (including secondary hazards), especially for use in early warning and preparedness activities, taking into consideration the following (Table 5.3).

Table 5.2 Participatory rural appraisal and participatory learning and action

Typology of participation	
Typology	Characteristics
Manipulative participation	Participation is simply pretense, with “people’s” representatives on official boards but who are not elected and have no power
Passive participation	People participate by being told what has been decided or has already happened. It involves unilateral announcements by an administration or project management without listening to people’s responses. The information shared belongs only to external professionals
Participation by consultation	People participate by being consulted, and external people listen to views. These external professionals define both problems and solutions, and may modify these in light of the people’s responses. Such a consultative process does not concede any share in decision-making, and professionals are under no obligation to take on board people’s views
Participation for material incentive	People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much on-farm research falls into this category, as farmers provide their land but are not involved in the experimentation of the process of learning. It is very common to see this called participation. People have no stake in prolonging activities when the incentives run out
Functional participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organization. Such involvement does not tend to be at early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent
Interactive participation	People participate in joint analysis, which leads to action and formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspective and make us of systematic and structure learning process. These groups take control over local decisions, and so people have a stake in maintaining structures or practices
Self-mobilization	People participate by taking initiatives independently of external institutions to change systems. They develop contacts with external institutions for the resources and technical advice they need, but retain control over how resources are used. Such self-initiated mobilization and collective action may or may not challenge existing inequitable distribution of wealth and power

5.4.2.2 Vulnerability Assessment

At the community level, vulnerability assessment is a participatory process to identify what “elements at risk” per hazard type, and to analyze the causes and root causes why these can be damaged. These are usually the weaknesses which factor to individual, family and community their inability to cope with hazards.

Elements at risk are the people, households, houses, property, crops, livelihood, community facilities, even the environment which may be damaged by the hazard.

Table 5.3 Community hazard assessment questions

Hazard assessment tools/ questions	Description and key questions to ask
Hazard/disaster history	Is the hazard part of normal life or rare? When was the last disaster? When was the biggest disaster? Is the hazard getting worse, better, or staying the same?
Location	Which areas are affected by hazard?
Warning signs	Scientific and indigenous/local signs of the hazard
Frequency	How often does the hazard occur? Is it more or less frequent than in the past?
Speed of onset	How quickly does the hazard happen? (very slow such as in 3–4 months in the case of drought; 3–4 days in the case of cyclone; very rapid for earthquake)
Period of occurrence	When does the hazard occur? What month or time of the year?
Duration	How long does the hazard last?
Severity	How severe can the hazard be? For example, water depth, wind speed, Richter scale for earthquakes

During vulnerability assessment, the elements at risk are studied in detail and why these can suffer damage and loss. Basically, vulnerability assessment answers the questions: (1) who are at risk or can incur damage and loss?; (2) what are other elements at risk?; (3) what damage or loss can these people or elements at risk suffer/incur?; and, (4) why will these people and elements suffer or incur damage and loss?

5.4.2.3 Capacity Assessment

Capacity assessment is a participatory study to understand how people cope with and survive in times of crisis and to identify resources which can be used to prepare for, prevent and/or reduce damaging effects of hazards.

Capacities are the strengths which individuals, households and the community possess. Capacities relate to resources, skills, knowledge, organizations and institutions, practices, attitudes and values. Coping is about managing resources or survival strategies in adverse or crisis situations. Most notions of coping is positive (and therefore relates to capacity), but it can also be negative such as those in distress sell their productive assets or engage in anti-social or destructive (prostitution, crime) activities in order to cope and thus lead to increased vulnerabilities.

For capacity assessment, these resources, strengths, coping/survival mechanisms and strategies are studied. Basically capacity assessment answers the questions: (1) what are the existing coping strategies and mechanisms in times of crisis? How have individuals, households and the community survived and responded to disasters in the past?; and, (2) what are resources, strengths, local knowledge and practices that can be used for disaster preparedness, mitigation and prevention?

5.4.2.4 Perception of Risk

Participatory Risk Assessment is more holistic than earlier approaches in risk assessment which were mainly technical and quantitative. Risk perception is taken into consideration as well as the inter-linkages of technical and physical elements with socio-economic and political factors. Understanding people's prioritization of risks is a necessary component of coming to a common understanding of disaster risk in the locality. This forms the basis for appropriate and adequate risk reduction measures which are owned by the affected population and communities.

Perception of risk is the subjective judgment that people make about their characteristics and severity of a risk. This explains why people make different estimates of the danger and decisions to avoid, reduce or accept. Risk has different meanings to different groups. Experts judge a risk through objective indicators, while the public perceive risk from subjective characteristics.

People may regard real every day concerns or problems such as livelihood, health, family as more immediate threats than the infrequent natural hazard. Communities living in the environs of an active volcano may opt not to be relocated to other places because of fertile land and strong family roots in the place.

How high the risk is judged also depends on the available information about the hazards and possible damaging consequences. How people prioritize risks also depends on options and workable solutions open to them. With growing poverty there are more and more situations in which the affected population accept a high level of risk and locate in flood prone areas or steep slopes in urban centers just to be near to employment opportunities.

Factors which account for varying perceptions of risks include: (1) socio-economic characteristics—age, gender, ethnicity, income, education, employment, health; (2) people's knowledge about their environment resulting in adopting local coping strategies; (3) lack of knowledge (and experience) about hazards or threats; (4) ability to cope with hazards and risks through technology, financial attributes, education, political power and having a voice; and, (5) ability to access help from outside.

Participatory community risk assessment should combine local disaster experience and knowledge (of insiders or community people) with science and technology (which are usually brought to the community by outsiders and experts). While listening to and appreciating local knowledge, CSOs now also facilitate scientific and technical information about hazards, especially those which the community has not previously experienced. Traditionally, community risk assessment looked into local historical experiences of disasters and hazards and CSOs now usually involve government and other stakeholders in the risk assessment process to provide technical and scientific inputs on hazards and its consequences on the elements at risk in the community.

The results of participatory risk assessment are usually maps which indicate or delineate areas or zones which are at high, moderate or low risk to various threats or hazards or which are safe or unsafe areas for settlements, economic activities, and

other community functions. As part of disaster preparedness planning, evacuation centers, life lines and safe routes to take are also indicated. Risk maps at the city/municipal level can inform the community about hazard and vulnerability maps.

5.4.3 Linking Communities with Government and Other Stakeholders

Many CSOs have worked with communities successfully in disaster risk reduction. For sustainability, it has been necessary also to link community work with local government development planning and budgeting processes and system. CSOs have provided the necessary interface (buffered in situations where there have been conflict between the community and local government) between the community and government for this mainstreaming or integration in government disaster risk management activities and development planning. This has also been referred to as linking the bottom-up and top-down approach for holistic engagement in risk reduction. For risk assessment, CSOs have included local government and mentored them in working with communities in participatory risk assessment and risk reduction planning.

Government can use GIS to capture community information for city/municipal level integration. Participatory GIS has been used in a few communities and geo-referenced risk information is being put into country geo-portals. CSOs and communities have to be capacitated to utilize these new technologies.

5.4.4 Combining Local Knowledge with Science and Technology

CSOs have long advocated for valuing local knowledge and practices in disaster risk reduction. While there are experiences of combining the participatory approach with science and technology for accurate risk assessment, the need for this remains a challenge. Gaining access to (and making these understandable) studies and risk assessments done by government, scientific agencies and consultants remains a challenge as government, the academe and science agencies are drawn to work with communities.

The use of information and communication technology (ICT) is changing the way cities are managed and the way organizations communicate and share information. ICT allows the mapping of risk parameters, sharing of reports across organizations and communicating risk to stakeholders in an understandable and usable way.

Geographic Information Systems (GIS) can play a crucial role in processing the volume of information needed for disaster risk management, serving as a tool to

collect, organize, analyze and present data. GIS enables the integration of different parameters such as land-use planning, urban infrastructure, population data, and other essentials in a single spatial risk analysis.

GIS is a systematic means of combining various bits of information about a unit of geographic space. The concept is analogous to a panel of post-office boxes, each representing a specified area. As each element of information about a particular attribute (soil, rainfall, population) that applies to the area is identified, it can be placed into the corresponding box. Since theoretically, there is no limit to the amount of information that can be entered into each box, huge volumes of data can be compiled in an orderly manner. It can generate a collection of mapped information which reveals spatial relationships between the different attributes, e.g. hazard events, natural resources, and socio-economic conditions, and can thus help in assessing the impact of hazards on elements at risk.

The maps generated with the community participation allow people to see complex information more easily as well as communicate spatial stories that raise awareness and assist for solutions to people's felt needs and issues. This participatory process using the GPS or mobile GIS (which enables field based personnel to capture, store, update, manipulate, analyze, and display geographic information) is now referred to as Participatory GIS (P-GIS). Others call this Public Participation GIS (PP-GIS), or Community-Integrated GIS (CIGIS). There are still others that call it Community Mapping or Participatory 3-Dimensional Mapping (P3DM).

To learn about their risks and facilitate action planning especially in urban areas, Town Watching and Disaster Imagination Game have been developed in Japan and applied in some risk reduction projects in Asia. An orientation is first given by experts and government officers on technical aspects of hazards and vulnerability analysis. Afterwhich, community members go around with the experts and note on their maps with "safe" and "unsafe" features in the community. Using risk estimation done by experts and the government, different scenarios of damage estimation are considered and form the basis for risk reduction action planning. Maps from authorities are used including equipment such as Polaroid or digital camera and geographic positioning system (GPS).

5.5 Issues and Challenges in Risk and Vulnerability Assessments

With relatively rich experience of CSOs in Asia in undertaking risk and vulnerability assessments, general issues and challenges remain. The following points outline these general issues and challenges.

First, as a result of CSO and other stakeholders initiative to carry out risk assessments, the Priority 2 (Risk Identification and Early Warning) of the Hyogo Framework for Action had achieved significant headway. Adaptation and innovation is now integral and embedded in the content, approaches and tools in risk and

vulnerability assessments. Nonetheless, there are still limitations evident since risk assessment is mainly applied and used in disaster preparedness and not in reducing the underlying risk factors which is Priority 4 in the HFA. This is because many governments still view risk reduction as mainly preparedness and not going deeply into the root causes or underlying risk factors. In the same manner, there is still lack of deep appreciation of mitigation and prevention linkage to community development. CSOs in general continue to advocate for risk assessment in relation to Priority 2.

Second, the **quantification of disaster risk vs. narrative description and historical risk assessment**. The latter serves as the tool that communities use in coming up with criteria in relation to the risks they are facing. This local level understanding can be quantified and serve as basis for high, medium, low risk zones. Moreover, it is a common practice that narrative results of risk assessments have meaning to specific communities. In complete contrast, these kinds of the risk assessment results may be irrelevant to the risk quantification efforts of other stakeholders carrying our risk assessments (i.e. government agencies and science/technical-based organizations among others).

Third, risk and vulnerability assessment tools should be sensitive to the needs of children, women, elderly, and persons-with-disabilities. As such there is a need to develop tools that are suitable and appropriate for the mentioned vulnerable groups. In the same manner, there is a need for training for those facilitators who will undertake these with these various groups.

Fourth, given that the impacts of disaster are experienced by others (community, national, regional), there is a need to upscale the results of risk and vulnerability assessment. This is also because the vulnerabilities of a particular area cannot be addressed by that area alone. That said, there is a need to form alliance and partnership with others that face the same risks.

Fifth, making scientific studies and highly technical vulnerability and risk assessments available to CSOs and communities in form which they understand and palatable. In the World Bank experience in Jakarta, Indonesia, the whole city was involved in piloting and utilizing the open source street map. Everyone participated in identifying important establishments and houses that are covered by the city. From such experience, a pilot activity was undertaken in Pampanga, The Philippines. This practice is feasible and possible with an effective procedure technical persons interacting with the community and providing inputs and guidance as the community undertakes risk assessment.

Sixth, the duration of risk and vulnerability assessments, particularly in rural and urban areas. Time is usually difficult for participants in both areas. Moreover, it would depend on funds available to carry out the assessments. The community risk assessment tools based on Participatory Rural Appraisal and Participatory Learning and Action are geared for rural communities. In the context of urban communities, it is difficult to gather them for a long time, so newer tools can be adapted like Town Watching which is being done by the Asian Disaster Resource Center (ADRC) in Japan.

Seventh, the standardization of risk assessment process which is being done in countries like Bangladesh. Standardization is necessary for the government to come up with a common template and basis for action. Nonetheless, it has its downside. In this regard, the issue of contextual application of the standardized tool comes to the fore. This is good in as far as government involvement is concerned but meaningful community participation must always be ensured in the actual conduct of risk assessment and risk reduction planning.

Eighth, risk and vulnerability assessments reveal development gaps and some CSOs on the basis of their mandates and resources are not in a position to comprehensively address such development challenges that surface in the process. As always, any development undertaking is a collaborative and complementary undertaking by networks and coalitions at varying levels to achieve significant outcomes and impacts. This only highlight the significance of partnerships and networking of various groups at varying levels to address this development challenge. And such reverberates that the least realised Priority Action is 4 of HFA.

Ninth, there are hazards which the communities have no experience yet. Their experience mostly in Participatory Risk Assessment pertains mainly to historical hazards and disaster experiences, and not on hazards relating to the changing climate. In climate scenarios, CSOs and other outsider stakeholders need to provide relevant risk information tapping the expertise of scientific agencies and organizations.

Tenth, the recent negative consequences of hazards and disasters (i.e., buildings which can collapse due to earthquake, flooding in areas due to very heavy rain which has not been experienced in the immediate period) are difficult to assess without technical guidance and inputs. This points to the fact that it is important to include government people and technical experts in the team when conducting community risk assessments.

Eleventh, the integration of indigenous local knowledge on vulnerability and risk assessments. These forms of knowledge are crucial to take into account since they influence the way people perceive and response to the risks they are facing. The “wisdom keepers” in the communities most especially in indigenous peoples communities are good sources of indigenous knowledge and information. At the same time, together with the provided historical and institutional memory of the communities.

Finally, there are a number of experiences in the past wherein CSOs borrow the risk assessment results (i.e. kraft papers, community maps) of communities for their write up and report and failed to return such resource to the communities afterwards. On the other hand, there are lots of community participants in vulnerability and risk assessments who cannot write eloquently, but could produce maps, seasonal calendars, and tables from the risk assessments that have meanings to them. These resources are displayed prominently and for sharing to others in the community and outside groups. And with the new technology including digital cameras, the visual outputs can readily be transformed as information materials for public awareness like risk maps displayed on tarpaulins or boards that can prominently be displayed in strategic places in the communities.

5.6 Conclusion

Courses of action toward vulnerability reduction and increasing capacities are premised on reliable, painstaking and continuing conduct of risk assessment. CSOs provide premium to this undertaking as a requisite to enhance established early warning system of the communities and in disaster risk reduction planning.

As was earlier discussed, risk assessment serves as the sound basis for CSOs' actions to concretize resiliency, enable and empower communities to develop and design risk reduction measures that are suitable and appropriate to the nature and particularities of their communities. On the other hand, there are several challenges in risk assessment efforts and initiatives of CSOs. The greatest challenge right now for CSOs is how to effectively respond to the issues to ensure that community vulnerabilities are addressed and reduced.

In contributing to reducing the underlying risk factors, communities can very well contribute by promoting food security, strengthening the implementation of social safety nets that help and assist the vulnerable sections of the population to cope and recover faster when disaster happens. And at best, to incorporate risk assessment in rural development planning of communities in partnership and collaboration with local governments.

With this in mind, the following are the ways forwards in relation to CSOs role in vulnerability and risk assessments: (1) CSOs can continue to advocate for risk assessment not only to enhance early warning and improved disaster risk reduction planning but also to help address the underlying risk factors towards development planning. There is need for greater appreciation of the linkage of mitigation and prevention to community development; (2) CSO can design risk and vulnerability assessment tools that are culturally sensitive and at the same time sensitive to the needs of children, women, elderly, and persons-with-disabilities. Complementary training is needed for these undertaking with various vulnerable groups; (3) CSOs can help popularize and make available scientific studies and highly technical vulnerability and risk assessments to communities in forms that are easy to understand and usable; (4) CSOs can enhance partnerships and networking in undertaking risk and vulnerability assessments at varying levels. Relevant experts are best to be included to help educate and guide CSOs and communities in undertaking such; and, (5) CSOs can facilitate the integration of indigenous local knowledge on vulnerability and risk assessments.

References

- Anderson M, Woodrow P (1989) *Rising from the ashes: development strategies in times of disaster*. Westview, Boulder and San Francisco
- Gaillard JC (2012) *People's response to disasters: vulnerability, capacities and resilience in Philippine context*. Center for Kapampangan Studies, Angeles City

- United Nations Economic and Social Commission for Asia and the Pacific (2012) Reducing vulnerability and exposure to disasters: the Asia-Pacific Disaster Report 2012. Bangkok
- United Nations International Strategy for Disaster Reduction (2004) Living with risk: a Global review of disaster risk reduction initiatives. <http://www.unisdr.org/we/inform/publications/657>. 25 Nov 2012
- United Nations International Strategy for Disaster Reduction (2009) Terminology on disaster risk reduction. <http://www.unisdr.org/we/inform/terminology>
- Wisner B, Gaillard J-C, Kelman I (eds) (2012) Handbook of hazards and disaster risk reduction. Routledge, London

Chapter 6

Risk and Vulnerability Assessment: Experience of Nepal

Amod M. Dixit

Abstract Located at the boundary of Indian and Tibetan plates, Nepal faces high level of seismic hazard. Seismic risk of the country is also extremely high because of rapid urbanization, prevalence of non-engineered constructions, poor implementation of building code, low level of earthquake awareness among the creators of vulnerabilities and, a gradual decay of indigenous knowledge and wisdom on earthquake resistant constructions. Kathmandu Valley is estimated to be one of the most at-risk cities in the world in terms of potential human casualty. Unfortunately, the risk is growing. Main source of earthquake risk is poor performance of buildings that are largely non-engineered. Although Nepal had a rich tradition of earthquake resistant constructions evidenced by numerous historic monuments and heritage buildings in the valley, the risk is continuously increasing which fact has become a global concern.

To address the problem, Nepalese professionals and agencies have developed methodologies of earthquake risk assessment and have successfully implemented, in collaboration with international development partners, several initiatives on earthquake risk reduction. School Earthquake Safety Program including seismic retrofitting of school buildings, efforts towards public private partnership for earthquake preparedness including promotion of business continuity planning, development of earthquake damage scenarios and corresponding action plan for risk management, and development of risk sensitive land use planning are some of the innovative initiatives being implemented in the country. The results of these initiatives are encouraging, Nepal has witnessed a significant improvement in community awareness and perception of earthquake risk, and the perspective of earthquake risk reduction appears very promising in terms of cost efficiency, and socio-economic and technical feasibilities.

A.M. Dixit (✉)

National Society for Earthquake Technology [NSET], Kathmandu, Nepal

e-mail: amod.dixit@gmail.com

Serious challenges identified are the problem in scaling up of successes and institutionalization of the achievements made so far. Further, ensuring sustainability of the efforts, especially at the local levels, and ensuring comprehensiveness of earthquake risk management actions in order to support the efforts being made towards meeting the development aspirations of the people and betterment of their livelihoods also are the challenges.

Keywords Earthquake hazard • Earthquake risk • Risk assessment • Seismic retrofitting • Strategy • Vulnerability

6.1 Earthquake Hazard and Risk of Nepal

6.1.1 Introduction

Nepal lies in the southern slopes of the Himalayan range. This is an active seismic belt. The country sits astride the boundary between the Indian and the Tibetan plates along which a relative shear strain of about 2 cm per year has been estimated. The existence of the Himalayan Range with the worlds highest peaks is evidence of the continued tectonic activities beneath the country. As a result, Nepal is very active seismically. The history of Nepal is full of devastating earthquakes. The earthquake risk in Nepal is believed to be one of the highest in the world.

In fact Nepal has a long history of destructive earthquakes. The earliest recorded event in the most comprehensive catalogue to date occurred in 1255. There were significant earthquakes in 1833, 1934, 1960, and 1988. In this century alone over 11,000 people have lost their lives in four major earthquakes. A 1934 earthquake produced an intensity of IX–X on the Modified Mercalli Intensity (MMI) scale in Kathmandu Valley, and destroyed 20 % and damaged 40 % of the valleys building stock. In Kathmandu itself, one quarter of all homes was destroyed. Many of the temples in Bhaktapur were destroyed as well.

A simple loss estimation study for Kathmandu Valley in 1998 indicated massive damage to be expected to Kathmandu Valleys buildings, structures and population if the shaking of 1934 were to repeat (NSET 1999a, b). As many as 60 % of all buildings in Kathmandu Valley are likely to be damaged heavily, many beyond repair, during the scenario earthquake. Bhaktapur, which suffered the worst damage in 1934, has historically suffered more than the rest of the valley in earthquakes, possibly because of its soil conditions—as many as 75 % of all buildings in Bhaktapur are likely to be heavily damaged. A recent revision of the casualty estimate for a scenario earthquake of IX MMI level of shaking in Kathmandu valley revealed significant increase in risk—potential death of 100, and serious injury of 300,000 against the 1998 estimates of 40,000 death and about 100,000 injured to the extent of requiring hospitalization (R. Guragain, 2011, Re-estimating potential losses due to a MMI IX level of earthquake shaking in Kathmandu Valley, personal communication).

On the other hand, more than 90 % of the buildings in Nepal are constructed by the owners following the advice of local craftsmen. Consequently, most residential buildings, even in urban environment, do not receive any rational design for strength. Thus, in both urban and rural areas, the traditional craftsmen play the pivotal role although they are not given any specific training on seismic safety, and they do not have adequate access to information related to safer construction practices. Further, although most municipalities do have a system of building permits, there is no provision in the process to check the submitted plans against the strength criteria. There is poor institutional and technical capacity within the local authorities for implementing strength-related provisions even if they were to be introduced into the building permit process. Under such apparently difficult situation, promoting safer building construction cannot be possible without taking a radical approach such as shifting the emphasis from training of engineers to training of masons, and relying more in convincing the house-owners on earthquake safety rather than only controlling them through strict administrative penalties.

Adhering to such approaches, the National Society for Earthquake Technology-Nepal (NSET) has been successfully implementing initiatives for improving seismic performances of new constructions in urban and rural areas of Nepal. NSET is a non-governmental, not-for-profit institution that is focused on earthquake risk management in Nepal and the region. Efforts for integrating seismic safety in construction practice of owner-built houses is considered a part of a comprehensive strategy of NSET that includes public awareness programs, regular consultation for house-owners, informal training to masons and petty contractors, and training programs at the community levels. Efforts are being made to build capacity of local authorities (municipalities) in adopting seismic provisions of the national building code in their building permit process. Seismic intervention in public school in rural areas with community participation and with local masons involvement serves as tool to promote safe construction. Awareness tools like simplified shake table demonstrations and earthquake safety exhibition with real-scale construction models are found very effective to convince the people on the benefits of seismic provisions.

6.1.2 Unsafe Buildings Are the Roots of Earthquake Risk

While rampant poverty, rapid population growth, and lack of awareness of earthquake risk are believed to be the cause, poor building performance has been singled out as the most important constituent source of the ever-increasing earthquake risk in Nepal (GESI 2001). Therefore, improving seismic performance of new constructions and improving the same for the existing buildings should become one of the main thrusts towards earthquake safety in Nepal. Promoting safer building construction is an objective necessity for Nepal where urban population, for example that of Kathmandu, seem to be doubling every 10–15 years. Such rapid

growth of urban population demands a very high rate of building production, which, in the absence of proper building permit process, and a general lack of the knowledge and skills for earthquake-resistant construction, end up in shanty construction that are extremely vulnerable to earthquake.

Most residential buildings, even in urban areas of Nepal, do not receive any rational design for strength. Even though most municipalities (58 altogether) do have a system of building permits, there is no provision in the process to check strength criteria. The building permit process takes into account only the compliance related to planning such as the ground coverage, floor-area ratio (FAR), and the stipulations of the building bylaws (height, provision of toilet, sewer and solid waste disposal etc.). There is poor institutional and technical capacity within the local authorities for implementing strength-related provisions if they were to be introduced into the building permit process.

To compound the problem, there is no system of controlling the professional standards of engineers/designers through reference to professional qualifications/membership, peer review process or by legal means. Further, the owner-builders, who follow the advice of local craftsmen and mason-leader, build a significant proportion of the buildings in Nepal. Neither the owner-builder nor the craftsmen are aware of the possible disastrous consequences from an imminent earthquake. Neither do they have adequate access to information related to safer building practices and incorporation of simple earthquake-resisting features at nominal extra cost. Even the building construction projects funded by national and multilateral agencies usually do not spell out adequate requirements related to seismic safety in their terms of reference to their consultants.

6.1.3 Traditional Wisdom of Earthquake-Resistant Construction

Existence of traditional wisdom in building strong and “earthquake-resistant” buildings have been proven to exist in the Himalayan region (BCDP 1994; Dixit et al. 2004); the following list some of the main points.

- **Symmetric Configuration:** Most of the traditional buildings are rectangular in shape. These simple configurations in plan make the building more stable.
- **Small length to breadth ratio:** In most of the buildings the length to breadth ratio was found 1.5 or less.
- **Symmetrically located small openings:** Openings are found relatively small and symmetrically located. The small openings increase the length of the façade and substantially increase the stiffness of the building.
- **A low floor-height and a limited number of stories:** In all cases the story height was found less than 2.5 m and the number of story limited to 2 story.
- **Wooden bands:** In temples wooden bands around the building at sill level, lintel level and at the floor level can be found curved as “Naga”. These bands protect

the walls from out of plane failures as well as provide integrity between different structural elements by connecting orthogonal walls.

- Vertical Post at corners: These vertical posts at corners act as vertical tensile reinforcement. These protect the building from damage due to tensile cracks in the building. In some cases they provide some redundancy in the system which is very useful to withstand earthquake force.
- Wooden Corner Stitch: In addition to wooden bands, corner stitch can be found which connects orthogonal walls and protects from separation at corner.
- Wooden Pegs: Proper connection of all wooden elements by wooden pegs can be seen in traditional buildings, which helps for proper connection of roof and floor with wall as well as the different elements of roof or floor.
- Boxing of openings by wooden frames, either all around or along both edges of the masonry wall provides strength around the openings.
- Use of wooden wedges, carpentry joints (dovetailing etc.) provides passage for easier energy dissipation.

Recent studies have verified the effectiveness of traditional constructions. An assessment of different typology of buildings using micro-tremor measurements was conducted as a part of the Study on Earthquake Disaster Mitigation in the Kathmandu Valley, the Kingdom of Nepal, by a team led by Japanese specialists (JICA 2002). The survey results conclude, “Traditionally-made Brick-in-Mud structures are stronger than expected and (they) will not . . . generate pancake destruction like (reinforced concrete) RC frame structure (would). These results lead us to conclude that over 40% (of the) traditional masonry remained (unaffected seriously) in (the) 1934 earthquake, even in the strongly shaken area. Furthermore, the court-yard building with symmetrical shape is considered strong.”

Many good, spontaneously developed, technological features have been observed in the indigenous communities. But they lack comprehensiveness and widespread coverage. Measures against earthquake hazards have been observed in some cases. However, the reasons behind these measures are largely unknown to the builders. Such good features are extremely difficult for individual and collective comprehension and subsequent application. Obviously, this issue demands scientific studies and research. Nonetheless, such initiative for systematically conducting researches including those of traditional construction practices is yet to begin. The SAARC Disaster Management Centre (SDMC) did conduct a starting research on inventorying indigenous knowledge on safe construction practice in the Himalayan region (SDMC 2009). NSET and SEEDS India did develop a concept for a implementing a Pan-Himalayan Study on Indigenous Knowledge for Earthquake-resistant construction, and conducted training for inventorying the practices in northeast India and Nepal as per a standard methodology. Such efforts towards unveiling traditional wisdom in disaster risk management should be supported.

6.1.4 Earthquake Risk of Nepal: A Global Concern

Nepal Himalayas have always been the study target for explorers and scientists. Topography, geomorphology, geology and seismology of Nepal and Nepal Himalayas always attracted researchers—since the advent of mountaineering of Everest in the first decades of twentieth century, geologists were usually a part of expeditions, and they conducted geological researches (Heim and Gansser 1939; Gansser 1964; Hagen 1969, 1980; Bordet et al. 1972). Since then, several scientists, Nepalese and non-Nepalese, studied the geology of Nepal (Le Fort 1975; Pêcher 1977; Stöcklin 1980; Gansser 1981; Pêcher and Le Fort 1986; Fuchs et al. 1988; Nakata 1989; Schelling and Arita 1991; Liu and Einsele 1994; Le Fort 1996; Srivastava and Mitra 1994). Although these researchers have characterized some of the tectonic parameters necessary to understand the seismic hazard of Nepal, these efforts were largely for the study of the geological structure and structure. Study of seismic hazard really started with the establishment of first seismographs in 1978 by the National Seismological Centre (NSC) of the Department of Mines and Geology of Nepal (<http://www.seismonepal.gov.np/>). NSC has been conducting seismic monitoring using a nation-wide network of short period seismographs, accelerometers and GPS instruments, and seismic hazard assessment by active fault trenching, and other scientific studies.

J. B. Auden was perhaps the first geologist to talk about earthquake risk of Nepal when he undertook an extensive survey of the effect of the 1934 Bihar–Nepal Earthquake (Dun et al. 1939). Maj. General Braham Samsheer J. B. Rana was another person who gave a detailed accounts of casualty and damage due to the 1934 earthquake in Kathmandu and rest of Nepal, and for the first time, indicated towards the high seismic risk in Nepal and suggested ways to minimize the risk including the need and method of constructing earthquake-resistant residences (Rana 1935).

An assessment of earthquake hazard and risk was done under the Nepal Building Code Development Project (MPPH/HMGN 1994). This served as the basis for the formulation of seismic zoning map, and ultimately the National Building Code of Nepal). For the first time, the country learned about the high earthquake risk and realized the need for concerted efforts towards earthquake risk management including implementation of the building code as a campaign.

NSET arrested attention of people and government when it published the earthquake damage scenario of Kathmandu Valley (NSET 1999a, b).

A study conducted by the Bureau of Crisis Prevention and Recovery of UNDP revealed that Nepal stands at 11st position with respect to relative vulnerability to earthquake (BCPR-UNDP 2004). Earlier, another study of on relative earthquake risk in 21 cities located in high seismicity regions revealed that Kathmandu Valley happened to be the most at-risk city in the world with respect to earthquake risk measured in terms of human casualty (GESI 2001).

Nepal participated actively in all processes of the International Decade for Natural Disaster Reduction (IDNDR) and shared its National Action Plan for Disaster Management (MOHA 1996) in the UN International Conference on Disaster Management

in Yokohama in 1994. This opened for developing organized approaches for disaster management in Nepal, which was further refined after Nepal became signatory to the implementation of the Hyogo Framework for Action (HFA 2005-2015).

Nepal is an active participant of regional and international initiatives in disaster risk management such as the bi-annual Asian ministerial meeting on disaster risk reduction (AMCDRR), the Global Platform for Disaster Risk Reduction and other forums. As an active member of the SAARC Disaster Management Centre (SDMC) of the South Asian Association for Regional Cooperation (SAARC), Nepal has been promoting sharing of knowledge and joint initiatives as per the Earthquake Risk Management Road Map of SAARC (SAARC 2009). As a national member of the International Association of Earthquake Engineering (IAEE), NSET has been facilitating participation of Nepalese professionals in the IAEE world conferences every 4 year since the Acapulco conference in 1996. So far, Nepalese have shared their experiences in aspects of earthquake risk management in Nepal by contributing more than 30 scientific papers to the IAEE world conferences. Last year alone, Nepalese scientists contributed more than 15 papers on a variety of topics that ranged from risk assessment to earthquake risk mitigation and measures of earthquake awareness in Nepal (see proceedings of IAEE World Conferences: Auckland 2000, Vancouver 2004, Beijing 2008, and Lisbon 2012).

Despite the international attention and support, and despite also of the existence of traditional wisdom in aspects of earthquake risk management, and despite the successes of several initiatives on earthquake risk management, Nepal continues to face ever-increasing risk from earthquakes. This calls for more concerted efforts towards earthquake risk management and institutionalization of the process. Fortunately, earthquake awareness as well as the capacity in earthquake risk assessment and earthquake risk reduction is growing steadily due to efforts of governmental, non-governmental, academic, and private sector businesses, and the support received from international organizations, the UN system and bilateral agencies. This chapter envisions providing information of Nepal's experience in aspects of earthquake risk management including risk assessment. The following sections try to provide brief description on the methods of earthquake vulnerability and risk assessment employed in Nepal, provide examples of the use of risk assessment for reducing the earthquake risk in different sectors, and discusses the achievements as well as the challenges of earthquake risk reduction in Nepal.

6.2 Earthquake Risk Assessment

6.2.1 History of Hazard and Risk Assessment

After the devastation caused by the M6.6 Udaypur Earthquake of 1988, Nepal realized the need to quantify the earthquake hazard and to assess the risk for developing a strategy for seismic risk reduction. The National Building Code Development Project (BCDP), implemented during 1992–1994 by the Government

of Nepal with the support of UN Habitat, did conduct a detailed seismic hazard assessment that served as the basis for the development of the designed seismic load for the National Building Code (NBC) of Nepal (MPPH/HMGN 1994; NBC 1994; BCDP 1994). Soon it became evident that understanding only the hazard is not enough—the people should understand and perceive earthquake risk even for the implementation of the NBC. Establishment of the National Society for Earthquake Technology-Nepal (NSET) in 1994 was the result of this understanding that Earthquake Risk Assessment should be the first step for realistic and effective planning and implementation of earthquake risk reduction as well as preparedness initiatives as it helps understanding the underlying problems and its magnitude. The first earthquake risk assessment at city level carried out in Nepal was in Kathmandu Valley under Kathmandu Valley Earthquake Risk Management Project (KVERMP) implemented jointly by National Society for Earthquake Technology-Nepal (NSET) and Geo-Hazards International (GHI) in 1997. NSET continued different earthquake risk assessment studies in different cities/communities in Nepal where different approaches and methodologies were adapted in the period of 1997–2007. Starting from simple earthquake loss estimation based on secondary information on general building typology distribution in the city combined with intensity distribution of past earthquake (NSET 1999a, b), to comprehensive one with detail analysis of individual buildings (Jimee 2006) were carried out. Assessments were carried out in small communities with population of a couple of thousands to mega-cities with million people. However, in any case, the active participation and effective involvement of communities, city level officials and concerned city and central level line agencies was insured.

This experience revealed that the risk assessment is a strong awareness raising and planning tool if concerned stakeholders are involved in the process of assessment itself.

6.2.2 Risk Assessments Methodologies Used

Seven different methodologies are used in Nepal for evaluation of earthquake risk of cities and communities in Nepal. They not only differ in accuracy but the approaches and process too. Brief description of each methodology is described in the following sections.

6.2.2.1 KVERMP Methodology

Kathmandu Valley Earthquake Risk Management Program (KVERMP) used secondary information on earthquake hazard and considered the intensity distribution of 1934 Nepal–Bihar Earthquake in Kathmandu (Fig. 6.1) as the worst-case scenario. In addition, liquefaction susceptibility map, prepared by MPPH/HMGN (1994), was used for estimating potential loss of lifelines and critical infrastructures. General information on building typology and their distribution based on census and

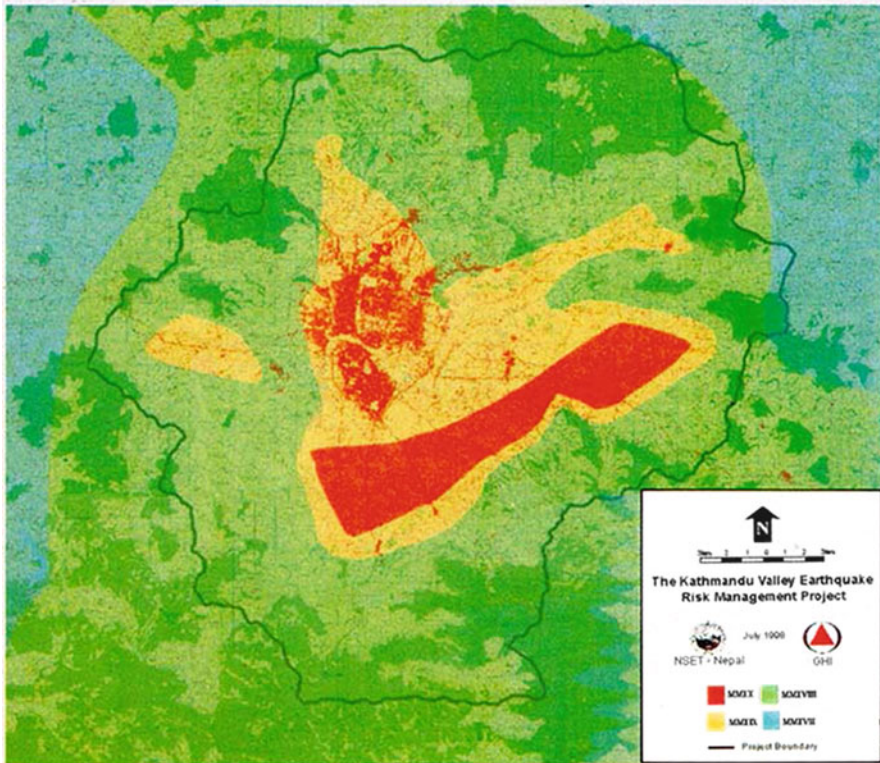


Fig. 6.1 Intensity distribution of 1934 Nepal–Bihar earthquake in Kathmandu Valley compiled by KVERMP

limited survey data carried out for other projects was used as the building and population information. Different lifeline networks like water supply network, road etc. and important critical facilities like hospitals were interpreted with the seismic hazard maps i.e. the intensity distribution and liquefaction susceptibility to assess the risk. Earthquake risk in terms of damage to buildings and infrastructures was calculated based on loss functions in ATC-13 (1995) and ATC-25 (1991). In addition, possible death and injury figures were determined by looking at statistics from previous comparable earthquakes from around the world.

The results of the technical analyses were discussed with representatives of technical community, decision makers/authorities, and operators of lifelines, schools, and hospitals in a series of interactions for their opinion on estimated damage and also their preparedness level and recovery capacities. After a realistic assessment of capacities of all concerned stakeholders, the risk maps were interpreted in common people language. For example, the number of possible breaks to water supply pipelines was compared with the repair capacity of Water Supply Corporation (Fig. 6.2). A scenario document explaining the results of the

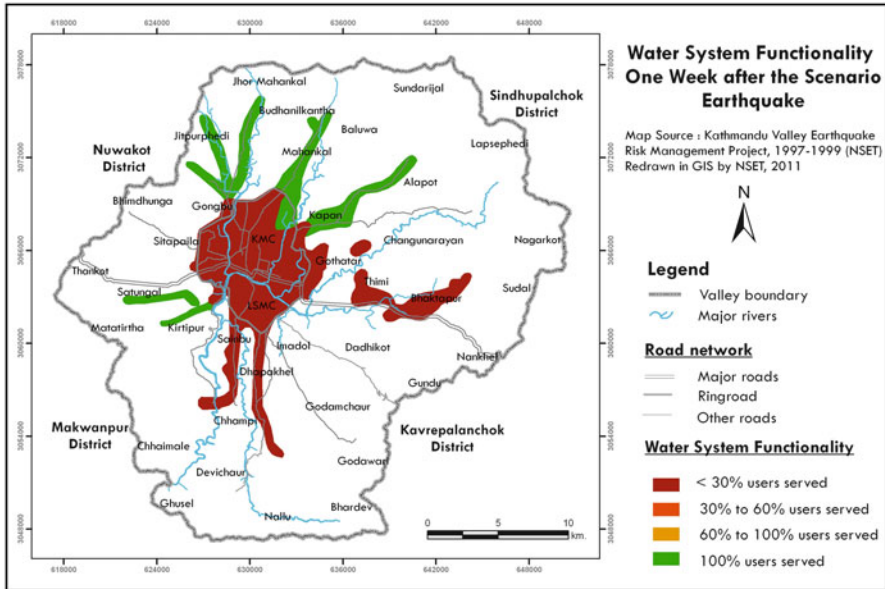


Fig. 6.2 Water supply system damage map in Kathmandu Valley prepared by KVERMP

earthquake loss estimation study in laymans terms was written and published in English and Nepali languages (NSET 1999a). This document includes a description of possible damages to various lifelines systems in Kathmandu and an explanation of the repercussions of this damage on in the society. The document also presents a story of a representative citizen, “Bhaicha”, for an entire year after the scenario earthquake, illustrating how his life is impacted.

After this process of scenario, the project worked with over 80 government and non-government institutions to develop an action plan (NSET 1999b) to systematically reduce the risk over time. The main purpose of the plan was to assist the Government of Nepal, concerned agencies and the municipalities of the Kathmandu Valley to reduce the earthquake risk over time by coordinating and focusing risk management activities. Although developed as an action plan, it became a perspective plan and is under implementation since then. Some of the activities of the Plan, e.g. the school earthquake safety program (SESP), mason training, earthquake safety day etc. are now considered successful programs in Nepal and the region.

6.2.2.2 RADIUS Methodology

The United Nations Office of the International Decade for Natural Disaster Reduction (IDNDR), currently known as the UN International Strategy for Disaster Reduction (UNISDR), during 1996–1999 implemented a project called Risk Assessment Tools for Diagnosis of Urban Areas Against Seismic Disasters

(RADIUS). The project included development of earthquake damage scenarios and action plans for earthquake disaster mitigation for nine different cities (Bandung, Tashkent, Zigong, Addis Ababa, Izmir, Skopje, Antofagasta, Guayaquil, and Tijuana). RADIUS has produced a tool for earthquake damage estimation. The scenario methodology developed under KVERMP was adopted by the RADIUS project for implementation in the RADIUS cities around the world (RADIUS 2000).

A computer program in Excel for simplified Earthquake Damage Estimation was developed as a component of the RADIUS project. The program requires input of a simple data set and provides visual results with user-friendly prompts and help functions. Input data are population, building types, ground types, and lifeline facilities. Outputs are seismic intensity (MMI), building damage, lifeline damage and casualties, which are shown with tables and maps. The concerned city needs to be divided to specific grid and the input data has to be provided for all grids.

NSET used the RADIUS tool for earthquake loss estimation widely—in small and medium municipalities and even in municipal wards, and also as a training material. As the RADIUS tool is easy-to-use and does not require detail technical knowledge on earthquake engineering, the municipality officials conducted the risk assessment themselves with small guidance from NSET, running the tool for different possible earthquake scenarios. The difference in potential impact depending on the time of the event occurrence (day/night) was analyzed. The city officials also analyzed the impact of implementing earthquake risk management activities like building code implementation by developing different scenario after a certain period of time (Fig. 6.3).

This methodology also engages different stakeholders to discuss and internalize the results of the risk assessment and based on it, an action plan for the city or the municipality. Ultimately, the priority actions thus identified could be incorporated to a certain extent into the periodic development plan of the city. Many cities started implementing some immediate short-term initiatives like folk lore competitions, earthquake safety rally etc. for awareness raising and also some long-term initiatives of earthquake risk reduction like implementation of building code at the city level. So, this participatory risk assessment helped the stakeholders to better understand the risk and the importance of implementing earthquake risk reduction activities in the city.

6.2.2.3 GIS in Grid

Ministry of Home Affairs (MOHA) of the Government of Nepal with support from Japan International Cooperation Agency (JICA) implemented a project on “Earthquake Disaster Mitigation in Kathmandu Valley” in 2001 (JICA 2002), which included detailed assessment of seismic risk. NSET worked with JICA study team for the seismic risk assessment component (Table 6.1). In this study, hazard and risk assessments were done in GIS environment. The whole Kathmandu valley was divided to 500 m × 500 m grid and distribution of seismic hazards and vulnerability were calculated for each grid. As the study area covered whole valley

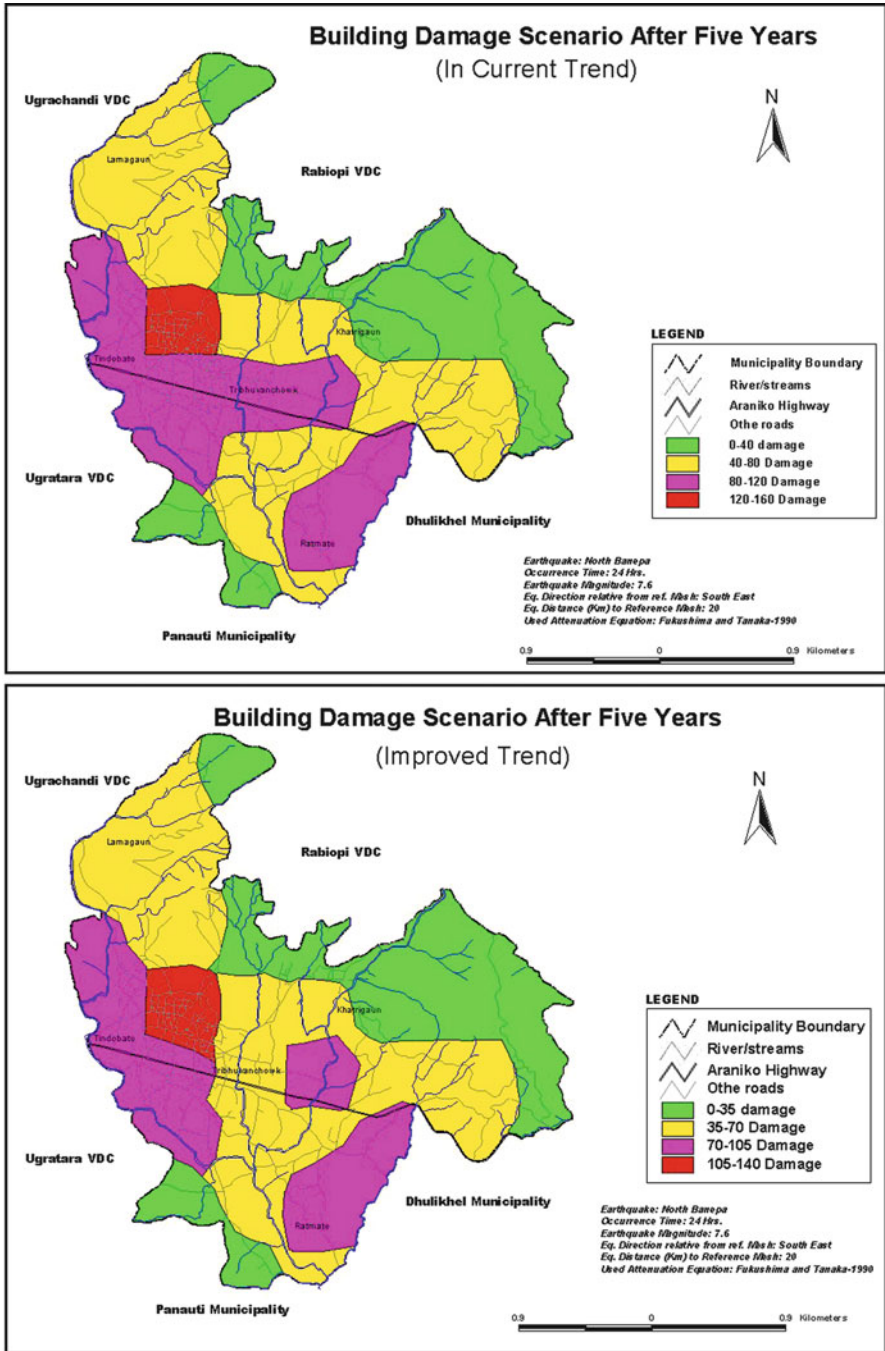


Fig. 6.3 Comparison of damage scenario for building construction with and without seismic consideration

Table 6.1 Building sample areas and total number of building assessed

No.	Building sample area	Settlement type		No. of areas sampled	Total number of samples
		Main type	Sub-type		
1	Institutional	Urban		(Schools, hospitals, college, cinema)	32
2	Commercial	Urban		6	150
3	Industrial (light industry)	Urban		4	40
4	Residential	Urban	Urban core	19	281
			Urban fringe	17	219
		Suburban	Suburban core	2	46
			Suburban fringe	7	151
		Rural	Rural core	3	81
			Rural fringe	7	183
Total					1,183

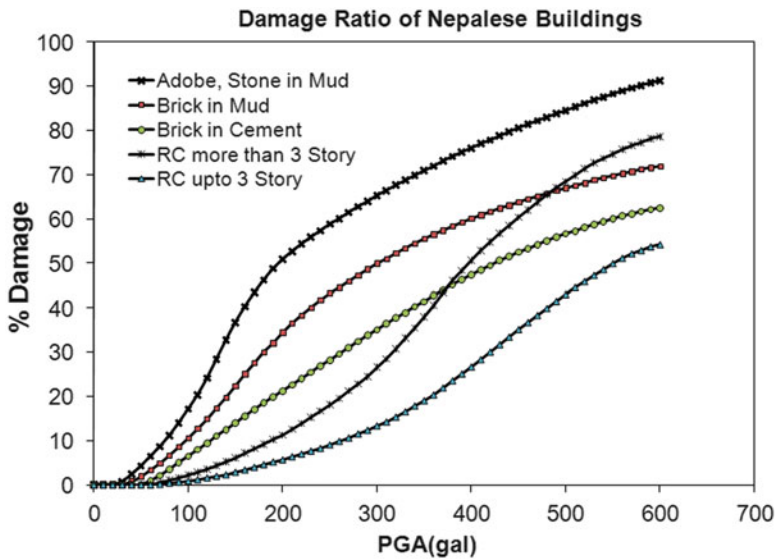


Fig. 6.4 Building fragility functions modified by the JICA (2000) project

with the population of about two millions, it was not possible to conduct vulnerability assessment of all individual buildings and infrastructures. So the whole valley was divided to six different categories of prevalent buildings typology distributions, population density and the urban development pattern.

About 1,200 buildings were surveyed in detail to understand the vulnerabilities of different typology as well as use of the buildings. Fragility functions given in Nepal National Building Code (NBC 1994) were modified based on building damage data of 1988 Udaypur earthquake in eastern Nepal (Fig. 6.4). These modified fragility functions were then used for calculation of buildings damage.

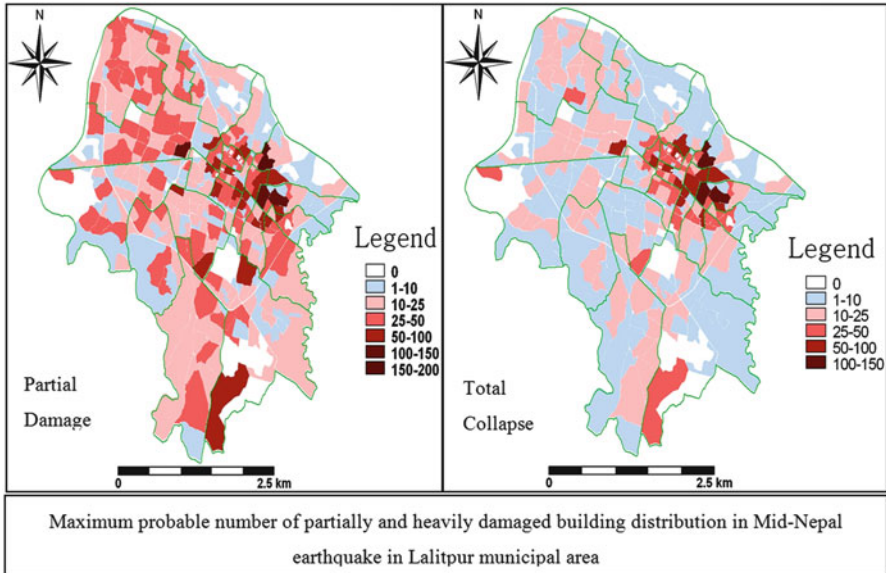


Fig. 6.5 Earthquake damage scenario developed by SLARIM

This formal scientific method of risk calculation was useful as it confirmed the results of the earlier less formal and simplified methodologies of risk assessment, which, nonetheless, did indicate towards high seismic risk of Kathmandu Valley and convinced the people and the government to develop and implement risk reduction initiatives.

6.2.2.4 SLARIM Methodology

In 2002 the International Institute for Geo-information Science and Earth Observation (ITC) launched a research project named Strengthening Local Authorities in Risk Management (SLARIM), which developed a generic methodology for GIS-based risk assessment and decision support for local authorities in medium-sized cities in developing countries. The project was implemented in three cities, notably, Naga city (Philippines), Lalitpur Sub-metropolitan city (Nepal), and Dehradun (India). NSET implemented the SLARIM project in Nepal (Guragain 2004; Islam 2004; Jimée 2006).

This methodology uses two-pronged approaches for estimating extents of buildings damage and casualty. The first approach is to divide the city into homogeneous clusters of similar buildings (number of stories, building use, building system and materials etc.). Estimates of building damage and casualty are done using appropriate fragility functions and the HAZUS-MH (HAZUS-MH 2003) methodology respectively. The outcome of this risk assessment methodology is detailed enough for city level planning for emergency response as it gives detail information on the distribution of building damage and road blockage by debris (Fig. 6.5).



Fig. 6.6 Buildings collapse probability (*left*) and potential casualty (*right*) at MMI IX level of shaking

The second approach, both the physical characteristics of the buildings and socio-economic information of the households are collected at individual building level. Different building related vulnerability factors, socioeconomic conditions, public awareness, response capacity; risk perception and preparedness level of individual household are collected from the field survey (Jimee 2006). An intensity-damage matrix, considering existing Nepalese building types, prepared by Guragain et al. (2008) is used for building damage estimation (Fig. 6.6).

Once the building damage is assessed, human casualties are estimated in relation of population distribution and building damage/collapse probability. Casualty ratios related to building damage are derived from HAZUS-MH.

NSET finds that this methodology is useful for a ward level risk assessment of medium to large cities in developing countries.

6.2.2.5 Community Watching

This is an informal but very effective method for enhancing local residents, understanding of prevailing seismic risk in an urban neighborhood. This methodology can be used in conjunction with Community-Based (or community-managed) Disaster Risk Management Programs.

Main activity of this method is a collective guided walk along the streets of a city neighborhood; an expert or a technical person engages the participants in discussion on vulnerabilities and risk by pointing out to the identified hazards, vulnerabilities, and risks. The participants collectively assess the hazard, vulnerability and capacity, and at the end of the “walk” prepare maps depicting the hazards, risks for different

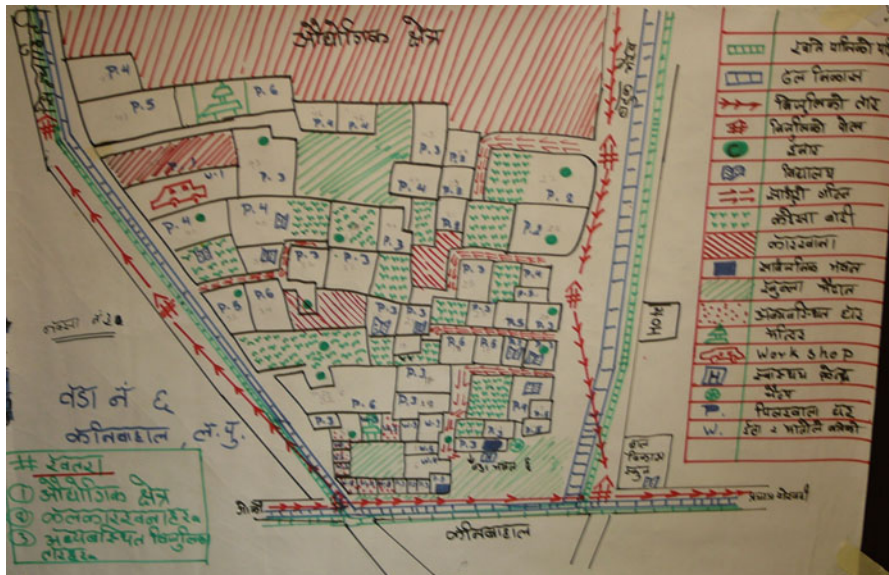


Fig. 6.7 Example of vulnerability and capacity map prepared by community

scenario (Fig. 6.7). Many times, an action plan of priority activities identified is prepared including demonstration projects. One of the main outcomes of this initiative has been establishment of local disaster risk management organization at community level.

6.2.2.6 HAZUS Methodology

The most advanced, interactive, publicly available loss estimation software is the HAZUS software, released by the United States Federal Emergency Management Agency (FEMA) since 1997. The latest version is the multi-hazard HAZUS-MH that analyzes earthquakes (ground shaking, and earthquake-induced hazards such as liquefaction, landslides, fires, floods, debris flow etc.), windstorms (hurricanes) and floods (coastal and riverine flooding). HAZUS-MH works in GIS environment and full datasets on the level of census tract can be obtained for the entire United States (HAZUS-MH 2003). Availability of systematic data on various parameters used in the analysis by HAZUS is a constraint for many developing countries.

NSET used HAZUS software for Kathmandu Valley on a research basis to check its usability against available parametric information. Our finding is that the method is relatively complex in comparison to other methodologies described above and requires a large quantity of the input data. It further needs adaptation for use at different levels of details, and different applications (e.g. nation-wide, or municipal

scale). Some technical difficulties like changing acceleration-based fragility functions to displacement based functions, limitations on building occupancy class etc. needs to resolve empirically to use it immediately. Further research is required to meet the local requirements. However, it is found that the HAZUS can be used and can be a basis for a national level risk assessment system if the objective is to conduct detail assessment work by professionals.

6.2.2.7 CAPRA

CAPRA (2013) is a Disaster Risk Information Platform for use in decision-making that is based on a unified methodology and tools for evaluating and expressing disaster risk. Building on and strengthening existing initiatives, CAPRA was developed by experts to consolidate hazard and risk assessment methodologies and raise risk management awareness.

Earlier, NSET has extensively used RADIUS tool for carrying out the earthquake assessment. While it still uses RADIUS especially while explaining urban risk to the policy/decision-makers, NSET has started using CAPRA methodology and tools for evaluating earthquake risk of urban areas of Nepal. Currently, NSET is implementing a new initiative called Building Code Implementation Program Nepal (BCIPN), which seeks to assist 24 municipalities of Nepal in building code implementation (NSET 2013). Development of an Urban Disaster Vulnerability Atlas is one of the targets, and we contemplate using CAPRA as an alternative methodology. We expect to publish the Atlas in 2 years time.

6.2.2.8 Comparison of Risk Assessment Methodologies

Table 6.2 provides a comparison of the different methodologies of earthquake risk assessment. It is based on the experience of NSET in using the different methods in Nepal and other countries.

A simple analysis reveals that simple and less resource-heavy methodology such as KVERMP, RADIUS and community watching are the most efficient confirming the actual fact of their high effectiveness in the early days of earthquake risk management activities in Nepal. Furthermore, the RADIUS and Community watching methods are low-cost and simple, and hence appeal to the community people and also the local authorities (Table 6.2). Therefore, although less accurate, these methods are highly effective in earthquake awareness; these can be used as stand-alone methods for the purpose of raising earthquake awareness or in combination with other more sophisticated methods in the initial stages of risk assessment/risk reduction programs.

The GIS GRID, HAZUS and CAPRA methodologies demand high professional inputs and analytical hardware; usually a professional training program is necessary to enhance competencies of local engineers.

Table 6.2 Comparison of risk assessment methodologies

Methodologies	Stakeholders involvement				Motivation to community	Accuracy	Resource required	Simplicity	Possibility of use in developing countries
	Professionals	Local authorities	Community	Community					
KVERMP	Medium	High	Medium	High	High	Medium	Low	Simple	Yes
RADIUS	Medium	High	Medium	High	High	Medium	Low	Simple	Yes
GIS GRID	High	Low	Low	Low	Low	Med-high	High	Complex	Yes
SLARIM	High	Medium	Low	Low	Low	High	High	Complex	Yes
Community watching	Low	Medium	High	High	High	Low	Low	Simple	Yes
HAZUS	High	Low	Low	Low	Low	Med-high	High	Complex	Yes
CAPRA	High	Low	Low	Low	Low	Med-high	High	Complex	Yes

6.3 Earthquake Risk Assessment for Earthquake Risk Management: An Example of Improving Seismic Performance of Public Schools

6.3.1 Structural Vulnerability Assessment of School Buildings

NSET started the School Earthquake Safety Program (SESP) in Nepal in 1997. SESP consists typically of (a) structural vulnerability assessment of schools buildings to different levels of earthquake shaking, (b) identification of possible structural interventions for improving seismic performance of the school buildings, (c) design and implementation of seismic retrofit or reconstruction, (d) earthquake awareness in the community, and (e) conduction of a variety of training programs for different target groups on structural and non-structural vulnerability reduction. The process includes study of building typologies (Table 6.3, Fig. 6.8), recording of geometry and other parameters to identify structural weaknesses in the building.

Weightage factor is then assigned to the vulnerability factors, and their collective contribution is summed to identify the damage grade of the building at various levels of shaking intensities. Further interpretation is conducted to evaluate the potential damage at various intensities, and classification of damage, both structural and non-structural ones. Options for possible intervention are then identified and recommended for further design and calculation.

Of the building typologies, adobe, and round rubble stone masonry are similar in their response to shaking while brick in cement, block masonry and quarry stone in cement are grouped as ones with similar response. Similarly, steel frame structure and reinforced concrete structure respond in somehow similar fashion. Such broad classification helps us to undertake prediction of possible damage at different levels of earthquake shaking. Ultimately, considering all parameters, the potential damage grade of the particular building is classified for different shaking intensities as per the established damage grade classification (Table 6.4).

Table 6.3 Prominent school building typology in Nepal

Typology	Abbreviation	Category
Adobe	AD	Masonry
Quarry stone in mud	QSM	
River stone in mud	RSM	
Quarry stone in cement	QSC	
River stone in cement	RSC	
Brick in mud	BM	
Brick in cement	BC	
Block masonry in cement	BLM	
Reinforced concrete	RC	Frame structure
Steel frame	SF	Steel frame
Wooden frame	WF	

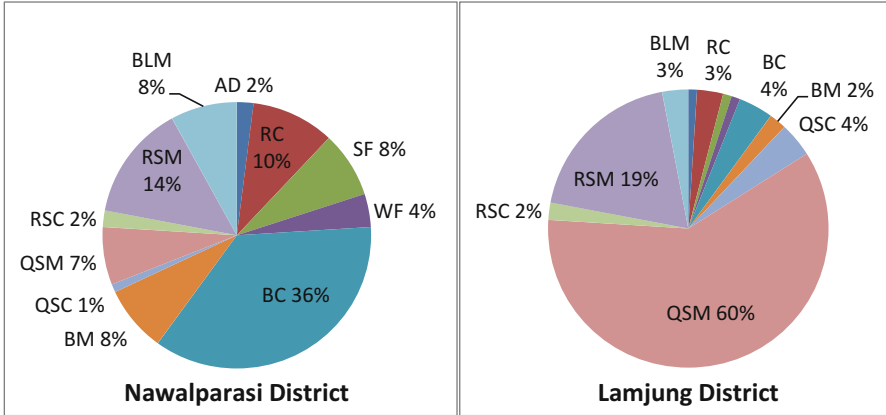


Fig. 6.8 School building typologies in Nawalparasi and Lamjung districts

Table 6.4 Damage grade and damage pattern

Damage grade	Damage pattern
DG1	Slight damage
DG2	Moderate damage
DG3	Heavy damage
DG4	Partial collapse
DG5	Collapse

Fig. 6.9 Potential damages of school buildings at MMI IX in Lamjung District

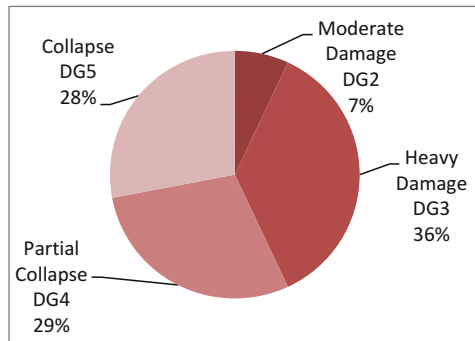


Figure 6.9 provides a picture of the vulnerability of school buildings in Lamjung District for a shaking intensity of IX MMI (Dhungel et al. 2012).

6.3.2 Casualty Estimation

In Nepal, casualty and injury during earthquakes are ascribed mainly to the damage and collapse of buildings. In case of schools, estimation of potential casualty is done for a normal working day when all classes are running, using established

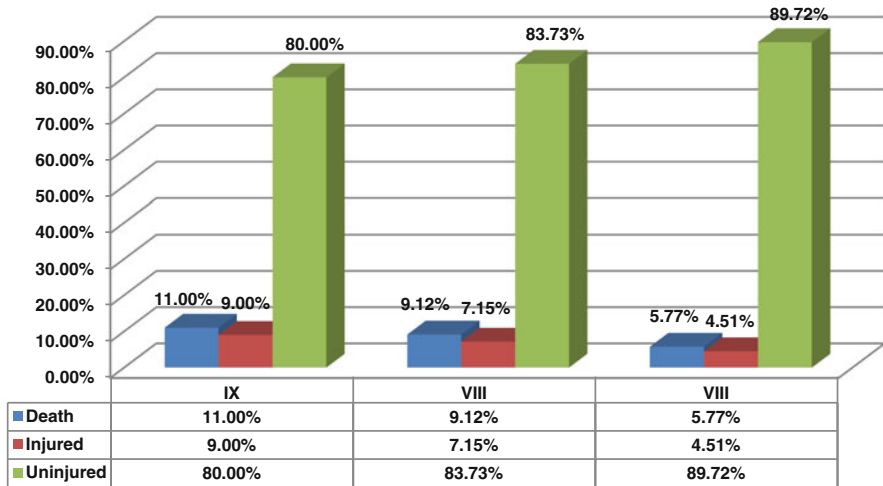


Fig. 6.10 Chart for the combined results of casualty and injury, Lamjung and Nawalparasi districts

methodologies such as RADIUS. Assumption is made that 60 % of the classroom population will be trapped inside for condition of heavy damage and partial or total collapse. Assessment of potential extent of damage is arrived at by using the fragility curve for Nepal interpreted in the light of the European Macroseismic Scale (EMS 1998).

Figure 6.10 provides combined average estimates for the two districts of Lamjung and Nawalparasi. Potential death of almost 11 % of the people (students, teachers and administrative staff) at MMI IX and more than 5 % at intensity VII MMI are exceptionally high figures that demand urgency for implementing school retrofitting programs in the country.

6.3.3 Development of a National Damage and Loss Scenario

6.3.3.1 Area Likely to Be Affected by One Large Earthquake in Nepal

Since the territory of the two adjacent districts of Nawalparasi and Lamjung cover all ecological belts of Nepal from Terai through the mid-hills to the Higher Himalayas, the findings of seismic risk of school buildings could be confidently extrapolated to the entire country in terms of building typologies and other physical parameters. Assuming that a large earthquake producing intensities of IX MMI or greater, similar to the Bihar–Nepal Earthquake of 1934, could affect about a third of the country length-wise, as shown in Fig. 6.11, we can make estimates on various parameters and ultimately the risk at the national scale. The following paragraphs provide the explanation.

Fig. 6.11 Hypothetical earthquake scenarios

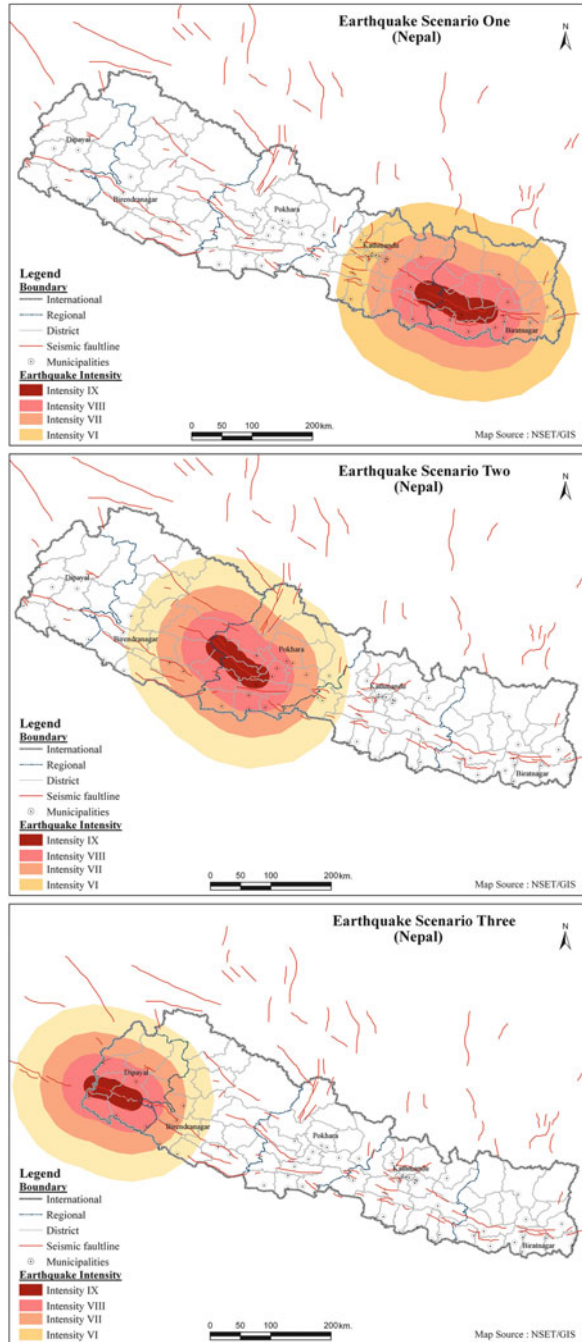


Table 6.5 National school building typology

Building typology	Percentage (%)
Masonry	89.43
Reinforced cement concrete	6.08
Steel frame	4.49

Table 6.6 Nation-wise school building damage scenario at intensity IX MMI

Damage grade	Shaking intensity IX MMI		Shaking intensity VIII MMI		Shaking intensity VII MMI	
	Building unit	Percentage (%)	Building unit	Percentage (%)	Building unit	Percentage (%)
No damage	0	0	0	0	3,587	3.84
DG1	0	0	3,587	3.84	19,831	21.22
DG2	3,587	3.84	19,831	21.22	26,666	28.53
DG3	19,831	21.22	26,666	28.53	29,506	31.57
DG4	32,758	35.05	29,509	31.57	12,656	13.54
DG5	37,292	39.90	13,875	14.84	1,218	1.30

6.3.3.2 Prevailing Typologies of School Buildings

Extrapolation of the findings of SESP to the whole country reveals a distribution of school building typologies as given in Table 6.5.

6.3.3.3 Probability of Damage

Table 6.6 shows the estimated probability of damage of school buildings of Nepal at different intensities of earthquake shaking. It is assumed that a large magnitude earthquake would affect about a third of Nepal's territory and the intensities of shaking would follow a pattern as depicted in Fig. 6.11.

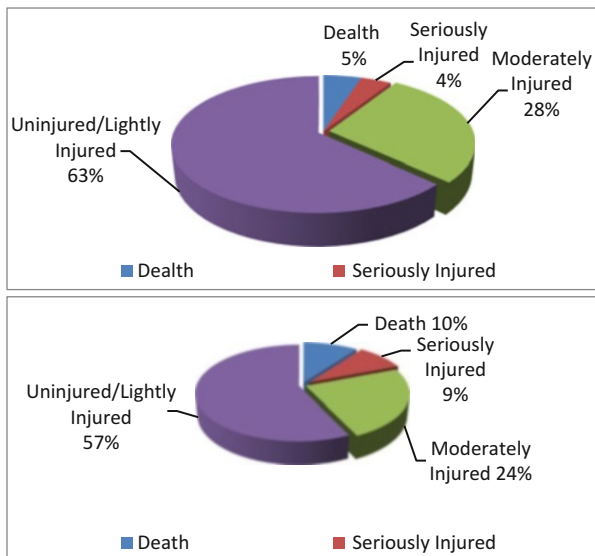
6.3.3.4 Casualty Scenario in Nepal at Shaking Intensity of IX MMI

Figure 6.12 shows the estimated extent of mortality and injury within the affected area of a high magnitude earthquake resulting in the maximum intensity IX MMI level of shaking in Nepal.

6.3.3.5 Summary Conclusion on Seismic Risk in Schools of Nepal

Official statistics shows that there are about 34,000 public and private schools in Nepal. Cumulatively, they have about 80,000 buildings. Out of these buildings, more than 50,000 buildings are vulnerable and need seismic retrofitting. About

Fig. 6.12 Casualty/injury in all school of Nepal, at intensity IX (top), at Intensity VII (bottom)



15 % of the building needs to be demolished and constructed anew. This is a grave situation that demands urgent attention. Failure to address the risk may result in an estimated death of over 110,000 occupants of the school building should the Big One strike during normal school hours.

6.4 Initiative for Earthquake Risk Management in Nepal

Despite the availability on knowledge of historical seismicity, and continued geological researches in the Nepal Himalayas, public awareness on the earthquake hazard and risk was minimal till some years ago, and implementation of earthquake risk management efforts were almost non-existent. The 1988 Udaypur Earthquake was a big turning point. Following the massive destruction and a toll of 721 human lives, the need for an organized approach was felt in all quarters. Several initiatives were conceptualized and implemented by the Government as well as non-government sectors since then. The following list provides a brief glimpse of the process:

6.4.1 Kathmandu Valley Earthquake Risk Management Project (KVERMP)

The Kathmandu Valley Earthquake Risk Management Project (KVERMP) was implemented during September 1997–December 1999 by the National Society for Earthquake Technology-Nepal (NSET) in association with GeoHazards International

(GHI), as the Nepal national project of the Asian Urban Disaster Mitigation Program (AUDMP) implemented by the Asian Disaster Preparedness Centre (ADPC).

KVERMP included a wide variety of activities aimed at beginning a self-sustaining earthquake risk management program for Kathmandu Valley. Project components included: (1) development of an earthquake scenario and an action plan for earthquake risk management in the Kathmandu Valley, (2) a school earthquake safety program, and (3) awareness raising and institutional strengthening.

The project was implemented with strong participation by national government agencies, municipal governments, professional societies, academic institutions, schools, and international agencies present in Kathmandu Valley in advisory committees, various workshops, seminars, interviews and joint programs.

Major accomplishment of the project was development of an earthquake damage scenario and an action plan for reducing the seismic risk of the valley. The action plan is a consensus document depicting roles and responsibilities of all concern institutions in managing the seismic risk of Kathmandu.

School Earthquake Safety Program (SESP) was another major accomplishment. It established technical and social feasibility and also the affordability of seismic improvement of school buildings. SESP is now an established program, which not only helps build the school buildings stronger, but also serves as an awareness-raising tool that ultimately makes the entire community safer against earthquake. Training of masons in earthquake safe construction and disseminating the earthquake safety information to children, teachers, parents and community at large are the strongest parts of SESP which is found as the start of a self replicating process. The KVERMP also helped institutionalize the seismic safety consideration with several policy shifts—at NSETs request, the government designated January 15 as the Earthquake Safety Day, in recognition of the occurrence of the last earthquake to strike the valley on January 15, 1934. An Earthquake Safety Day National Committee has been constituted with the Minister of Home Affairs as the Chair, and 22 representatives of various organizations, including NSET, as committee members. The Committee is responsible for organizing the Earthquake Safety Day events annually. KVERMP successes triggered an organized process of earthquake risk reduction in Nepal. Some of the major subsequent initiatives are listed in Table 6.7.

6.4.2 The Study on Earthquake Disaster Mitigation of Kathmandu Valley (SEDM)

The Japan International Cooperation Agency (JICA) carried out a project “The Study on Earthquake Disaster Mitigation in the Kathmandu Valley, Kingdom of Nepal” (JICA 2002) in cooperation with the Ministry of Home and several Nepalese institutions. The study undertook a detailed loss estimation calculation for three scenario earthquakes. Potential casualty and damage to infrastructures was done at the municipal ward level. Different surveys were undertaken for assessing the available resources and constraints. A building inventory was prepared for 1,100

Table 6.7 Trigger and history of organized earthquake risk management in Nepal

Historical events as triggers and subsequent ERM initiatives	What changed as a result?	Challenges/obstacles to progress	Tangible examples(s) of success stories
1. 1988 earthquake	Earthquake became a national concern National Building Code developed NSET established in 1993	NBC implementation huge task	NBC incorporated four levels of building code provisions to cover entire building typologies of Nepal
2. International Decade for Natural Disaster Reduction (IDNDR) (1990–1999)	National Action Plan for DM Prepared, 1994—to be presented during World Conference in Yokohama, Japan	Lack of policy, legal instrument felt acutely	IDNDR national committee decentralized to include members from outside government e.g. NSET became member
3. Kathmandu Valley Earthquake Risk Management Project (KVERMP), Nepal Earthquake Risk Management Program (NERMP), Program for Enhancement of Emergency Response (PEER), 1997–2005, implemented by NSET	The project was implemented with strong participation by national government agencies, municipal governments, professional societies, academic institutions, schools, and international agencies present in Kathmandu Valley in advisory committees, various workshops, seminars, interviews and joint programs. Organized approaches for ERM started e.g. earthquake risk assessment of KV, action planning for risk mitigation, knowledge management, preparedness. Earthquake damage scenario helped to enhance awareness at different levels Need for integrating disaster reduction into development of infrastructure started being felt Enhanced Governments involvement in ERR	Limited GON involvement and acceptance in ERR	Earthquake scenario, action-plan for KV School Earthquake Safety Program (SESP) Annual Earthquake Safety Day (ESD) Mason training programs Hospital assessment Water system assessment Building code implementation in Lalitpur Community Based Disaster Risk Management PEER in 6 counties by NSET Public Private Partnership in Earthquake Risk Management (3PERM)
4. Study on Earthquake Disaster Mitigation for Kathmandu Valley (JICA 2002)		No follow-up, no actions	GIS based risk maps Tools for community based ERM developed and tested

<p>5. World Conference on Disaster Reduction (WCDR), 2005, Kobe, Japan</p>	<p>DRR included as policy in national plan National commitment to DRR reiterated Need felt for improving policy, legal environment Numerous programs/actors, methodologies islands of success</p>	<p>No proper mechanism and plan for implementation No budget, no plan for DRR, no adequate international support for DRR</p>	<p>More CBDRM More schools More municipalities</p>
<p>6. Formulation of National Strategy for Disaster Risk Management (NSDRM), 2007–2009</p>	<p>National vision for DRR portrayed Comprehensive DRR framework developed Priority actions identified Cluster approach accepted as key Replicable models identified Need for institutional framework for DRR felt Donors included DRR in their national strategy NSDRM approved by government</p>	<p>Scaling up Lack of institutional mechanism Action</p>	<p>SESP going outside of Kathmandu Valley National strategy for safer schools Risk Sensitive Land use Planning (RSLUP) in Kathmandu Metropolitan City (KMC) Building Vulnerability parameter collected in census 2011</p>
<p>7. Nepal Risk Reduction Consortium (NRRCC), October 2009</p>	<p>Unified and consensus approach by most donors/financial institutions on DRM Collective efforts to assist government</p> <ul style="list-style-type: none"> • Mandatory in development works by government/donors • Training curricula, manuals, guidelines prepared/tested • Huge need vs. limited institutional and HR capacity • Plan for hospitals retrofitting • Mainstreaming DRR • CDRMP by UNDP 	<p>Risk assessment and RR not Mandatory in development works by government/donors Huge need vs. limited institutional and HR capacity Mainstreaming DRR</p>	<p>SESP, 65 schools retrofitted in 2 years Training curricula, manuals, guidelines prepared/tested Plan for hospitals retrofitting CDRMP by UNDP</p>

typical buildings representing the valley. Damage analysis of existing building stock, public facilities, and lifeline networks was based on the building inventory research. This study also undertook a social structure survey that explored existing social norms that contributed to disaster resiliency of the society. The existing policy and legal environment was also researched

The project ended up proposing several schemes for making seismic risk coping mechanism operational and sustainable (JICA 2002):

- To build a coordination mechanism by establishing a permanent structure such as National Disaster council.
- To put higher priority on the disaster mitigation and preparedness policies and confirm it in the 5 year national plan.
- To empower local autonomous bodies for risk management.
- To promote public awareness to earthquake disaster and give support to target groups for resilient capacity on self-help basis.

The SEDM proposed generation and implementation of earthquake disaster reduction plans at different levels of the government. It was suggested that the individual disaster management plans should be prepared at each level of government and institutions by the method of full participatory planning by all stakeholders.

6.4.3 Urban Regeneration

This is a concept of redevelopment of city core area with improved infrastructure, enhanced economic activities, transformed old earthquake-vulnerable building stock into earthquake-resistant neighborhood, improved quality of life, preserved historic & architectural heritages and social relation from a situation of highly vulnerable buildings without possibility of seismic retrofitting; poor accessibility, especially for emergency services; poor infrastructure; under-utilized high tourism and economic potentials, and cultural heritage and vernacular architecture being at high risk due to seismic and fire hazards, and also due to the current trend of building repair & replacement.

6.4.4 Nepal Risk Reduction Consortium (NRRC)

In May 2009, the Government of Nepal launched the comprehensive Nepal Disaster Risk Reduction Consortium (NRRC 2013). The NRRC is a unique institutional arrangement, bringing together financial institutions, development partners, the Red Cross/Red Crescent movement, and the UN in partnership with the Government of Nepal. It bridges the spectrum of development and humanitarian partners, uniting to support the Government of Nepal in developing a long term Disaster Risk Reduction Action Plan building on the National Strategy for Disaster Risk Management (NSDRM). The founding members of the Consortium are the

Asian Development Bank (ADB), the International Federation of the Red Cross and Red Crescent Societies (IFRC), United Nations Development Programme (UNDP), UN Office for the Coordination of Humanitarian Affairs (OCHA), UN International Strategy for Disaster Reduction (ISDR) and the World Bank. Five priority areas are being implemented as the five flagship programs under the NRRC.

6.4.5 Promoting Public Private Partnership for Earthquake Risk Management (3PERM)

The program 3PERM focuses on tapping the vast potentials of the private sector business to contribute to earthquake risk reduction in Kathmandu Valley and Nepal. The program is geared towards: (a) raise awareness of all stakeholders, especially the private sector and other stakeholders that closely relate with potential earthquake risk reduction activities, (b) assess the potential of the commitments and potential energy and leadership within the private sector and its potential capacity to exert pressure on the government to consider earthquake risk management as one of the priority areas for mainstreaming into the development processes, and (c) implement a detailed study of the model public private partnership (PPP) in urban regeneration to be piloted in a demonstration neighborhood of the core area of Kathmandu.

The program believes that participation of the private sector is essential, and should be a “matter of fact” perpetually in disaster risk reduction processes. Therefore, it is necessary to raise awareness of the private sector, convince the businesses that earthquake risk management is much more than “charity”, and demonstrate the economic, social and corporate feasibility of PPP in disaster risk reduction, and persuade that it is a sound investment to be done. 3PERM also emphasizes on the added benefits of this program to other sectors such as tourism, cultural heritage preservation, contribution to social assets generation etc.

6.4.6 Risk Sensitive Land Use Planning (RSLUP)

The RSLUP provides a view and a framework on how the Kathmandu Valley Development Concept can be made risk sensitive or disaster risk reduction and management (DRRM) compliant. In view of the need identified by the Government of Nepal, to integrate disaster risk concerns in the development planning process and land use plans of the Kathmandu Valley, the study reviews the planning process and outputs at the Valley level, and looks into the various aspects of its planning system where disaster risk reduction (and climate change and variability risk aspects) may be introduced and thus making it risk sensitive and supportive of the sustainable development. A framework of RSLUP was developed for Kathmandu Metropolitan City (KMC) during 2008 by KMC with the technical support

from Earthquake and Megacities Initiative (EMI) and NSET. Recently, the Comprehensive Disaster Risk Management Programme (CDRMP) of UNDP, Nepal under the Flagship 5 component of NRRC, has developed an outline approach and framework for extending RSLUP formulation for the entire Kathmandu valley. Hopefully, RSLUP and its implementation will start soon in the valley providing a replication model for other urban areas to follow suit.

6.4.7 Building Code Implementation Program in Municipalities of Nepal (BCIPN)

The national building code of Nepal was formulated in 1994, and made mandatory for urban and urbanizing areas in 1998 by the promulgation of the Building Act. However, only a few municipalities could implement the code because of the obvious reasons of lack of institutional capacities, low level of earthquake awareness, and lack of competent human resources. NSET continued assisting Dharan and several other municipalities in building code implementation by providing technical assistance in the forms of training, awareness as well as through advise on incorporation of the stipulations of the building code into the building permits process. Several municipalities showed remarkable success. Capitalizing on this success and lessons learned, NSET has initiated BCIPN in 24 municipalities of Nepal as a part of a national program led by the government. The program BCIPN focuses on assisting the municipal governments in Nepal in enhancing their capacities to develop and administer the building permits and control system properly for ensuring improved seismic performance of all new building construction in those urban and urbanizing areas of Nepal where compliance to the National Building Code has been made mandatory by law. This entails, one hand, helping the municipalities to develop an effective mechanism for building code implementation, and on the other, enhance earthquake awareness of the residents and technical knowledge of the municipal official on aspects of earthquake risk management including earthquake-resistant design and construction. This is proposed to be achieved by conducting a series of training courses for technical personnel including the contractors and mason and by conducting earthquake orientation and other awareness activities. The project aims at supporting some municipalities with provision of technical human resources such as engineers and construction technicians as and when necessary.

6.4.8 Achievements in Earthquake Risk Reduction Efforts

The following are some of the important achievements of the continued efforts of NSET and many other institutions in earthquake risk management in Nepal:

1. There has been a remarkable change in terms of policies, that has led to
 - (a) increase in the level of investment in disaster risk reduction (DRR),

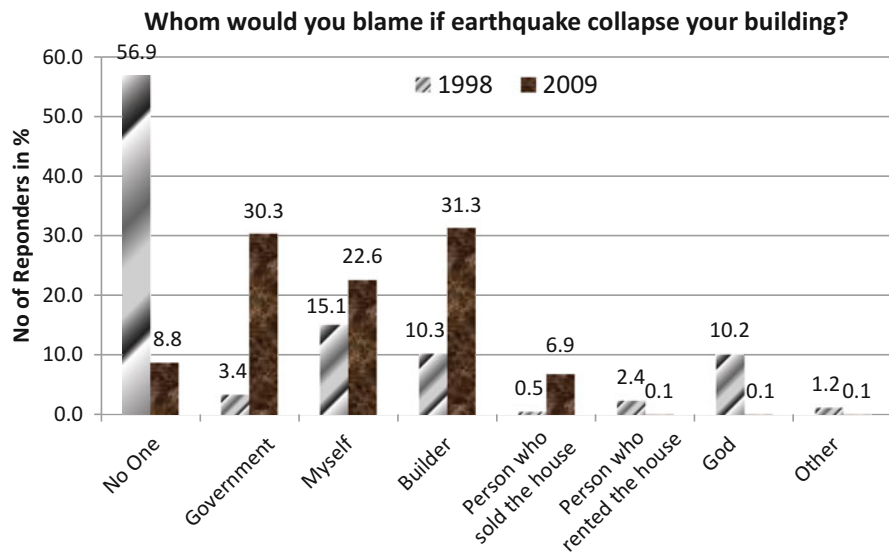


Fig. 6.13 Positive change in perception of earthquake risks

- (b) increase in the number of institutions, both government and non-government, that have DRR activities in their annual work plans, (c) start of institutionalization of DRR. Inclusion of the commitments and actions related to building code implementation has been made an important indicator to measure performance of municipalities.
- The level of earthquake awareness in the population is remarkably enhanced; this is the result of decades-long efforts of earthquake awareness by central and local governments and non-government organizations. This change indicates towards high potential of bringing in change in other parts of the country also. Figure 6.13 shows this remarkable change in public awareness and perception of earthquake risks.
 - The demand for earthquake-resistant construction is growing—house-owners are influencing the municipal authorities to include seismic safety in the building permit process. The importance of such change in peoples attitude towards earthquake safety becomes obvious when one considers that it is taking place at a time when there was no significant devastating earthquake in Kathmandu in the past several decades.

One of the significant outcome of the efforts towards risk assessment and disaster risk reduction (DRR) done so far in Nepal is the positive experience of collaboration among government agencies and international development partners with local non-governmental organizations and academia. Nepals achievements in DRR in the past two decades vividly show the importance of the contribution of national and local NGOs in aspects of DRR.

6.5 Challenges and Possibilities for Further Improvements

The achievements made by Nepal in the past 10–12 years in terms of successful implementation of earthquake risk reduction actions could be considered as a matter of pride and satisfaction by those who are involved in the process directly or indirectly. The country was totally at a fix after the devastating Udaypur earthquake of 1988, however, the country did decide in favor of developing the national building code based on a simplified hazard and risk assessment at the national scale. In early 1990s, the country did not have easy access to science and technology of disaster risk management, and the level of awareness even among the decision-makers and policy makers was low. Promulgation by the United Nation of the International Decade for Natural Disaster Reduction (IDNDR) and the policy and program support received by Nepal did help much in making a sound start in this direction. Further, Nepal did adopt the Hyogo Framework of Action (HFA) and formulated its own National Strategy for Disaster Risk Management (NSDRM), which has become the guiding policy for the government in disaster risk reduction (DRR) and for integration of disaster risk management onto governance and development planning. As a result, international development partners have also integrated disaster risk management into their development assistance strategy of Nepal. Further, the UN and the bilateral agencies have started coordination of their assistance in DRR through the Nepal Risk Reduction Consortium (NRRC), which is currently implementing, in close coordination with the Government of Nepal, five flagship programs on school and hospital safety, flood management, community based disaster risk management, emergency response capacity enhancement and policy support.

Nepal has embarked upon such ambitious and innovative initiatives as school earthquake safety, earthquake safety of health institutions, nation-wide building code implementation, community based disaster risk management, public private partnership for disaster risk management, business continuity planning for industry and hospitality sectors, risk-sensitive land use planning, urban regeneration including *ex-ante* emergency response and recovery planning, and so on.

The successes made and the paradigm shift from disaster response to disaster preparedness is surprising, especially if one considers the fact that Nepal is one of the weakest economies and the nation has not made/does not have capability to make/any significant investment in disaster risk reduction, and that the seismic risk of the country is one of the highest in the world if one considers earthquake lethality as an indicator.

Despite these achievements of project successes, Nepal, however, has yet to do much in institutionalization of the gains in DRR and to ensure their sustainability. This demands continuity of efforts and integration of the positive gains and lessons into the policy framework comprehensively.

This puts forward two main challenges to the concerned professionals and agencies (a) continue the support provided so far to ensure that the efforts and investments made till date are insured, and (b) assist the local institutions, central and local governments, and non-governmental organizations, to take up new and

ever-widening responsibilities. One has to understand that raising earthquake awareness of the community reduces the risk significantly, but it also tremendously increases the demand for more and better knowledge, technologies, management tools, institutional capabilities, and improved policy and legal environment. Coping with such natural, expected and desired outcome may become a maddening trance for the activist especially if he/she or the institution fails to receive the support, mainly a moral support from the national authority or international humanitarian agencies!

The following are seen as the major tasks that need to be addressed in coming times:

- (a) Scale up activities: there could be a serious blow to all the efforts and successes achieved so far, and people would stop believing in mitigation if the earthquake occurs now. Therefore, it is necessary to consolidate the achievements as much as possible before the next big one. The scale of implementing the methodologies that are proven to be replicable, e.g. hazard/risk assessment, action planning of earthquake risk management, implementation of SESP, mason training, earthquake awareness etc.), need to be implemented in as wide geographical area as possible. There should be a significant increase in the number of masons trained in earthquake-resistant construction, or the number of engineers trained in earthquake resistant construction. So far NSET worked in Kathmandu Valley and some cities. It is necessary to implement projects in all the 58 municipalities of Nepal. Perhaps it is necessary to implement similar initiative also in the adjoining districts/municipalities in India.
- (b) Make the approach comprehensive: success in earthquake risk management cannot be achieved in piecemeal. The efforts should be comprehensive: it should tell the common citizen how to construct safer abode, how to maintain it, how to convince the neighbor on the benefits of earthquake vulnerability reduction (EVR), what to do before, during, and after an earthquake, how to demand earthquake safety from the state etc.
- (c) Emphasize on Action-oriented Implementation: It is clear at this stage that the School Earthquake Safety Program (SESP) works wonderfully in developing countries, then why to waste time by not implementing similar initiatives in other sectors also.
- (d) Ensure greater ownership of local government and local stakeholders: DRR should be pegged at the local level—at the villages, urban municipal wards, neighborhoods, and at individual institutions public or private.
- (e) Emphasize on grass-roots level works: The most vulnerable are at the grass-roots level, and the ones most willing to implement EVR are also at the grass-roots level.
- (f) Publicize success stories: given the low level of awareness, high cost, and the complexity of earthquake risk reduction measures, it is logical to emphasize on successful cases so that a lesson learned at a place could be transferred and used in another place. Since there is similarity of problems of earthquake risk across regions, there should also be similarity of solutions, and hence the need for sharing and exchanges among communities, stakeholders, and even nations.

References

- ATC-13 (1995) Earthquake damage evaluation data for probable maximum loss studies of California buildings. Applied Technology Council, California
- ATC-25 (1991) Seismic vulnerability and impact of disruption of lifelines in the conterminous United States. Applied Technology Council, California
- BCPR-UNDP (2004) Reducing disaster risk: a challenge for development, Bureau for crisis prevention and recovery
- BCDP (1994) The development of alternative building materials and technologies for Nepal. UNDP/UNCHS (Habitat) Subproject NEP/88/054/21.03, Appendix A—Prototype Building Inventory, A report prepared by consultants for the Building Code Development Project (BCDP), His Majesty's Government of Nepal, Ministry of Housing and Physical Planning
- Bordet P, Colchen M, Le Fort P (1972) Some features of the geology of the Annapurna range Nepal Himalaya. *Himalayan Geol* 2:537–563
- CAPRA GIS Ver. 2 (2013) A probabilistic risk assessment program. www.ecapra.org. Accessed 20 Sept 2013
- Dhungel R, Guragain R, Joshi N, Pradhan D, Acharya SP (2012) Seismic vulnerability assessment of public school buildings in Nawalparasi and Lamjung District of Nepal. In: 15 WCEE, Lisbon, 24–28 September 2012
- Dixit AM, Parajuli YK, Guragain R (2004) Indigenous skills and practices of earthquake resistant. Construction in Nepal. In: 13th WCEE, Vancouver, 1–6 August 2004
- Dun JA, Auden JB, Ghosh AMN, Wadia DN (1939) The Bihar–Nepal earthquake of 1934. *Geol Surv India Mem* 73
- EMS (1998) European Macro Seismic Scale. http://en.wikipedia.org/wiki/European_Macroseismic_Scale
- Fuchs G, Widder RW, Tuladhar R (1988) Contributions to the geology of the Annapurna range (Manang area Nepal). *Jahrbuch der Geologischen Bundesanstalt* 131:593–607
- Gansser A (1964) *Geology of the Himalayas*. Wiley Interscience, London/New York/Sydney, p 289
- Gansser A (1981) The geodynamic history of the Himalaya, in Zagros, Hindu Kush. In: Gupta HK, Delany FM (eds) *Himalaya-geodynamic evolution*. Geodynamic series 3. American Geophysical Union, pp 111–121
- GESI (2001) Global Earthquake Safety Initiative Pilot Project (GESI), October 2001. GeoHazards International and United National Centre for Regional Development
- Guragain J (2004) GIS for seismic building loss estimation: a case study from Lalitpur Sub-Metropolitan City Area, Kathmandu, Nepal. MSc thesis, Enschede, p 84
- Guragain R, Jimée G, Dixit AM (2008) Earthquake awareness and effective planning through participatory risk assessment: an experience from Nepal. In: 14th WCEE, Beijing, 12–17 October 2008
- Hagen T (1969) Vol. 1: Preliminary reconnaissance. Report on the Geological Survey of Nepal 86. *Denkschriften der Schweizerischen Naturforschenden Gesellschaft*, p 185
- Hagen T (1980) *Nepal: the kingdom in the Himalayas*, 1st edn. Kümmerly + Frey
- HAZUS-MH (2003) Multi-hazard loss estimation methodology: earthquake model. Department of Homeland Security, Emergency Preparedness and Response Directorate FEMA, Washington, DC
- Heim A, Gansser A (1939) Central Himalaya geological observations of Swiss expedition, 1936. p 246
- Islam M (2004) Population vulnerability assessment for earthquakes in Lalitpur, Nepal. MSc thesis, International Institute for Geo-information Science and Earth Observation, Enschede, p 84
- Japan International Cooperation Agency (JICA) (2002) *The study on Earthquake Disaster Mitigation in the Kathmandu Valley Kingdom of Nepal*, vols I–IV. Final report

- Jimee G (2006) GIS for seismic building loss estimation: a case study from Lalitpur Sub-Metropolitan City Area, Kathmandu, Nepal. MSc thesis, Enschede, p 144
- Le Fort P (1975) Himalayas, the collided range: present knowledge of the continental arc. *Am J Sci* 275A:1–44
- Le Fort P (1996) Evolution of the Himalaya. In: Harrison TM, Yin A (eds) *Tectonic evolution of Asia*. Cambridge University Press, New York
- Liu G, Einsele G (1994) Sedimentary history of the Tethyan basin in the Tibetan Himalaya. *Geologischen Rundschau* 83:32–61. Bibcode:1994GeoRu..83...32L. doi:[10.1007/BF00211893](https://doi.org/10.1007/BF00211893)
- MOHA (1996) National Action Plan on Disaster Management in Nepal. His Majesty's Government, Ministry of Home, Nepal
- MPPH/HMGN (1994) Seismic Hazard Mapping and Risk Assessment for Nepal, Project document, National Building Code Development Project. Ministry of Physical Planning and Housing, HMG/N, Kathmandu
- Nakata T (1989) Active faults of the Himalayas of India and Nepal. *Geol Soc Am (Special Paper)* 32:243–264
- NBC (1994) Nepal National Building Code (NBC). Ministry of Physical Planning and Works, Nepal
- NRRC (2013) Nepal Risk Reduction Consortium. <http://un.org.np/coordinationmechanism/nrrc>
- NSET (1999a) Kathmandu Valleys Earthquake Scenario. National Society for Earthquake Technology (NSET), Kathmandu
- NSET (1999b) The Kathmandu Valley Earthquake Risk Management Plan. National Society for Earthquake Technology (NSET), Kathmandu
- NSET (2013) www.nset.org.np/nset2012. Accessed 20 Sept 2013
- Pêcher A (1977) Geology of the Nepal Himalaya: deformation and petrography in the Main Central Thrust Zone. *Ecol Geol Himalaya Sci Terre* 268:301–318
- Pêcher A, Le Fort P (1986) The Metamorphism in Central Himalaya, its relations with the thrust tectonic. In: Le Fort P, Colchen M, Montenat C (eds) *Évolution des Domaines Orogénique d'Asie Méridionale (de la Turquie à la Indonésie)*. *Sci Terre* 47:285–309
- RADIUS (2000) A CD ROM on Risk Assessment Tools for Diagnosis of Urban Areas against Seismic Disasters – an initiative of the International Decade for Natural Disaster Reduction (IDNDR). Secretariat of the International Strategy for Disaster Reduction (ISDR), Geneva
- Rana BSJB (1935) *Nepalko Mahabhukampa (The Great Earthquake of Nepal)*, Jorganesh Press, Kathmandu
- SAARC (2009) Regional Cooperation on Earthquake Risk Management in South Asia: road map. In: SAARC workshop on Earthquake Risk Management in South Asia, Islamabad, 8–9 October 2009
- Schelling D, Arita K (1991) Thrust tectonics, crustal shortening, and the structure of the far-eastern Nepal Himalaya. *Tectonics* 10(5):851–862. Bibcode:1991Tecto..10..851S. doi:[10.1029/91TC01011](https://doi.org/10.1029/91TC01011)
- SDMC (2009) Indigenous knowledge for disaster risk reduction in South Asia. SAARC Disaster Management Centre, Delhi
- Srivastava P, Mitra G (1994) Thrust geometries and deep structure of the outer and Lesser Himalaya, Kumaon and Garhwal (India): implications for evolution of the Himalayan fold-and-thrust belt. *Tectonics* 13:89–109. Bibcode:1994Tecto..13...89S. doi:[10.1029/93TC01130](https://doi.org/10.1029/93TC01130)
- Stöcklin J (1980) Geology of Nepal and its regional frame. *J Geol Soc Lond* 137:1–34. doi:[10.1144/gsjgs.137.1.0001](https://doi.org/10.1144/gsjgs.137.1.0001)

Chapter 7

Civil Society and Knowledge, Education and Training in Risk Reduction

Takako Izumi and Rajib Shaw

Abstract Disaster education can be a basis of disaster risk reduction measures, thus it is extremely important for all individuals. Each of Indigenous knowledge, disaster education at schools and training programmes for teachers, government officials, and various stakeholders has different characteristics and challenges. Indigenous knowledge has an origin of the culture and lifestyles, thus it could be transferred from generation to generation. Disaster education at schools could contribute to continuous learning and it makes children and students effective agents to share the knowledge with family and communities. Trainings are effective when the capacity development opportunity that needs to be done in a short period of time in an audience-specific manner. What all types of education require are that it has to be a participatory-approach not depending on textbooks too much and that it needs the involvement and participation of various stakeholders.

Keywords Civil society organizations (CSOs) • Disaster education • Indigenous knowledge

7.1 Introduction

Knowledge/awareness raising, education and training to learn about disasters and disaster risk reduction (DRR) are extremely important for all individuals despite their ages and occupations. Education can be regarded as one of the best media to prepare a community for disasters (Izadkhah and Hosseinin 2005). Petal (2008) also

T. Izumi (✉)

International Research Institute of Disaster Science, Tohoku University, Sendai, Japan
e-mail: izumi@irides.tohoku.ac.jp

R. Shaw

Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: shaw.rajib.5u@kyoto-u.ac.jp

argues that the success of DRR education leads to developing disaster-resilient communities. The scheme and targets of disaster education are slightly different, however, its ultimate objective is to understand what kind of impacts and damage are caused by disasters and how people can protect their lives and assets and prepare to minimize the risks before disasters strike. Education can play the pivotal role in reducing the impacts and achieving human security (Shaw et al. 2011a).

Shaw et al. (2011a) classifies the education in three modes, namely formal, non-formal and informal. In practice, formal, non-formal and informal may exist simultaneously, sometimes in concert with one another. For example, the school provides formal education and at the same time fosters non-formal education through extra-curricular activities. Through the different phases of an individual's lifetime, he or she comes into contact with these different modes of education. Nielsen and Lidstone (1998) stress the importance of both formal and informal approaches for disaster education. From the recent shift in emphasis from education to learning increases the importance of informal and incidental learning relative to formal education in DRR. Formal education would remain valuable as a systematic and structured learning that progresses through a hierarchy over time and is guided by an instructor. At the same time, the important role of informal education should be recognized. Informal education is organized education outside of formal institutions, occurring when an individual gains awareness of an opportunity to learn and deliberately uses it.

It is also crucial to elaborate the contents and methodology of the programs and activities. Shaw et al. (2011a) argues that while conventional education is largely dependent on classroom lectures, textbook lessons, and exercises, studies have shown that disaster education is more successful through experience-based and action-oriented learning. A study on school disaster education in Nepal found that school DRR education which is based on lectures can raise risk perception, but cannot enable students to understand the importance of pre-disaster measures and to take actual action for disaster education (Shiwaku et al. 2007). Nielsen and Lidstone (1998) also stress that a causal link between provision of information, awareness and behavior, though appealing, was not supported on either rational or empirical grounds. Many falsely assume that when it comes to public education for disaster "if the public knows the facts it will act wisely". There is no evidence that attitude or behavior associated with risk have ever changed as direct result of being provided with information.

The methodology of learning put a significant influence on the effectiveness. Not only learning from the textbooks, but also learning from the experiences and the history could be highly important. Karanci et al. (2005) point out that it is necessary to find methods that will facilitate cognitive and more importantly behavioral change and thereby elicit preparedness behaviors. Shaw and Takeuchi (2008) emphasize the importance of the participatory approach in learning process. As the target learners, not only students, but also community members must be included. For effective disaster education, anticipated hazards, stakeholders, availability of human and physical resources, extent of threatened or affected area, culture history, and other various factors can be taken into account (Shiwaku and Fernandez 2011). Preston (2012) also stresses not only school based initiatives and

public information campaigns but also family and community learning, adult education and popular culture have to be included.

This chapter examines the importance and challenges of indigenous knowledge, disaster formal education and trainings on DRR and reviews the roles of Civil Society Organizations (CSOs) in each category. In order to analyze the current progress and challenges of disaster education at national level, the national country reports for 2011–2013 submitted by the disaster related Ministry of 12 Asian countries to UNISDR were used.

7.2 Indigenous Knowledge

The Priority 3 of the Hyogo Framework for Action (HFA) calls for promoting the inclusion of DRR in school curricula, and developing training and learning programs on DRR at a community level, for local authorities and targeted sectors (UNISDR 2005). The Mid-term review report for the HFA assesses that there was a large number that indicated progress in developing school-based programmes including the inclusion of DRR in school curricula and in the production and dissemination of public information material. However, not many countries reported progress in capturing and using local knowledge (UNISDR 2011). The recognition and incorporation of indigenous knowledge in DRR efforts has been dismally insufficient though there is compelling evidence that indigenous knowledge has the potential to provide solutions for reduction disaster risks at many levels (Kyoto University et al. 2009) and has been transferred from generations to generations by helping save the lives of thousands of people (Shaw et al. 2011a). A well-known indigenous knowledge that exists in the island of Simeulue in Indonesia proved it can save thousands of people's lives from an earthquake and tsunami. The story tells that you must run to higher places if you feel the tremor. Because of this common knowledge, it is considered that the impacts on human lives by the earthquake happened in March 2005 was minimized.

Shaw (2012) describes that there are different but similar terminologies while exploring indigenous and traditional knowledge: indigenous knowledge, traditional knowledge, local knowledge, community-based knowledge, indigenous knowledge systems and practices, indigenous technical knowledge, and traditional and local knowledge system. Each of these terms has its specific meaning and application. Shaw (2009) explains that traditional knowledge as accumulative body of knowledge, know-how, practices, and representations maintained and developed by people with extended histories of interaction with the natural environment, while indigenous is attached to place and indigenous people. Indigenous knowledge is more framed on a cultural perspective like the folk song for awareness raising and water-puppet show to tell a flood story.

Indigenous knowledge is defined differently by scholars. Grenier (1998) defines it as “the unique traditional knowledge existing within and developed around the specific conditions of women and men indigenous to a particular geographic area”.

It is also described that indigenous knowledge is considered as a body of knowledge existing within local people over a period of time through accumulation of experiences, society-nature relationships, community practices and institutions, and through passing it down through generations. Such knowledge evolves in the local environment, so that it is superficially adapted to the requirements of local people and conditions. It is also creative and experimental, constantly incorporating outside influences and inside innovations to meet new conditions (Langill and Landon 1998; Mercer et al. 2009). Thus, it can be the basis of community coping practices that have helped vibrant communities survive natural calamities over centuries (Kyoto University et al. 2009). The common thread that runs through all the definitions are that it should be understood from the people's perspective of the physical environment in which they live, the natural resources they are endowed with and the ways in which these resources can be utilized optimally to cope with the challenges of the environment within the contexts of their social and cultural milieu (SAARC 2008a).

Indigenous knowledge is also classified based on geographical, thematic, and organizational contexts and in many cases there are overlaps (Shaw 2012). For instance, based on five geo-physical regions in South Asia, it is classified as mountain ecosystems, floodplains, peninsular plateau, desert ecosystem, and islands and coasts. Each region has its plethora of natural hazards. The communities living in these regions have learnt to live with the hazards, acquired intimate knowledge of the strength and limitations of local resources, and developed innovative and cost effective ways of coping with them (SAARC 2008a). An example of thematic groups in the Asia-Pacific includes mountain ecosystem, coastal zones, river basin management, water resource management, and housing (Kyoto University et al. 2009).

Another important point is how indigenous and scientific knowledge can be integrated to establish DRR strategies. Too often in the past, top-down DRR strategies have failed due to the inability of inhabitants to fit the context within which they are placed (Mercer et al. 2009). There is a need to recognize the good knowledge assets that already exist in local communities, and at the same time there is wisdom in adopting and benefiting from the advances that current science offers us. The core issue is one of avoiding cultural invasion that so often comes as part of the package with technologically advanced disaster management solutions (Kyoto University et al. 2009). The combination of both indigenous and scientific knowledge could lead to more effective solution to DRR. It is addressed that the sole use of indigenous or scientific strategies is unlikely to be as effective as the two combined. Strengthening the DRR capabilities of indigenous communities through an integration of the two knowledge bases using participatory approaches should be seen as critical for sustainable DRR (Mercer et al. 2009). Shaw et al. (2011b) also describes that indigenous knowledge evolves as a part of the survival process of people and communities. It is based on food, security, education, natural resources and various other community-based activities. At the same time, it is also a result of a continuous process of experimentation, innovation and adaptation. Thus, it has a capacity to blend with knowledge based on science and technology, and should

there be considered complementary to scientific and technologic effort to solve problems in social and economic development.

One of the major challenges of indigenous knowledge is its documentation. In most cases indigenous knowledge is orally transmitted and thus, the challenges of its implementation are not properly documented (Shaw 2012). In addition, it is culture specific, and represents people's lifestyle. Thus, the dissemination and wider practices of the knowledge is often a challenging issue (UNISDR and Kyoto University 2008; SAARC 2008b).

In order to further pursue indigenous knowledge, what could be advised? Firstly, indigenous knowledge needs to be recognized and upgraded from a body of undocumented anecdotal practices to a validated body of applicable knowledge. Secondly, indigenous knowledge should be promoted and applied for an element of formal education in linkage with modern technology. Thirdly, the advocacy initiatives of inclusion of indigenous knowledge in governance, disaster management risk reduction and climate change adaptation as well as sustainable development. Lastly, the promotion and integration of indigenous knowledge has to be carried out in the institutional framework (Kyoto University and SEEDS India 2008).

7.3 Disaster Education

Formal, non-formal and informal education are all important and should be partnered together, if possible, to achieve best results. Both formal and non-formal education is indispensable to change people's attitudes and the combination of the various types of education can maximize the effect (Shaw 2012). At the same time, the importance of disaster education to children and students are strongly highlighted. One of the best ways of publicizing awareness program is the integration of these initiatives into children's programmes in both preschool and school levels. The aim of these initiatives is to increase the knowledge and understanding of children about risks, to teach preparedness and also to demonstrate how to react in times of disasters (Twigg 2003). Izadkhan and Hosseini (2005) emphasizes that these days schools and particularly children play a crucial role in the development of a culture of prevention and in the dissemination of their knowledge widely. Young people especially the current generation learn easily. They can act as good channels for transferring the ideas to their families. Shaw et al. (2011a) also highlighted that while there are different approaches, tools, and target groups of disaster education, possibly the best starting point is children and students.

Even at the international level, inclusion of DRR in the education system and the research community is advocated widely in the HFA Priority 3 (UNISDR 2005). UNISDR carried out the campaign "DRR begins at school" in 2006–2007 aiming to promote the integration of DRR into government plans for school curricula and to ensure that school building are safe from the impacts of natural hazards (UNISDR 2006). The reasons why disaster education at school is important are well

summarized by Shiwaku (2009) as follows: (a) children are one of the most vulnerable sections of the society during a disaster; (b) they represent the future; (c) school serve as a community's central location of meetings and group activities; and (d) effects of education can be transferred to parents and community.

CSOs made a great contribution to disaster education. SEEDS India has been advocating the role of schools and children as a dynamic and powerful force of change and supporters in creating awareness in the community. Recognizing the immense potential of children as potent agents of change, the initiative of school safety has been taken by SEEDS India since 2005. One of their school safety programme was conducted in Andaman which focuses on disaster preparedness in schools but also aims to reach out to the local communities through children. Emergency task force training, evacuation route maps, mock drills are some of key activities under the initiative (SEEDS India 2008). The role of teachers in school safety is also emphasized based on their experiences. Teachers act as guardians in school as well as emergency manager in case of emergency evacuation. It is important to take a complementary approach where teachers can view the subject as an extension of their existing curricula. Practical lessons in life saving skills add value to existing classes on physical education (Gupta 2008). The initiatives and efforts by CSOs in disaster education led to the broaden international advocacy of school safety. The International Conference on School Safety took place in Ahmedabad, India in 2007. An important outcome of the conference is the "Ahmedabad Agenda of Action for School Safety" which summarizes important contributions made by school safety champions, as well as users—school communities that have been exposed to safety programmes. The Agenda set the goal of achieving "Zero mortality of children in schools from preventable disaster by the year 2015". It also identified various stakeholders and their roles and responsibilities in the implementation of the actions outlined. The roles of CSOs identified in the Agenda include:

- Establish ongoing links with academic/scientific/research institutions and experts for development of training programmes, delivery of training programmes and research on impacts and outcomes.
- Initiate coalitions for school safety at every level, local, districts, state, national, regional and global levels.
- Integrate DRR into mainstream development and aid activities, including adoption of standards and standard operating procedures that ensure physical safety of school buildings.
- Mainstream DRR in schools through appropriate advocacy and communication to common citizens.

In addition, in the light of the huge loss of lives in the earthquake that struck Pakistan in 2008 which led to the loss of over 17,000 children, the Islamabad Declaration on School Safety drafted during the conference in May 2008 calls for a Resilient School Movement and urges national governments to develop a National School Safety Programme. The underlying messages in the Declaration were to make school safety part of the mainstream development process, to emphasize on

the aspect of safe school buildings and to achieve its aim through establishment of policies and partnerships between national government and local entities and communities (Gupta 2008; Gwee et al. 2011).

This section focuses on examining the progress in formal education especially on inclusion of the DRR elements in the school curricula in the Asian countries. 12 Asian countries (Bangladesh, Bhutan, China, India, Indonesia, Japan, Korea, Laos, Maldives, Malaysia, Mongolia, Pakistan, Sri Lanka) submitted the national progress report on the HFA to UNISDR for 2011–2013 which is the most recent version. Four core indicators were set under the HFA Priority 3 (Use knowledge, innovation and education to build a culture of safety and resilience at all levels). The core indicator 2 (school curricula, education material and relevant trainings include DRR and recovery concepts and practices) is most relevant to disaster education. The result of the progress of each country is summarized in Table 7.1. This report has been submitted by each country based on their self-assessment.

The average score of overall progress under this indicator is 3.75. Most of the countries have initiatives in disaster education and in incorporating DRR elements in school curricula though the level of achievements varies. While there are certain initiatives and progress in disaster education is captured, it has not been formally institutionalized and no country succeeded in making the education compulsory in a policy. On the other hand, there are various initiatives of disaster education and awareness raising conducted in cooperation with other stakeholders such as international organizations, Red Cross and NGOs as informal education.

Four countries (Bangladesh, China, Indonesia and Korea) answered that DRR has been included in the national education curriculum at all levels. However, they still require a systematic, long-term and sustainable approach and strong advocacy to expand the activities. In addition, the coordination mechanism to obtain the agreement and support from all the relevant Ministries to disaster management needs to be strengthened (MoDMR 2013; MoCA 2013; BNPB 2013; GOK 2013; Cabinet Office 2013). In Bhutan and Pakistan, it was highlighted that the concept of DRR is still new to these countries and lack of awareness and understanding to DRR is a major challenge to them (NDMA 2013; MoHCA 2013). Seven countries (Bhutan, India, Indonesia, Laos, Maldives, Malaysia, Pakistan, and Sri Lanka) addressed the lack of expertise and skills of teachers and government officials as well as of educational materials, guidelines and manuals is a major challenge in order to further scale up the activities of disaster education to the next step (MoHCA 2013; MHA 2013; BNPB 2013; NDMO 2013; NDMC 2013; NSC 2013; NDMA 2013; DMC 2013). Finally, Bangladesh and India raised the issue and challenge in disaster education for most vulnerable groups—children, women, aged, persons with disability (MHA 2013; MoDMR 2013). Even the incorporation of DRR elements in normal school curricula is not an easy task, therefore, the disaster education for vulnerable groups will need stronger commitment as it requires different skills, knowledge, expertise and materials to teach depending on their special needs. The capacity development of trainers and teachers to fulfill the needs are urgently required. However, it is encouraging that the national disaster management agencies pointed out the issues as a constraint, and has acknowledged it as an issue to be further improved.

Table 7.1 National progress on HFA priority 3 in Asia

Country	Total score			PEP	Description	Constraints
	PS	SS	Univ.			
1 Bangladesh	4	0	0	0	<ul style="list-style-type: none"> School curricula of class III–XII includes disaster management (DM) elements Special DM courses were conducted for civil servants and LGs 	<ul style="list-style-type: none"> Not reached most vulnerable—children, women, aged and disabled Gender perspective needs to be addressed in curricula and training modules
2 Bhutan	3	×	×	×	<ul style="list-style-type: none"> DRR is incorporated in non-formal curricula in connection with environment and water resource issues DM plan was prepared at more than 300 schools Trainings for teachers and awareness campaign were conducted. Manuals on DRR education were distributed at schools 	<ul style="list-style-type: none"> Serious gaps in capacity of school teachers exist DRR elements to be incorporated in school and university curricula DRR concept is still new in Bhutan
3 China	4	0	0	0	<ul style="list-style-type: none"> School curriculum for awareness raising at primary and secondary schools were developed 	<ul style="list-style-type: none"> Long-term plan and mechanism to institutionalize disaster education has not been yet built
4 India	4	0	×	×	<ul style="list-style-type: none"> DM was included in curriculum of secondary education Some universities have professional DM course A national school safety program was launched in 22 states to cover 8,800 schools Gov requested all universities to integrate DM education 	<ul style="list-style-type: none"> Need experts as trainers Intervention that targets children with special needs is necessary
5 Indonesia	3	0	0	0	<ul style="list-style-type: none"> DRR was mainstreamed into school curriculum and piloted at 100 schools 70 % of the special fund for education has been allocated for retrofitting school buildings 	<ul style="list-style-type: none"> Lack of coordination among concerned agencies form national to local levels Need strong advocacy of DRR integration into school education Need DM trainings especially for local governments

6	Japan	4	○	○	×	×	<ul style="list-style-type: none"> • In process of providing teachers with manuals on DRR education • Operating website on DRR education, distribution of educational materials and training for the national government staff • Providing trainings on fire safety to public and government officials 	<ul style="list-style-type: none"> • It is required to develop education programmes that fit to ages and areas systematically • Need to improve current official curriculum guidelines
7	Korea	5	○	○	○	○	<ul style="list-style-type: none"> • School textbooks that include DRR element combined scientific theories are soon to be developed • More graduate schools include DM majors 	<ul style="list-style-type: none"> • Legislative mechanism that make disaster education mandatory needs to be developed
8	Laos	3	○	×	×	×	<ul style="list-style-type: none"> • DRR was included in school curricula in eight provinces • TOTs for teachers are provided in three provinces • Awareness raising and child-led mitigation activities were conducted in schools 	<ul style="list-style-type: none"> • Lack of funding and human resources • No initiatives to incorporate DRR into higher education
9	Maldives	4	○	○	○	×	<ul style="list-style-type: none"> • Primary and secondary curriculum contains DRR elements in relation to environmental science • Some universities have DM courses • In process of revising school curriculum • More schools are conducting drills based on School Emergency Operations Procedures 	<ul style="list-style-type: none"> • Insufficient technical capacity to implement DRR plans and drills • Lack of funding allocation for DM and drill
10	Malaysia	4	×	×	○	○	<ul style="list-style-type: none"> • Several programs have been conducted by UN, NGO and government, but not institutionalized • On-going campaign of One Million Safe Schools and Hospitals by ASEAN • There are post-graduate programs on DM 	<ul style="list-style-type: none"> • Need more comprehensive national campaign on safe schools • Need commitment from key agencies • Lack of trained teachers
11	Pakistan	3	×	×	○	○	<ul style="list-style-type: none"> • Gov is developing strategy to integrate DRR into education • Some universities offer specialized courses in DM • Working on integrating DRR education into the training of civil servants 	<ul style="list-style-type: none"> • DRR is a new concept in Pakistan • Lack of awareness is a major challenge • Lack of awareness and of expertise in relevant government offices impede integrating DRR into education curricula

(continued)

Table 7.1 (continued)

Country	PS	SS	Univ.	PEP	Description	Constraints
12 Sri Lanka	4	×	○	○	<p>Total score</p> <ul style="list-style-type: none"> • School curricula from year 6 upward includes DRR concept • DM publications are distributed at schools • Post-graduate diploma in education includes school disaster safety • National guidelines on disaster safety education have been developed • DRR concepts are included in university curricula in engineering, science, town planning, geography and earth science 	<ul style="list-style-type: none"> • Current training programmes for school children are not attractive and need to improve • Interaction and case studies should be included in the program • Training guideline, manuals, modules need to be developed

PS primary school, *SS* secondary school, *Univ.* university, *PEP* professional DRR education programs

7.4 Training for Various Stakeholders

To develop DRR training for key sectors is also recommended under the HFA Priority 3. This task focuses on developing training initiatives for specific sectors that will equip policy makers, development practitioners and disaster managers with knowledge and skills to integrate DRR into development and other relevant sectors (UNISDR 2005). Thus, the module could be more audience-specific in line with local contexts. In addition, the duration of the training could be also flexible and does not have to be absent from their normal works for long time.

As pointed out in the national report on the HFA progress, most of the countries addressed the need of capacity development and training opportunities of teachers and government officials who are the key actors and driving forces to strengthen the disaster education in the countries. It is indispensable for organizers, trainers, facilitators, teachers, and government officials to have strong knowledge and skills of conducting educational programmes and trainings in order to maximize education opportunities (Shiwaku and Fernandez 2011). CSOs have played a crucial role in providing trainings for local governments, teachers, students, communities and journalists (Izumi and Shaw 2012). However, if it is taken a lead by CSOs, the sustainability of the programmes could be always questioned due to their financial constraints.

In many cases, the target audience of DRR trainings by CSOs is beyond CSOs and local governments who are traditional DRR stakeholders. KOGAMI (Komunitas Siaga Tsunami) that is a national CSO based in Padang, Indonesia. KOGAMI acknowledged the important role to be played by media, and conducted a workshop to discuss the roles of media in DRR and develop a DRR guidebook for journalists. KOGAMI stressed three roles of media in DRR: (1) reporting disaster situation and casualties, (2) disseminating DRR educational information, (3) monitoring progress of LGs DRR initiatives. At the end of the workshop, it was agreed to set up the media center during emergency and recovery stages, to develop the information sharing mechanism for communities, and (4) issuing a monthly newsletter that includes the article on DRR and local wisdom that contribute to DRR (Izumi 2012).

7.4.1 *Malaysian Technical Cooperation Program (MTCP)*

This is a unique training program provided by one of international CSOs based in Malaysia for CSOs and government officials from all over the world in disaster response, recovery and DRR. Moreover, this program is funded by the Malaysian government in line with the spirit of South-South Cooperation. In this regard, it is carried out based on the collaboration with the Malaysian national government and CSO. This Program aims to share development experiences and expertise of Malaysia with other developing countries and to promote technical cooperation



Fig. 7.1 Town-watching exercise at MTCP

among developing countries, to strengthen regional and sub-regional cooperation as well as to nurture collective self-reliance among developing countries (MERCY Malaysia 2010).

From 2008 to 2010, MERCY Malaysia organized two training courses under MTCP each year: (1) disaster response and recovery and (2) community-based disaster risk management (CBDRM) (Figs. 7.1 and 7.2). In 2013, the same training courses will be organized. The participants in the above mentioned MTCP courses include from Afghanistan, Bangladesh, Bhutan, Brunei, Cambodia, Chile, China, DPRK, Fiji, India, Indonesia, Iran, Korea, Madagascar, Mongolia, Myanmar, Pakistan, Sri Lanka, Sudan, and Vietnam. The impact of the training course on CBDRM is highlighted that based on the course, most of the participants identified the lack of the actual methodology and skills to conduct assessment and develop a risk/hazard map in their countries. The introduction and exercise of town-watching filled in the gap existing in their skills and provided the expertise to develop an actual DRR tool. In addition, the concept of accountability raised a great interest among the participants (MERCY Malaysia 2013).

These types of trainings will match the demands highlighted in the national report on the HFA progress. However, one of the challenges is that most of the participants from governments are from national level, and only a few are from local governments. The positive way of looking is that the trained national government officials could duplicate the similar trainings as trainers for the local government officials. It still has to depend on strong commitment and financial support from the national government. At least, these training courses contributed to raising the awareness of government officials and CSOs in DRR and mobilizing their initiative of taking an action in their current positions.

Fig. 7.2 Hazard mapping developed by participants



7.4.2 ASEAN Safe School Program

Not only the national government, but also the regional inter-governmental entity such as ASEAN has been collaborating with CSOs to conduct training programmes on DRR for the governments as well as the CSOs based in the ASEAN countries. The 2010–2011 World Disaster Risk Reduction Campaign on “Building Resilient Cities – My city is getting ready!” was launched by UNISDR in 2010. This global launch was supported by the ASEAN Committee on Disaster Management (ACDM), and the activities are part of ASEAN’s efforts to implement the AADMER (Reliefweb 2010). In the workplan for 2010–2015 of AADMER, ASEAN member countries committed to incorporate DRR into education aiming to integrate DRR and school safety in the teacher training system, i.e., annual in-service and pre-service teacher trainings (BNPB 2010).

ASEAN has been involved deeply in this initiative from the beginning and developed an implementation strategy in cooperation with the AADMER Partnership Groups (APG) that consists of six international NGOs (Plan International, HelpAge, World Vision, MERCY Malaysia, Save the Children, ChildFund and Oxfam GB). It was the first step of the project of “ASEAN Safe School Initiative (ASSI)”. The challenge addressed by APG is that there is no agreed definition and minimum standards on Safe Schools, and having a definition and minimum

standards will guide the work of government in fulfilling the commitment as stated in AADMER (Plan International 2012).

ASSI was led by the ASEAN secretariat in collaboration with APG and can be considered it is implemented based on an innovative collaboration between ASEAN and CSOs at regional level. It aims to improve and accelerate the implementation of safe schools in all ASEAN countries by developing regional guidelines and indicators of safe schools, preparing tools to assess school safety, awareness raising, capacity building and also establishing models of safe schools in different ASEAN countries with different designs in different contexts. The project consists of two parts: (1) compilation of current educational programmes, tools, guidelines etc from ASEAN countries through consultative workshops and meetings and (2) analyze the collected materials and programme information to design the next phase of ASSI and support the initiatives at the regional level taken by ASEAN under the framework of AADMER as part of the efforts to achieve AADMER Work programme 2010–2015 (Plan International 2012).

The national consultative workshop organized in Malaysia aimed especially to review the current status of school safety program in Malaysia, to identify the disaster education programs that have been conducted in Malaysia to date, and to make the recommendation on future disaster education plan and strategy. It was attended by 24 teachers and administrators from the primary and secondary schools. The School Safety Programme in Malaysia has been initiated by the Ministry of Education (MOE) since 2002 by disseminating the concept of standard safety mechanism and assessing the capacity of each school. Furthermore, several policies and guidelines related to school safety were issued. In addition to the relevant Ministries and government offices, UNICEF and MERCY Malaysia eventually joined the governments to work together in strengthening the school safety programme and capacity of disaster preparedness of students and teachers. MERCY Malaysia initiated the School Preparedness Programme since 2007 to train students and teachers in disaster preparedness and it has been continued in 2013. It is only CSO working in DRR issues in Malaysia (MERCY Malaysia 2013).

The key issues and challenges highlighted at the workshop were how to develop the capacity of teachers about disaster preparedness under the current situation of lacking the expertise to train teachers and how to develop suitable and attractive DRR educational materials. The recommendations listed include allocating the annual budget for DRR educational projects for multiple-year, making it mandatory to incorporate DRR in the existing school safety programmes, and distributing the pocketbook on disaster preparedness to all the students.

Based on the findings from the workshops, APG analyzed the results and identify the current progress and situation of disaster education in details, then provided suggestion for the project design of the next 3 years to implement the school safety program in a coordinating manner with other ASEAN countries. It eventually aimed to develop a regional guideline and indicators of safe schools, and to prepare tools to assess school safety. By receiving guidance and endorsement by APG and ASEAN for the programme, it was easier for CSOs to receive understanding, support and cooperation from the national governments. This could be one of an

effective framework to draw the leadership of the national government, their initiative and further support.

As an option of training tools, the usage of technology such as social network has become a part of disaster education and trainings. Preston (2012) argues that there is a diversity of forms such as leaflets, public information, television, film, popular culture, written media, radio broadcasting, school curricula, family and community learning, internet and cell phone messaging, however, they cannot be separated from a social context. Marincioni (2007) also stresses the significant possibility of shifting the way of disaster communication and education through information technology (IT). IT will be able to enhance interaction among individuals and institutions for information and knowledge exchange, and to be useful for distance education programmes and trainings. However, the public who has the access to such information technology and internet is still limited, and there is a gap between the level of education in the capital and other cities, especially in small towns and villages though they are the ones who will be damaged by disasters easily (Izadkhan and Hosseinin 2005). In order to reduce the gap, a wide-range of variety and options of materials and tools have to be sustained to provide disaster education and trainings in most effective and sustainable manner (Shiwaku and Fernandez 2011).

7.5 Conclusions

Each mode of education: formal, non-formal and informal has a different role and demand, and all are important to develop and strengthen the awareness and knowledge on DRR and to learn how to react and respond to emergencies in order to protect themselves and their family. The major characteristics and challenges of indigenous knowledge, disaster education and trainings as well as the roles of CSOs in each activity are summarized in Table 7.2.

Indigenous knowledge could be transmitted effectively through the participatory and experienced-based approaches. It normally includes the idea and messages on how people should respond to disasters, not only to provide the information on what disasters are. In this type of education, various stakeholders' involvement is a key. On the other hand, there are some constraints in documentation and dissemination of the knowledge because it is culture specific (UNISDR and Kyoto University 2008). CSOs can play a crucial role to overcome these challenges with advocacy and dissemination of indigenous knowledge combining their regular programme for communities.

Disaster education as formal education requires inclusion of DRR elements into school curricula and to conduct it more systematically. There is a certain level of initiatives and progress at national level in Asia, however, the implementation requires further support and commitment from national government, in particular, in the budget allocation for activities and material development, and in developing a law or policy which makes disaster education compulsory. In addition, a strong leadership and commitment of the Ministry of Education in this matter is

Table 7.2 Characteristics, challenges and roles of CSOs in education related activities

	Major characteristics	Concerns/challenges	Expected role of CSOs
Indigenous knowledge	<ul style="list-style-type: none"> • Provide solution not only information on DRR • Transfer knowledge from generations to generations • Fit the local context within which they are placed • Learn things in atmosphere of participatory approach with community 	<ul style="list-style-type: none"> • Combination of indigenous and scientific knowledge • Documentation • Culture specific and represents people's lifestyle, thus dissemination and wider practices is challenging 	<ul style="list-style-type: none"> • Documentation of folklores, songs, water-puppet show attached to place and indigenous people • Advocacy of inclusion of these knowledge in DRR programmes
Disaster education	<ul style="list-style-type: none"> • Contribute to continuous learning • Children can be effective agents to share the knowledge with family and communities • Can save the most vulnerable section of the society—children • School can serve as center of communities 	<ul style="list-style-type: none"> • Lack of capacity of teachers • Various perspective such as gender incorporated in DRR • Lack of long-term planning and mechanism for institutionalization of disaster education • Insufficient funding, human resources and commitment from key agencies • Improvement of educational materials and programmes 	<ul style="list-style-type: none"> • Programme development of disaster education in collaboration with other stakeholders and experts • Mainstream DRR in schools through advocacy and communications • Involve communities into school safety programmes for public awareness
Trainings	<ul style="list-style-type: none"> • Target-specific, i.e., teachers, women, community-groups, policy-makers, thus materials can be context-specific • Duration can be shorter and flexible 	<ul style="list-style-type: none"> • Need of guidelines and manuals • Implementation of trainings are subject to funding and no guarantee for sustainability • Need support and understanding from higher governmental body 	<ul style="list-style-type: none"> • Plan and provide trainings for various stakeholders such as local governments, teachers, students, communities and journalists

indispensable. CSOs can make a great contribution to advocacy and communication to the Ministry of Education and the local education offices on the need of developing the curricula and to implementation of the education programmes at schools in collaboration with the local government. CSOs also can contribute to providing technical knowledge on the material development through their experiences of school safety programmes.

Furthermore, the capacity development of teachers, government officials, trainers, facilitators etc in disaster education is extremely crucial. There are a number of initiatives DRR trainings conducted by CSOs in collaboration with government, schools, and communities. In addition, a regional initiative of developing guidelines for school safety program in collaboration with CSOs and governments exists. The reason that this type of new cooperative scheme was initiated would be the fact that the progress in disaster formal education is relatively slow and it has not been systematized. Having the regional guideline and the pressure from the regional entity such as ASEAN could be a driving force of the next step and stronger commitment to national governments.

Each level and types of disaster education requires innovative approaches. Different approaches and information on disaster education are necessary for people to be motivated to take preparatory activities in different cultures (Tanaka 2005). It is necessary to consider various factors and situation in order to provide disaster education that meet local contexts. In this regard, a standardized disaster education programme is not appropriate, and various stakeholders need to involve in the process (Shiwaku and Fernandez 2011). Shaw et al. (2011b) describes the innovation in the concept of “Tsunagaru”. “Tsunagaru” is a Japanese word that means linking and it can be a key of disaster education. The linkage is between school and community, between community and family, between different disciplines, between different stakeholders, between nature and human and between past and future. The linkage is also necessary between CSOs, governments and communities. One of the important roles of CSOs is considered as a facilitator and moderator among local stakeholders (Izumi and Shaw 2012). In such linkage of stakeholders, disaster education and trainings will be one of the tasks for CSOs that can maximize their characteristics and strength.

Acknowledgement The authors express the appreciation to MERCY Malaysia for their cooperation in providing information of their activities.

References

- BNPB (2010) AADMER work programme for 2010–2015
- BNPB (2013) Indonesia: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- Cabinet Office (2013) Japan: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)

- DMC (2013) Sri Lanka. National progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- GOK (2013) Korea: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- Grenier L (1998) Working with indigenous knowledge: a guide for researcher. International Development Center, Ottawa
- Gupta M (2008) Investments for a safe future: disaster reduction in schools in South Asia. *J South Asia Disaster Stud* 1(1):139–155
- Gwee RW, Shaw R, Takeuchi Y (2011) Disaster education policy: current and future. In: Shaw R (ed) Disaster education. Emerald, Bingley, pp 23–44
- Izadkhah YO, Hosseinin M (2005) Towards resilient communities in developing countries through education of children for disaster preparedness. *Int J Emerg Manag* 2(3):138–148
- Izumi T (2012) Effectiveness of partnership between civil society organizations and local governments for disaster risk reduction in Asia: perspectives from Indonesia and Malaysia. PhD thesis, Kyoto University
- Izumi T, Shaw R (2012) Role of NGOs in community-based disaster risk reduction. In: Shaw R (ed) Community-based disaster risk reduction. Emerald, Bingley, pp 35–54
- Karanci AN, Aksit B, Dirik G (2005) Impact of a community disaster awareness training program in Turkey: does it influence hazard-related cognitions and preparedness behaviors. *Soc Behav Pers* 33(3):243–258
- Kyoto University, SEEDS India and UNISDR (2009) Indigenous knowledge for disaster risk reduction: policy note
- Langill S, Landon S (1998) Indigenous knowledge: readings and resources for community-based natural resource management researchers, vol 4. IDRC, Canada
- Marincioni F (2007) Information technologies and the sharing of disaster knowledge: the critical role of professional culture. *Disasters* 31(4):459–476
- Mercer J, Kelman I, Suchet-Pearson S, Lloyd K (2009) Integrating indigenous and scientific knowledge bases for disaster risk reduction in Papua New Guinea. *Geografiska Annaler Ser B Hum Geogr* 91(2):157–182
- MERCY Malaysia (2010) MERCY Malaysia annual report, Malaysia
- MERCY Malaysia (2013) Programme report: ASEAN Safe School Initiative (ASSI): consultative workshop, Malaysia
- MHA (2013) India: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- MoCA (2013) China: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- MoDMR (2013) National progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- MoHCA (2013) Bhutan: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- NDMA (2013) Pakistan: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- NDMC (2013) Maldives: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- NDMO (2013) Lao PDR: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- Nielsen S, Lidstone J (1998) Public education and disaster management: is there any guiding theory? *Aust J Emerg Manag (Spring)*:14–19
- NSC (2013) Malaysia: national progress report on the implementing of the Hyogo Framework for Action (2011–2013)
- Petal M (2008) Concept note: formal and informal education for disaster risk reduction, for the International conference on school safety, Islamabad

- Plan International (2012) ASEAN safe school initiative: supporting implementation of AADMER, Concept note for APG
- Preston J (2012) What is disaster education? In: Preston J (ed) *Disaster education: race, equity and pedagogy*. Sense Publishers, Netherlands, pp 1–10
- Reliefweb (2010) India: global launch of the one million safe schools and hospitals, and ASEAN Forum on Safe Hospitals. Reliefweb report
- SAARC (2008a) Indigenous knowledge and disaster risk reduction. Indigenous knowledge for disaster risk reduction in South Asia. SAARC Disaster Management Center, India, pp 5–14
- SAARC (2008b) Indigenous knowledge for community based disaster risk reduction. SAARC Disaster Management Center, India, pp 144–150
- SEEDS India (2008) Annual report 2007–2008
- Shaw R, Takeuchi Y (2008) Environment and disaster management – role of people and community. Series of Kyoto University’s lecture – approach to environment of globe. In: *Workshop on global environment of Kyoto University*. Maruzen Publishing, Tokyo, pp 45–57
- Shaw R (2009) Role of local actors in community based disaster risk reduction. *Perspectives in disaster management*, METU, ISDR, WBI, pp 123–145
- Shaw R, Takeuchi Y, Gwee QR, Shiwaku K (2011a) Disaster education: an introduction. In: Shaw R, Shiwaku K, Takeuchi Y (eds) *Disaster education*. Emerald, Bingley, pp 1–22
- Shaw R, Takeuchi Y, Shiwaku K (2011b) Tsunagaru. In: Shaw R, Shiwaku K, Takeuchi Y (eds) *Disaster education*. Emerald, Bingley, pp 153–162
- Shaw R (2012) Overview of community-based disaster risk reduction. In: Shaw R (ed) *Community-based disaster risk reduction*. Emerald, Bingley, pp 3–17
- Shiwaku K, Shaw R, Kandel RC, Shrestha S, Dixit A (2007) Future perspective of school disaster education in Nepal. *Disaster Prevent Manag* 16(4):576–587
- Shiwaku K (2009) Essentials of school disaster education: example from Kobe, Japan. In: Shaw R, Krishnamurthy PR (eds) *Disaster management: global challenges and local solutions*. Universities Press, India, pp 321–337
- Shiwaku K, Fernandez G (2011) Innovative approaches in disaster education. In: Shaw R, Shiwaku K, Takeuchi Y (eds) *Disaster education*. Emerald, Bingley, pp 115–136
- Tanaka K (2005) The impact of disaster education on public preparation and mitigation for earthquakes: a cross-country comparison between Fukui, Japan and the San Francisco Bay Area, California, USA. *Appl Geogr* 25:201–225
- Twigg J (2003) *Disaster risk reduction: mitigation and preparedness in development and emergency programming*. Overseas Development Institute, UK
- UNISDR (2005) *Words into action: a guide for implementing the Hyogo Framework for Action*. United Nations
- UNISDR (2006) 2006–2007 campaign “disaster reduction Begins in Schools”
- UNISDR and Kyoto University (2008) *Indigenous knowledge for disaster risk reduction: good practices and lessons learned from experiences in the Asia-Pacific Region*. UNISDR Asia and Pacific, Thailand
- UNISDR (2011) *Hyogo Framework for Action 2005–2015: building the resilience of nations and communities to disasters, mid-term review 2010–2011*. United Nations

Chapter 8

Knowledge, Education and Training for Risk Reduction: Specific Case of Myanmar, Vietnam and Japan

Yasutaka Ueda, Mitsuko Shikada, Eriko Matsumoto, Yuko Nakagawa, and Rajib Shaw

Abstract This chapter deals with three cases of knowledge-based DRR activities conducted by SEEDS Asia, a Japan-based NGO, in Myanmar, Vietnam, and Japan. From the case of Myanmar, it is clarified that even short-term DRR training initiated by NGOs can enhance capacity on DRR. From the case of Vietnam, it is proved that the working group consisted of teachers and educational administrative officers to develop DRR education programs and materials is effective for raising motivation and ownership, and NGOs can play vital role to organize the working group and to advocate to educational administrative plan for sustainability. In the case of Japan, the importance of DRR education with community was shown and it was indicated NGOs could be a bridge between school and local resources. Furthermore, it was found that DRR education network with community functioned not only for disaster preparedness but also for disaster response and recovery based on experiences of Kesenuma City. At the last, it is stressed through the three cases that one of the key issues of education is working with local government, and have trust with the school teachers and educational administrative staff.

Keywords Disaster risk reduction education • Japan • Myanmar • Role of NGOs • Training of trainers • Vietnam

Y. Ueda (✉) • M. Shikada • E. Matsumoto • Y. Nakagawa
SEEDS Asia, Kobe, Japan
e-mail: yasutaka.ueda@seedsasia.org

R. Shaw
Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: shaw.rajib.5u@kyoto-u.ac.jp

8.1 Introduction

The Hyogo Framework for Action (HFA) 2005–2015 emphasizes the role of “Knowledge and Education” for disaster risk reduction (DRR) in the priority for action 3. The goal of development for disaster resilient communities is widely recognized to depend heavily on the success of DRR education (Petal and Izadkhah 2008). Some of the lessons from the Great Hanshin-Awaji Earthquake of 1995 was pointed out as following: (a) education is a process for effective disaster reduction; (b) knowledge, perception, comprehension, and actions are the four important steps; (c) schools and formal education play an important role in knowledge development (Shiwaku 2009). From recent studies, experience-based action oriented learning make disaster education successful (Shaw et al. 2011b). Shaw et al. (2009) proposed the KIDA Tree model, one of the knowledge-based methods for disaster education, in the book “1-2-3 of Disaster Education”. KIDA is knowledge, interest, desire, and action. Knowledge, interest, and desire are necessary to promote to take action and actions are significant output of disaster education.

Another significant aspect of disaster education is to conduct in cooperation with community. School is considered to play a crucial role in raising awareness among students, teachers, and parents in addition to within the local community (Shaw et al. 2011b). The key to disaster education is to mobilize communities and the role of families and communities is vital as the actors, as well as the key stakeholders, in the mobilization process (Takeuchi et al. 2011). Hence, school DRR, coupled with self, family, and community education, can help that a student develop a “culture of disaster preparedness” in their communities and non-formal activities that influence actions rather than mere knowledge should be involved in disaster education (Shaw et al. 2004).

Graduate School of Global Environmental Studies et al. (2010) showed three tasks for local implementation of the priority 3 of the HFA: Raise awareness of disaster risk reduction and develop education program on DRR in schools and local communities, develop or utilize DRR training for key sectors based on identified priorities, and enhance the compilation, dissemination and use of disaster risk deduction information. Consideration of local context is required for its implementation, therefore, it is regarded that one of the key stakeholders in disaster education is NGOs. The reason is that NGOs are closer to communities, and are familiar with local culture and easily grasp the importance of the community-based approach (Izumi and Shaw 2012).

This chapter provides the roles of NGOs in DRR education and training through three cases of the projects in Myanmar, Vietnam and Japan conducted by SEEDS Asia, a Japan-based NGO with the aim of helping communities to reduce the risk of being affected by natural disasters. Common characteristics of the three projects are to be composed on the basis of the KIDA tree model and to adopt the way of Training of Trainers (ToT). The case of Myanmar project is a mobile DRR education project utilizing Mobile Knowledge Resource Center (MKRC), the customized-track with facilities for DRR training. The case of Vietnam project is

establishment of DRR core schools and network on DRR education among schools in Danang City. The case of Japan project is DRR education based on Education for Sustainable Development (ESD) after the Great East Japan Earthquake and Tsunami (EJET) of 2011 in Kesennuma City. The last part of this chapter discusses what are the role of NGOs in DRR education.

8.2 Case 1: Myanmar—MKRC/WKRC Project

8.2.1 Background

Myanmar has approximately 2,000 km coastline, and is prone to natural disasters such as tsunamis, storm surges, and floods, as well as cyclones and earthquakes, since the country has many active faults. In particular, the Cyclone Nargis of 2008, with wind speed of 250 kph, caused massive storm surge, left 138,373 deaths and missing as official record (Union of Myanmar et al. 2009). After the Cyclone Nargis, DRR countermeasures have been initiated by the national government in Myanmar, particularly, DRR education was started as one of the life skill classes in school curriculum in 2010. However, problem was that basic knowledge of teachers on DRR was insufficient to conduct the class especially in rural area. According to investigation of 2010 by SEEDS Asia to 234 teachers in five townships in delta region, about quarter of teachers answered “No” to the following question “Can you explain mechanism of causing disasters and countermeasures against ones?” Actually, more than 90 % of the teachers were not enable to explain accurately in oral when its question was asked. Moreover, it was found that most the 90 % of the teachers had never been received DRR training (Shikada et al. 2012).

8.2.2 Intervention of SEEDS Asia

DRR education was not carried out sufficiently even at schools in the cities due to lack of resources and materials, and the situation was worse at schools in farming or fishing villages, far from the cities without access to such information or assistances. Thus, MKRC was developed by SEEDS Asia and Myanmar Engineering Society (MES), the group of local engineers in 2009 to provide 1- or 2-day training on DRR knowledge with catchphrase “Reaching the unreachable.” MKRC is the customized-truck with participatory DRR learning facilities with DRR models, posters, and card games for children to learn DRR with fun by looking or touching such materials. Afterword, the customized-ship, Water Knowledge Resource Center (WKRC) was developed in 2010, in order to reach to the coastal areas in delta region, where are not accessible by cars from the capital city of Yangon.



Fig. 8.1 Staff of SEEDS Asia explaining a safer village with a model on WKRC to teachers (*right*) and a trained teacher teaching disaster mechanism utilizing a poster in MKRC (photos taken by author)

Some of the areas were devastated by the Cyclone Nargis, and have high demand of DRR education.

These MKRC and WKRC which are equipped to provide learning opportunity on cyclones, floods, earthquakes and tsunamis, began the journey for conducting DRR in disaster prone area in Myanmar. Learning materials for landslides, tornados and thunder-lightening were also added in order to respond to the needs from community in 2012 and fire in 2013. Moreover, the DRR training in Teachers Training College (TTC) were focused since 2012 to enable every junior teachers who graduated from the college to disseminate DRR knowledge. MKRC and WKRC have reached out to over 227 schools in the regions of Ayeyarwady, Yangon, Bago, Rakhine, Sagaing and Mandalay. In total, 22,280 participants including teachers, students and community people received training by MKRC or WKRC as of the end of February 2013.

8.2.3 Features of Training Program and Materials

One of the specialties of MKRC training is ToT, which is a type of training that teachers receive DRR training first, and then students and community people get same training by those teachers. Through the process, DRR education skills are learnt by the teachers, as well as DRR knowledge are obtained by other teachers, students, and community people (see Fig. 8.1).

The KIDA tree model is used in this short-term training program to effectively raise interest in DRR and put it into action. In particular, the program consists of the following: making teaching materials as posters, card games, and models to learn mechanism of disasters and methods of securing safety; making life-saving device made of plastic-bottles and hazard maps; and practical workshops including DRR activity plan making or evacuation routes confirmation. In particular, MKRC has

been highly evaluated by the participants for providing DRR knowledge in an enjoyable format with games and practice using characters from a popular local cartoon for exterior of the MKRC truck and in the teaching materials, while resolving lack of transportation and time for people in the remote areas by using the truck as a mobile resource center. Posters and machines are also considered to attract people to enjoy learning, and to achieve a strong impact in reminding them with messages. These are considered as very important points to disseminate and cultivate the culture of preparedness (see Fig. 8.2).

8.2.4 Evaluation of the Training

8.2.4.1 Comparison Between Results of Pre- and Post-test

SEEDS Asia conducted DRR training in nine TTC in Myanmar from March 2012 to February 2013. The project received 1,696 beneficiaries; 371 teachers in TTC and its attached middle schools, 452 students who were going to be teachers after graduating the TTC, 480 students from the attached middle schools, 393 people from the surrounding community. In order to evaluate the training, pre-test and post-test which were created to measure the level of DRR knowledge were conducted to these participants. The result shows the average of the overall marks was 72 % before the training and increased to 94 % after the training (see Table 8.1). It indicates that even 1- or 2-day training utilizing MKRC and WKRC were useful and effective for raising knowledge on DRR.

8.2.4.2 Evaluation Survey Results on MKRC/WKRC

Evaluation survey to MKRC/WKRC project sites where DRR training was conducted in April 2011 was conducted by external experts in May 2012, after almost a year of the first visit MKRC/WKRC. In the result of it, increase and retaining of the proper knowledge among participants were seen in almost every beneficiary of MKRC/WKRC projects (SEEDS Asia 2012). Besides, it was found that many of teachers turned to be able to teach on mechanism of hazards and impact of it, and they took the measures to be taken to mitigate the risk. Many actions were taken as individual or as a school to prepare and mitigate the risk by applying the knowledge that they had gained by the training. Moreover, proper response towards the tsunami early warning which was issued on 11 April 2011 were also reported by the teachers and students who attended the training; such as collection of the information by proper source, confirming higher place as evacuation, and having emergency bag etc.

Another evaluation survey were conducted in Wakema, Maubin, Myaungmya and Seik Kyi Khanaung To Township in February 2013 by SEEDS Asia in order to



Fig. 8.2 Training materials in MKRC and WKRC

Table 8.1 Comparison between results of pre-test and post-test

Participants	N ^a	Before (%)	After (%)
Teachers of TTC and its attached middle school	371	75	96
Students in TTC and students in the middle school	932	73	95
Community people	393	69	92
Overall	1,696	72	94

^aThose who answered to the test during training. Number may differ slightly from the number of attendance

Table 8.2 Result of the monitoring survey conducted in February 2013

Question	Teachers (%)	Students (%)	Total (%)
Felt improvement of capacity on DRR after training	100	86.0	97.3
Got more interest in learning about disaster	72.7	95.5	97.7
Listened more carefully to the announcement or news from radio/TV/newspaper	100	90.9	95.5
Told the disaster story you have seen from video to students	90.9	90.9	90.9
Told safety tips to students or your family which you learned from posters	72.7	100	86.4
Established school DRR taskforce (only for teachers)	54.5	–	54.5
Discussed and made school evacuation plan with other teachers or family members	63.6	32.0	52.2
Conducted evacuation drills	54.5	45.5	50.0
Prepared emergency bags at school or home	54.5	31.8	43.2
Made sandbags	50.0	22.7	36.4
Conducted evacuation drills	45.5	18.2	31.8
Researched the history of disasters of village/town where you live	4.5	45.5	25.0
Joined CBO's activity for DRR	27.3	22.7	25.0
Checked the furniture of your school/home to mitigate the risk of disasters by fixing to the wall etc.	13.6	27.3	20.5
Played DRR card game with students or family members	22.7	22.7	22.7
Did NOT do anything	0.0	0.0	0.0

ensure the knowledge retaining and to observe actions by participants (see Table 8.2). According the survey results, there were no person who answered that “I did NOT do anything”. It proved an opportunity for learning on DRR by MKRC/WKRC could lead persons to take action by their initiative. Another result, 97.3 % of teachers and students answered that they felt the improvement in capacity on DRR and 97.7 % felt that they got more interest in learning about disasters. As for dissemination, 90.9 % of teachers and students talked the cases of tsunami that they saw in documentary video during training, and 86.4 % shared what they learned such as mechanism of hazards and safety tips. Likewise, it was found that many of the participants shared what they had learned from the training to the surrounding.

On the other hand, there were some questions that made much gap in actions after training between teachers and students. For instance, 52.2 % as total but teachers 63.6 % and students 32.0 % answered they discussed and made school evacuation plan with other teachers or family members, and 31.8 % as total but teachers 45.5 % and students 18.2 % said that they conducted evacuation drills after the training. The fact that students are having difficulty to take action can be seen more clearly in the other activities which require more resources, for example some goods or costs, such as preparation of emergency bag (teachers: 54.5 %, students: 31.8 %), making sandbags (teachers: 50.0 %, students: 22.7 %) and making life saving bottles (teachers: 45.5 %, students: 18.2 %).

8.3 Case 2: Vietnam—DRR Core School Project

8.3.1 Background

In Vietnam, while three fourth of the total area is mountains, flood is the highest cause of death among all natural disasters, of which children accounts for 80 % or more (Statistics by Ministry of Agriculture and Rural Development of Vietnam 2011); thus, need of DRR education for children is high. In particular, typhoons, floods, and landslides have devastated in the central area since it is subject to tropical low pressure system and monsoon. In 2006, Typhoon Xangsane caused tremendous damage, especially in the provinces of Quangnam, Hue and Danang City, left more than 100 deaths in Danang.

8.3.2 Intervention of SEEDS Asia

In consideration of disaster-prone situation of Danang City, SEEDS Asia started 2-year project from September 2011 to September 2013 to build capacity of one school in each of seven districts in the city for DRR as DRR core school which is responsible to become centers to promote DRR education in the city.

In the beginning of this project, SEEDS Asia with Department of Education and Training (DOET) in Danang City conducted baseline survey targeting Bureau of Education and Training (BOET) in each district and 148 schools, all elementary and secondly schools in the city. In accordance with the result of the survey, five elementary and two secondary schools were selected as DRR core school. The core schools were equipped with educational materials and other information tools for DRR. Teachers of the core schools were provided DRR training program by SEEDS Asia, including curriculum making, then they carried out DRR classes to their students.

Afterwards, DRR classes were conducted by the trained teachers two times at each core school. The first period was from November to December 2012, and the

Table 8.3 The result of the first and second DRR class

DRR core school	First DRR class		Second DRR class	
	Number of teachers	Implemented programs	Number of teachers	Implemented programs
Le Thanh Ton	11	22	11	30
Nguyen Van Linh	11	39	11	22
Lam Quang Thu	11	19	11	22
Dinh Bo Linh	9	20	9	21
Nguyen Phan Vinh	12	23	12	37
Le Lai	11	27	11	22
Tran Binh Trong	11	27	11	20
Total	76	177	76	174

second was from April to May 2013. DRR classes were carried out at least two times in each period and number of the classes aggregated 351 (177 the first class, 174 the second class) in the project (see Table 8.3). In these DRR classes, 10 of 21 the DRR programs with knowledge gained by TOT and created materials. Besides, monitoring of the DRR classes was conducted by SEEDS Asia accompanied by BOET staff to promote understanding of educational administration agency on DRR education and its monitoring procedures. After the first classes, teachers discussed further improvement of quality of the classes based on the result of the monitoring, and it is confirmed that all of the second classes were more understandable than the first class.

Furthermore, SEEDS Asia conducted additional training to the teachers of DRR core schools for capacity building of their teaching skills and organized ToT for two teachers from all schools in the city by the trained teachers.

8.3.3 Features of Training Program and Materials

This project is focused on capacity building by ToT method for the core school's teachers who are expected to become DRR education trainers to students and other school's teachers. In the lead-up to above activity, SEEDS Asia developed 21 DRR educational programs according to the KIDA tree model concept (see Table 8.4). For training teaching method of the 21 programs, ToT was carried out for a total of 88 teachers and vice-principal of the core schools and BOET officials. In this ToT, not only practicing the programs they would like to do to their students but also lesson plan making, demonstration of the lesson and action plan making for the lesson was included.

In terms of creating educational materials, a noteworthy unique case is a contest of materials created by the core school's teachers. Ahead of DRR classes for students at each core school, the teachers created DRR education models and teaching aids in order to enhance interest and understanding of students, and

Table 8.4 DRR Programs developed based on principal of the KIDA tree model

	Program	Goals of the program	KIDA ^a
1	Lecture and Video play	Students can understand the situation, phenomena and mechanism through attending lecture and watching DRR video play	K
2	Preparedness and non-structure mitigation	Students can notice the necessity for preparations to mitigate disasters in advance	K
3	Drawing	Students can recognize and consider how to mitigate disasters through drawing a picture	I/D
4	Picture-Story play	Students can learn the necessity of preparations against disasters through watching picture-story play	I/D
5	Card game	Students can study on preparedness against disasters and mitigation of disaster impacts through playing card game	I/D
6	Essay writing	Students can remember fear of disasters and try to think what to prepare and how to mitigate disaster impacts through essay writing	I/D
7	Emergency bag making	Students can consider what items are essential for survival when disasters strike through making emergency bag	I/D
8	Newspaper reading	Students can collect the information on disasters of both inside and outside of their country through reading newspapers	I/D
9	Newspaper making	Students can make DRR newspaper by gathering DRR information	I/D
10	Story from affected people	Students can gain knowledge on DRR by listening to people affected by disasters	I/D
11	Rain Diary	Students can check weather reports with a small memo and gain basic knowledge about relations between rainfall and disaster impacts	I/D
12	Indigenous knowledge	Students can be enlightened about indigenous DRR by listening to legends/traditional stories, and consider how to prevent disasters	I/D
13	Family meeting	Students can notice the importance of coping with disasters with their families	A
14	Fire fighting	Students can obtain skills to extinguish fire from fire fighting drills	A
15	Protection by sandbags	Students can understand the effects and importance of sandbags to reduce disaster impacts	A
16	Cooking	Students can study about emergency foods to cope with disasters, and create recipes which they can cook	A
17	School walking and map making	Students can find vulnerable places to disasters through walking inside the school, and make a DRR school map for evacuation	A
18	Town watching and map making	Students can find places vulnerable to disasters through research of the town, and make a DRR town map for evacuation	A

(continued)

Table 8.4 (continued)

	Program	Goals of the program	KIDA ^a
19	Evacuation drill	Students can learn how to evacuate from disasters through evacuation drills	A
20	First aid	Students can gain basic medical treatment skills for injury and sickness caused by disasters	A
21	Sports festival	Students can meet community people through sports festivals, and understand the need for mutual support to cope with disasters	A

^aK increase of knowledge, *I/D* enhancement of interest and desire, *A* promotion of action



Fig. 8.3 “Card of emergency bag making” which submitted to the contest (*left*), and a DRR class with that cards (photos taken by author)

those models and teaching aids were evaluated in the contest. Nineteen materials were submitted to the contest, which motivated teachers as well as woke attention of DOET and BOET staff who participated in the contest as the judges. SEEDS Asia also joined in the contest as the judges and advisory staff. The evaluation by officials as supervisor and an expert NGO as a third party in a neutral way contributed greatly to increasing motivation of the actors. Finally, “Picture story show” and “Card of emergency bag making” which were got high evaluation in the contest were decided to distribute to all DRR core schools in response to demands (see Fig. 8.3).

Moreover, SEEDS Asia developed a DRR education module, a handbook, and some educational materials such as games and models along with local context to learn DRR with fun through discussion with DOET, BOET and DRR core schools. The module was developed by result of research of the official textbooks from grade 1st to 9th in order to suggest basic concept on lesson plan making in consideration of curriculum in the regular classroom. The handbook was developed to explain how to conduct DRR education programs in the class. The materials with colorful illustrations were developed for students to be attracted and enjoy learning as well as Myanmar’s project.

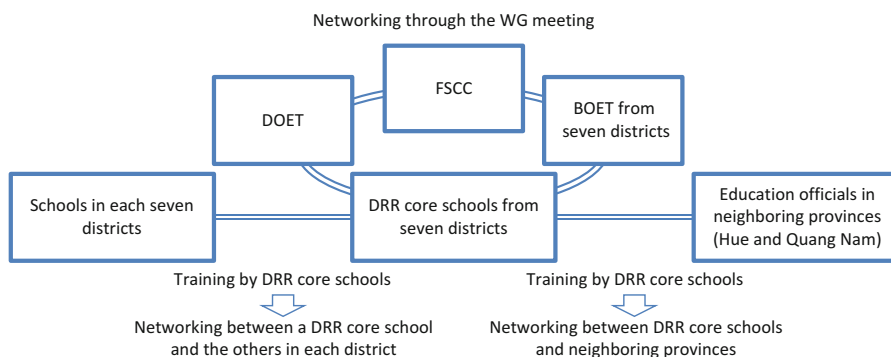


Fig. 8.4 Chart of network formulation on DRR education with DRR core schools

8.3.4 *Networking Schools on DRR Education*

One of the keys of this project is a network making on which DRR core schools were centered. SEEDS Asia organized a working group (WG) by DOET, BOET, vice-principal and teachers of DRR core schools and Flood and Storm Control Center (FSCC) to discuss how to improve DRR classes and spread to the citywide. About 40 teachers of DRR core schools and educational administrative officers participated in this WG to share outcomes and lessons from DRR classes. This WG became a place for teachers to get knowledge and skills through presentation of cases of Japan by SEEDS Asia as well.

In addition, members of the WG became DRR education trainers to conduct ToT for all of the schools in Danang, teachers and students of Danang University of Education, and teachers in Quangnam and Hue province which are bounded on the north and south by Danang. Some teachers from DRR core schools were selected as the leading trainers for this ToT and were built their capacity through making materials for the ToT. This means that SEEDS Asia provided an opportunity for sharing information and making network formation on DRR to learn between DRR core schools and other schools in the city or neighboring provinces through ToT. In the same time, developing the ability of teachers from DRR core schools who enable to provide DRR knowledge sustainably (see Fig. 8.4).

For sustain DRR education, strategy plan of educational administration with budget plan is necessary. DOET, the supervisor on DRR education in Danang City, found needs of DRR education and motivation of teachers for the education and made an implementation plan including the budget plan for DRR education to submit the People's Committee, the authority for budget in the city. Besides, keeping quality of the education is another issue. The DRR module and the handbook developed by SEEDS Asia was discussed in the WG where DOET and BOET joined, therefore DOET was familiar with these. Eventually, DOET made decision to distribute these to all elementary and secondary schools in the city to utilize as the official guide to DRR education.

8.4 Case 3: Japan—DRR Education Based on ESD

8.4.1 Background

EJET was the biggest earthquake in recorded history in Japan with magnitude 9.0, and at some places, massive tsunami, more than 10 m high, maximum height of 40 m was observed (Cabinet Office, Government of Japan 2011). 15,883 lives were lost, and the missing toll reached still 2,654 in the disaster as of September 2013, after two and a half years past from the event (Reconstruction Agency 2013). Kesennuma City was one of the hugely devastated city by the tsunami. The damage is that number of death and missing reached more than one thousand and two hundred, and especially more than 80 % of the citizen lost their job because the tsunami struck the central of the city (Kesennuma City 2011). Fortunately, although no victims appeared in the students who were in school during the tsunami, either, more 10 of the students whose parents took home before tsunami and the students who were absent from school on that day lost their lives (Oikawa 2012).

According to Kesennuma City Board of Education (BoE), the BoE has been conducting DRR education since 10 years ago before the EJET, in the same perspective as ESD that has been an important initiative of the city, placing emphasis on protecting lives and coordinating with the regional universities, Crisis Management Division of the city government and related organizations for implementation. Although there are opinions from the communities that these efforts have shown “significant results” that most students were saved from the tsunami, it has also become clear that there are much room for improving and developing new measures for schools to take actions in the recovery process and DRR education. Hence, a working group (WG) consisted of Education Researchers who was chosen from teachers under the BOE was organized to develop an innovative DRR education on the basis of their experience of EJET in 2012, after around 1 year from the disaster.

8.4.2 Intervention of SEEDS Asia

In consideration of the background mentioned above, SEEDS Asia with Graduate School of Global Environmental Studies, Kyoto University assisted the WG activity, including management assistance, technical advice, and study visit arrangement. Moreover, SEEDS Asia supported for some schools to conduct practical DRR education in integrated study, including volunteer activities experience, exchange with residents of temporary housing, plus making and performing the drama based on the local folklore (see Fig. 8.5).

Through the year, several meetings on the studies by Education Researchers were held every month and advice on DRR education was given by staff of Kyoto University and/or SEEDS Asia. At the last of their 1-year activities, Education



Fig. 8.5 Study meeting of Education Researchers with Kyoto University and SEEDS Asia (*left*), Map-making class assisted by SEEDS Asia staff in an elementary school (photos taken by author)

Researchers compiled “Guidebook of Lesson Plans for Disaster Education” which includes 50 lesson plans for DRR education based on their experiences from the EJET as achievement of their research.

8.4.3 Study Visit on DRR Education

To provide a learning opportunity to Education Researchers, study visit on DRR education to Saijo City was conducted by SEEDS Asia, which was conducted in June 2012 with participants from seven members of Education Researchers, and two staff members of Kesennuma BoE. The study visit became very informative reference for Education Researchers to compile the guidebook in the theme of experience-based learning.

Saijo City, Ehime Prefecture, Japan, was severely affected by typhoons in 2004. Since the disaster, the city has been promoting “12-year-old education” program, which is DRR education program, targeting grade 6th students in elementary schools. The program aims to train leaders of school kids for DRR, and the leaders undertake learning activities with other students to raise their awareness. The participants from Kesennuma took part in “Saijo Children’s DRR Camp”, one of its DRR education program. It made them have a chance to consider locally relevant DRR education of Kesennuma City. In addition, the participants had a meeting with staff of Risk Management Division and BoE of Saijo City, and the steering committee of the 12-year-old education, to exchange opinions about achievements and challenges of DRR education. At the last of the study visit, review and wrap-up meeting was held. Key findings they gained from the study visit became a useful reference for making their DRR lesson plans (see Fig. 8.6). Thus, SEEDS Asia provided an opportunity to consider DRR education voluntarily by setting an observation of other DRR education sites and exchange session with the practitioner.

[Contents of the study visit in Saijo City]



[Key findings from the visit by Education Researchers]

- DRR Education encourages practices of learners constantly and such process
- DRR Education needs participation of communities and networking (Residents, Parents, Outsiders, Experts on DRR, etc)
- DRR Education emphasizes active commitments of children
- DRR Education needs connection between elementary and junior high schools
- DRR Education assume hazards and imagine possible impacts of disasters
- DRR Education should be planned considering 5-10 years later situation

The key findings were reflected to lesson plans that was considered by the Education Researchers of Kesennuma City

Fig. 8.6 Key findings from the study visit to Saijo City

Statement of the school superintendent for Kesennuma City was impressive. “Kesennuma City was sometimes affected by big tsunamis, therefore, experiences of the past disasters were learned for preparedness in the city. However, if we learned, for example, the Sumatra Earthquake and Tsunami of 2004 more, we could reduce damages by the EJET. It is necessary to learn disaster experiences occurred out the city as well for preparedness against future tsunamis, and to disseminate our lessons learnt from the EJET to outside of the city.” It is essential for NGOs conducting knowledge-based DRR activities to learn disaster experiences on a global scale, and to share the experiences as well as to bridge between affected people by past disasters and people who live in areas where they will be affected by future disasters.

8.4.4 Support for Teachers to Conduct Practices of DRR Education as ESD

Kesennuma City Jonan Junior High School (JHS) reviewed the contents of classes for ESD based on the experiences of the EJET and began a new course to study on co-existence with communities which is on the recovery process in 2012, with aiming at education for students to be able to become future leaders of Kesennuma.

SEEDS Asia assisted as external lectures to make lesson program of the course as well as to implement practical lessons such as lectures, investigation works, and other work-studies, for example, volunteering activities, exchange with residents in

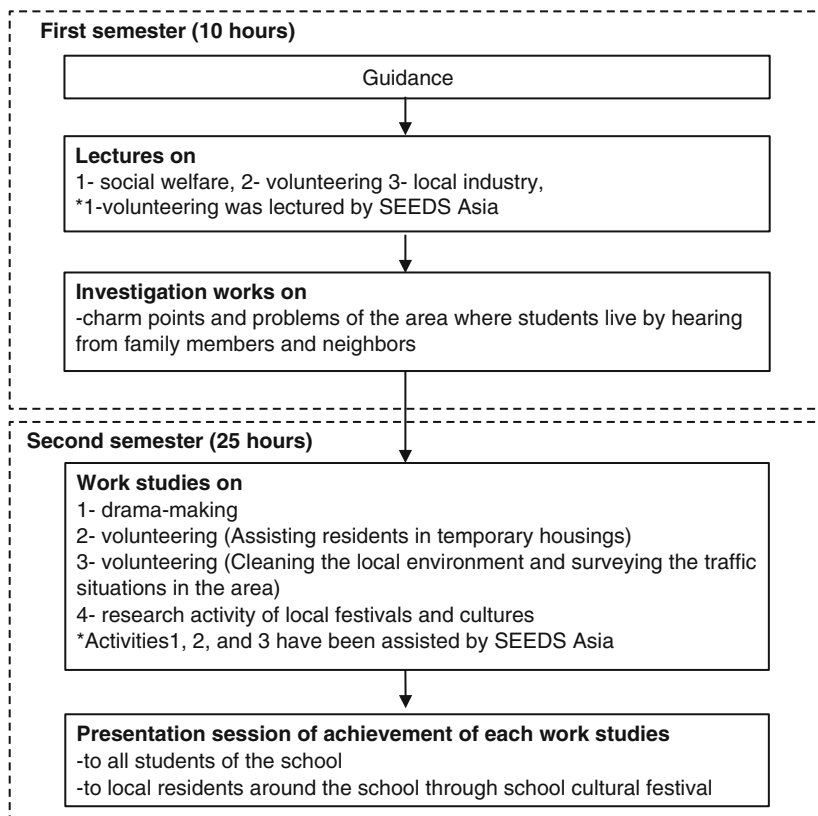


Fig. 8.7 Flow of the ESD class at Jonan Junior High School in 2012

temporary housing, and drama-making in the theme of a local folk story (see Fig. 8.7). Indeed, drama-making is recommended by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan (2011) as a comprehensive educational tool with which mutual understanding, consensus building, collaboration communication and works, and expression activities are able to be learnt. Furthermore, drama-making method is easy to adjust the KIDA tree model. For instance, in case of drama-making on DRR, the first step is an activity to know about DRR [Knowledge]. The second step is one to raise interest through scenario-making or scenic art works [Interest]. The third step is one to creative contents giving messages to someone [Desire]. The final step is one to express the messages actually by performing the drama [Action]. In addition, local external resources can be involved in this creative activity, for example, scenic art works with the locals who are good at carpentry.

Though a drama-making workshop in the theme of EJET was suggested by SEEDS Asia at the beginning of this activity, the school side refrained to adopt for

the idea since the school was afraid that some mental troubles of students like flashback would happen. However, in 2013, the school decided to conduct the drama-making in the theme of EJET in the standpoint that DRR education is education for securing students and leads to support their mental stability.

At the end of 1-year activity in 2012, hearing survey from three teachers who were in charge of the class was conducted to evaluate intervention of SEEDS Asia. Key findings from the hearing are as below:

- It was vital for ESD to make network with local resources and external specialists, and to develop an annual lesson plan on the basis of these resources. However, the biggest problem was that teachers hardly secure time for meetings with these resources especially after the EJET.
- There were some difficulties for connection with local resources. For example, a teacher in charge had a good connection to rent clothes for drama individually in this time, however, others do not have. Teachers sometimes met troubles due to shortage of connection with external resources. In this case, there was lack of information on possible resources in normal.
- SEEDS Asia functioned to negotiate with local resources and keep the connection instead of the teachers in charge in this activity. This was very helpful for the school.

8.4.5 N-Help: A New Concept of DRR Network

Education Researchers (2013) emphasized “N-help” as a new concept for disaster measure in “Guidebook of Lesson Plans for Disaster Education”. Capital “N” means network as well as NGO. “Public-help”, “Mutual-help”, and “Self-help” are known as disaster measures in Japan. N-help was explained in the guidebook as follow; N-help is defined as assistance by NGOs in the phase of evacuation or recovery after disasters. This is a new concept named originally by Kesennuma City BoE and DRR activities with various organizations making network.

According to the BoE, daily ties between schools and communities developed by ESD which has been implemented since 2002 were helpful for securing students during evacuation and early responses to affected people at schools as evacuation center. Similarly, emergency relieves were gathered to Kesennuma City during the EJET through network between BoE of the city and domestic/foreign organizations such as UNESCO which has been developed by ESD.

Thus, even knowledge-based DRR network functions effectively not only for daily DRR education but also during disasters. This DRR network among stakeholders is made by development of human resources through daily DRR education in terms of ESD which emphasizes ties with the locals, and by collaboration works among stakeholders in the process of the development.

8.5 Discussion

In this section, the argument deals with the roles of NGOs in DRR education through the three cases. Izumi and Shaw (2012) proved the role of NGOs in community-based disaster risk reduction. Table 8.5 constitutes the roles of SEEDS Asia in the three cases to be considered accordingly.

In the Myanmar case, SEEDS Asia played a role to provide DRR training to teachers. It is clarified that there were effectiveness of raising awareness on DRR by only 1 or 2 day training, however, this training opportunity in a school could lead teachers and limited students to take action with their surroundings. Shiwaku et al. (2007) pointed out that community plays an essential role in promoting students' actual actions for disaster risk reduction. From the Myanmar case, it is indicated development of following-up system to sustain the activities by collaboration of surrounding community would be more effective in terms of raising their interest to take action as ultimate goal of DRR education.

Many of the NGO activities face the problem of sustainability (Shaw 2009). Shaw et al. (2011a) pointed out that school teachers and NGOs should be included in efforts promoting disaster education for sustainability. Myanmar project remained the problem of sustainability due to short-term training. In contrast, this problem was cleared in the Vietnam case. The 2-year project in Vietnam focused on making a model and network for DRR education. The important point is that development of DRR programs and materials was drafted by SEEDS Asia in consideration of local context and putting new elements the NGO knew, and discussed and modified in the WG where teachers and educational administrative officials joined. In this way, the NGO that conducted a knowledge-based activity had a significant role not only to give a technical advice related to DRR but also to take various efforts to strengthen trainees' motivation and ownership through the activity. Moreover, the NGO played a vital role as a facilitator for the network formation by providing an opportunity to learn for enhancement of their understanding to DRR education. From another view points, institutionalization is one of the keys for sustainable DRR education and advocating for educational administrative is also NGO's important role. In the Vietnam case, suggestion of the DRR module and handbook and communication through the WG were very functionable to develop a strategy for sustainable DRR education by DOET, the authority.

In the case of Kesenuma, educational network among teachers were already organized by the BoE before the start of the project. It was different from the case of Vietnam. To provide learning opportunities based on academic research on the global scale were evaluated as useful to develop an innovative DRR education program even though knowledge on ESD and DRR education had been stored in the city. Another problem is that generally utilization of external resources is required to ESD, however, coordination work for utilizing the resources can become load of schools especially in case schools starts a new course. Therefore, coordination with external resources by SEEDS Asia was evaluated. ESD is able to establish the linkage or partnership with community (Oikawa 2012). If network organization

Table 8.5 The roles of SEEDS Asia in the three cases

	Myanmar	Vietnam	Japan
Project	MKRC and WKRC	DRR core school	ESD-DRR education
Background			
– Disaster name and year	Cyclone Nargis (2008)	Typhoon Xangsane (2006)	EJET (2011)
– Death and missing	138,373	100	18,537
– Start of the project	2009	2011	2011
Training method	Conduct 1 or 2 day (s) mobile training	Make a model and network for DRR education	Provide learning opportunity and support to practices
Development of teaching materials by	SEEDS Asia	SEEDS Asia and arranged by teachers and education administrative	Teachers with education administrative
WG members for DRR education	N/A	Teachers, education administrative and SEEDS Asia	Teachers, education administrative and SEEDS Asia
Organizer of the WG	N/A	SEEDS Asia	Education administrative
Achievements and challenges of DRR education to be found	Even 1- or 2 day training could be effective for raising knowledge, however, could lead teachers and limited students to take action	Teachers of the core schools became as capable as ToT teacher to other schools. Administrative plan was made to conduct DRR education in the citywide	Teachers had some hesitation to conduct DRR education due to anxious about mental trouble to school students
Roles of SEEDS Asia	Provide a training for capacity building of teachers	Provide a training for capacity building of teachers Identifying local needs, and developing a project with new elements Creating a sense of program ownership among teachers Establish a good network and partnership with local stakeholders Assisting in and working together with local government in developing strategy	Provide a learning opportunity for capacity building of teachers Identifying local needs, and developing a project with new elements Inviting various stakeholders in a DRR education Addressing the need of specific field that requires research and technology together with academics and identifying innovative methodology and tools

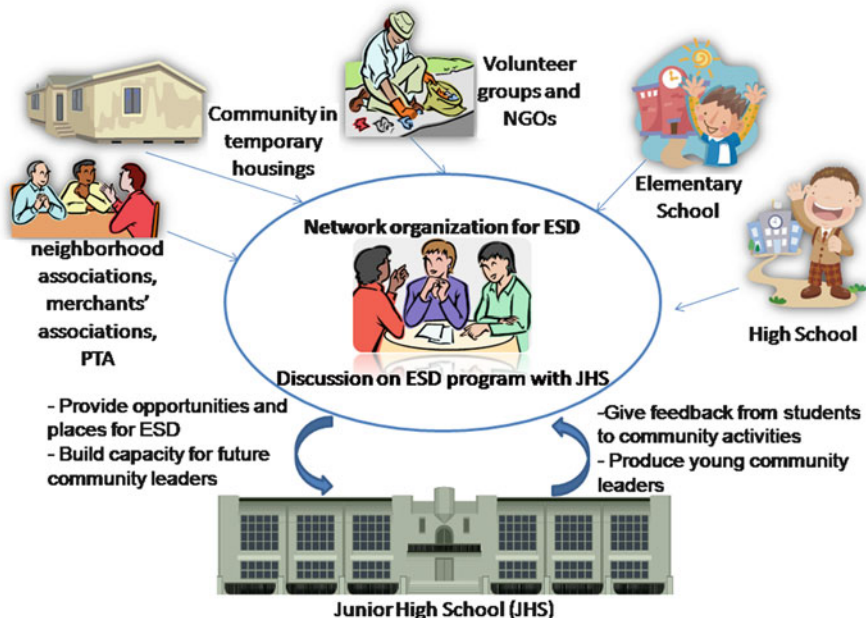


Fig. 8.8 Suggestion of network organization as support system for ESD at school

consisted of schools, Parents Teachers Association (PTA), neighborhood associations including ones for temporary housing, merchants' associations, NGOs is set as support system for ESD at schools, it is possible to build community study into school education and to conduct ESD in school formal education sustainably (see Fig. 8.8). Communication between school side and community side can be not enough at the beginning of setting the network and it may take a lot of time to coordinate implementation of ESD by utilizing the network, but its coordination work will be smoother with the network organization accumulates experiences of coordination and stores information and knowledge. Assistance of external NGOs for initial coordination work is useful, and SEEDS Asia played a role in the coordination in that case. In addition, this can create generation exchange by involvement of students in community where population is aging and young generation hardly participates in. Education plays a important role in enhancing DRR knowledge and awareness and at the same time promotes sustainable development (Shaw et al. 2011b). The major role of NGOs is for sustainable community development (Nikkhah and Redzuan 2010). Thus, such ESD with the network can be contributed to activation of community (Oikawa 2012). Discovery of community problems and suggestion for resolving the problems by students provide an opportunity for participation of various agents in community activities. Moreover, experience of community activities in school education such as ESD can give a chance for students participation in future community activities.

Another challenge is that some teachers hesitated to conduct DRR education because they were afraid DRR education might trigger mental burden of students. It is a lesson from the episode that consideration for mental burden of affected people and students should be taken when knowledge-based DRR activity is conducted at only a short time from disasters. Besides, establishment of trusty with school teachers are also important.

8.6 Conclusion

Effectiveness of DRR education/training and roles of NGOs in the education/training were discussed on this chapter through three cases of knowledge-based activities by SEEDS Asia, a NGO, in Myanmar, Vietnam and Japan. One of the roles of NGOs is to provide opportunities with new elements for capacity building. Through the cases, the KIDA tree model, an innovative DRR education concept from raising knowledge to take action, was adopted.

From the case of Myanmar, it is clarified that such DRR training, even short-term, initiated by NGOs can enhance capacity on DRR. On the other hand, one of the issues in disaster education that should be considered is sustainability and keeping quality (Shaw et al. 2011a). This case faced the same issue, however, the case of Vietnam cleared. From the case of Vietnam, it is proved that the working group consisted of teachers and educational administrative officers to develop DRR education programs and materials is effective for raising motivation and ownership, and NGOs can play vital role to organize the working group and to advocate to educational administrative plan for sustainability. In the case of Japan, the importance of DRR education with community was shown and it was indicated NGOs could be a bridge between school and local resources.

In the discussion part, establishment of network organization led by a NGO among school and local resources to discuss DRR education was suggested for sustainability of DRR education based on ESD. To provide external experts can be the role of NGOs as well. Paton (2005) mentioned that disaster education should be integrated with community development initiatives to increase resilience and facilitate self-help capacities so as to reduce reliance on external response and recovery resources. This chapter introduced that DRR education network functioned not only for disaster preparedness but also for disaster response and recovery based on experiences of Kesennuma City and was emphasized as a new concept “N-help”, by the BOE in the city.

At the last, it is stressed through the three cases that one of the key issues of education is working with local government, and have trust with the school teachers and educational administrative staff.

Acknowledgements This chapter is written on the basis of knowledge gained from activities by SEEDS Asia supported from the Ministry of Foreign Affairs of Japan, Japan International Cooperation Agency, the Ministry of Education, Culture, Sports, Science and Technology of Japan, Church World Service and many other related organizations. Authors thank for relevant stakeholders to cooperate its activities.

References

- Cabinet Office, Government of Japan (2011) White paper on disaster management 2011 executive summary. http://www.bousai.go.jp/kaigirep/hakusho/pdf/WPDM2011_Summary.pdf. Accessed 29 Sept 2013
- Graduate School of Global Environmental Studies, Kyoto University, United Nations Office for Disaster Risk Reduction - Hyogo Liaison Office, Asia Regional Task Force on Urban Risk Reduction (2010) A guide for implementing the Hyogo Framework for Action by local stakeholders consultation version. http://www.unisdr.org/files/13101_ImplementingtheHFA.pdf. Accessed 28 Sept 2013
- Izumi T, Shaw R (2012) Chapter 3 role of NGOs in community-based disaster risk reduction. *Commun Environ Disaster Risk Manag* 10:35–54. doi:10.1108/S2040-7262(2012)000010009
- Kesennuma City (2011) Kesennuma City recovery plan. Kesennuma Shi Fukko Keikaku. <http://www.city.kesennuma.lg.jp/www/contents/1318004527115/files/hukkokeikaku.pdf>. Accessed 29 Sept 2013 (in Japanese)
- Kesennuma City Education Researchers (2013) Guidebook of lesson plans for disaster education. Bousai Gakushu Shito (in Japanese)
- Ministry of Education, Culture, Sports, Science and Technology. (2011) To build capacity for communication of children. Kodomotachi no Komyunikeshonnouryoku wo hagukumutameni (in Japanese)
- Ministry of Agriculture and Rural Development (2011). Statistics by Ministry of Agriculture and Rural Development, Vietnam
- Nikkhah HA, Redzuan M (2010) The role of NGOs in promoting empowerment for sustainable community development. *J Hum Ecol* 30(2):85–92
- Oikawa Y (2012) Chapter 8 Education for sustainable development and its implications to recovery process in Kesennuma. East Japan earthquake and tsunami: evacuation, communication, education and volunteerism. Research Publishing Service, pp 165–186
- Paton DF (2005) Community resilience: integrating hazard management and community engagement. School of Psychology, Launceston
- Petal M, Izadkhah YO (2008) Concept note: formal and informal education for disaster risk reduction. In: Prepared for the international conference on school safety, Islamabad. http://www.pacificdisaster.net/pdnadmin/data/original/Formal_Informal_Educat_on_DRR.pdf. Accessed 28 Sept 2013
- Reconstruction Agency (2013) Situation and measures of reconstruction. Fuku no Genjo to Torikumi. Issued on 25 September 2013. http://www.reconstruction.go.jp/topics/main-cat7/sub-cat7-2/20130925_sanko1-2.pdf. Accessed 29 Sept 2013 (in Japanese)
- SEEDS Asia (2012) Disaster risk reduction training using mobile (Water) Knowledge Resource Center (MKRC/WKRC) External Evaluation Report. Publication, SEEDS Asia
- Shaw R (2009) Role of local actors in community based disaster risk reduction. *Perspectives in disaster management*. METU, ISDR, WBI, pp 123–145
- Shaw R, Kobayashi KSH, Kobayashi M (2004) Linking experience, education, perception and earthquake preparedness. *Disaster Prevent Manag* 13(1):39–49. doi:10.1108.0965356041052.6.9

- Shaw R, Mallick F, Takeuchi Y (2011a) Chapter 5 Essentials of higher education in disaster risk reduction: prospects and challenges. *Commun Environ Disaster Risk Manag* 7:95–113. doi:10.1108/S2040-7262(2011) 0000007011
- Shaw R, Takeuchi Y, Gwee QR, Shiwaku K (2011b) Chapter 1 Disaster education: an introduction. *Commun Environ Disaster Risk Manag* 7:1–22. doi:10.1108/S2040-7262(2011) 0000007007
- Shaw R, Takeuchi Y, Shiwaku K, Fernandez G, Gwee QR, Yang B (2009) 1-2-3 of disaster education. European Commission (EC); United Nations Office for Disaster Risk Reduction - Regional Office for Asia and Pacific (UNISDR AP). <http://www.preventionweb.net/english/professional/publications/v.php?id=12088>. Accessed 28 Sept 2013
- Shikada M, Myint UT, Gyi UKK, Nakagawa Y, Shaw R (2012) Chapter 10 Reaching the unreachable: Myanmar experiences of community-based disaster risk reduction. *Commun Environ Disaster Risk Manag* 10:185–203. doi:10.1108/S2040-7262(2012) 0000010016
- Shiwaku K (2009) Essentials of school disaster education: example from Kobe, Japan. In: *Disaster management: global challenges and local solutions*, pp 321–337
- Shiwaku K, Shaw R, Kandel RC, Shrestha SN, Dixit AM (2007) Future perspective of school disaster education in Nepal. *Disaster Prev Manag* 16(4):576–587. doi:10.1108/09653560710817057
- Takeuchi Y, Mulyasari F, Shaw R (2011) Chapter 4 Roles of family and community in disaster education. *Commun Environ Disaster Risk Manag* 7:77–94. doi:10.1108/S2040-7262(2011) 0000007010
- Union of Myanmar, Myanmar Engineering Society, Myanmar Geosciences Society, Myanmar Information Management Unit, Asian Disaster Preparedness Center (2009) Hazard profile of Myanmar. http://www.preventionweb.net/files/14567_14567HazardReport25.8.091.pdf. Accessed 28 Sept 2013

Chapter 9

Civil Society and Cross-Cutting Issues for Risk Reduction: Food Security, Health, Human Security, Environment and Microfinance

Takako Izumi and Rajib Shaw

Abstract Each agency or individual researcher addresses different cross cutting issues in disaster risk reduction (DRR) based on the areas of their expertise and focuses. These cross cutting issues can be categorized mainly into five groups: Sector-focused (Health, Livelihood, etc.), Target-focused (Elderly, Children Persons with disabilities, etc.), Underlying causes-focused (Environment, Urbanization, etc.), Tool-focused (Information management, Capacity development etc.), and Approach-focused (Multi-hazards, Gender and cultural diversity, Community and volunteer participation etc.). A number of projects and activities that target different cross cutting issues in conjunction with DRR have been implemented by CSOs. Developing a creative and innovative project that can tackle both disaster risks and various cross cutting issues together requires a holistic and scaling-up multidisciplinary approach, and this is an area that CSOs can highly contribute to.

This chapter addresses five topics as cross cutting issues: food security, health, human security, environment and microfinance. When the capacity of these cross cutting issues is successfully developed, it has a huge impact on DRR improvement. It is discussed why the five topics are important to be included in the cross cutting issues.

Keywords Civil society organizations • Cross cutting issues • Disaster risk reduction

T. Izumi (✉)

International Research Institute of Disaster Science, Tohoku University, Sendai, Japan
e-mail: izumi@irides.tohoku.ac.jp

R. Shaw

Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: shaw.rajib.5u@kyoto-u.ac.jp

9.1 Introduction

Each agency or individual researcher addresses different cross cutting issues in disaster risk reduction (DRR) based on the areas of their expertise and focuses (Table 9.1). UNISDR selected Multi-hazard approach, Gender perspective and cultural diversity, Community and volunteers' participation, and Capacity building and technology transfer as the cross-cutting issues in DRR in the Hyogo Framework for Action (HFA) (UNISDR 2005). Davis (2006) chose three topics as cross cutting issues, namely, Strengthening capacities, Gender factors, and Information management. According to him, strengthening capacities is likely to be one of the key aims in seeking to build a sustainable future through the recovery process. Gender factors are of fundamental importance in any consideration of disaster recovery in recognition of the severe vulnerability of women and children. Information management relates to all phases of disaster recovery, to all management levels and to all sectors of the subject.

In the Sphere standard, the cross-cutting themes focus on particular areas of concern in disaster response, and address individual, group or general vulnerability issues. The themes include children, DRR, environment, gender, HIV/AIDS, older people, persons with disabilities, psychosocial support (Sphere Project 2011). The inclusive of the most vulnerable groups are especially highlighted in disaster response.

Although different agencies address different topics as cross cuttings issues, they are likely to be categorized into five groups: Target-focused, Approach-focused, Underlying cause-focused, Sector-focused, and Tool-focused (Fig. 9.1).

Having such a variety of cross cutting issues indicates that DRR requires a multi-disciplinary approach and the involvement of various stakeholders and experts. Levy (1992) analyzes the cross cutting issues are not only having critical inter-relationships in practice, but also their incorporation into planned intervention

Table 9.1 Cross cutting issues related to disaster issues by different sources

Source	Cross cutting issues
UNISDR (DRR in HFA)	Multi-hazard approach, gender perspective and cultural diversity, community and volunteers' participation, and capacity building and technology transfer
Davis (DRR)	Strengthening capacities, gender factors, information management
Sphere project (disaster response)	Children, psychosocial support, DRR, environment, gender, HIV/AIDS, older people, persons with disabilities
VFL (DRR)	Community participation and information, actual and fair participation of local stakeholders, encouraging volunteers, training activities, gender and resources, cultural sensitivity (diversity, traditional knowledge and language)
FAO (DRR)	Capacity development of member countries, knowledge management and communication, strategic partnerships, and gender equality
IFRC (DRR)	Gender, livelihood and food security, urbanization

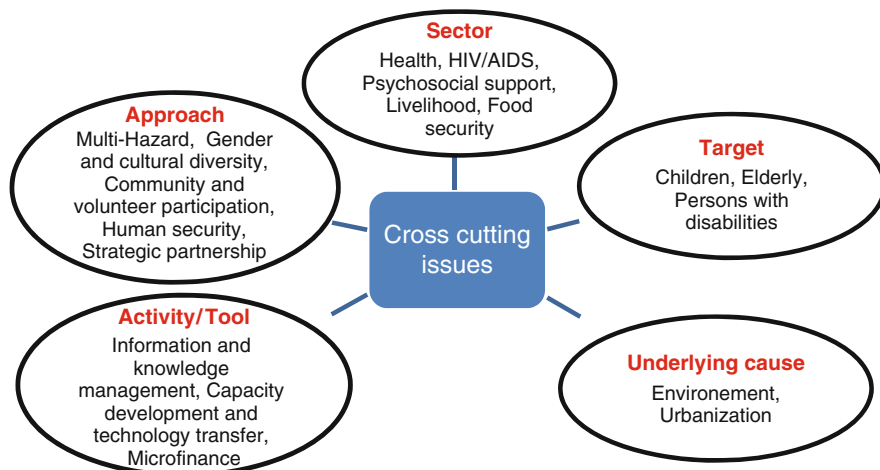


Fig. 9.1 Five categories of cross cutting issues

will increase the effectiveness and efficiency of policies, programmes, and projects, and will thereby increase the prospects for being more equitable and sustainable.

This chapter addresses five topics as cross cutting issues: food security, health, human security, environment and microfinance, which are less or not addressed in the topics in Table 9.1. Health, human security and microfinance were not included in Table 9.1 though they are critical topics that need to be integrated and linked to DRR process. When the capacity of these cross cutting issues is successfully developed, it has a huge impact on DRR improvement. The following sections discuss why the five topics are important to be included in the cross cutting issues.

9.2 Food Security

The standard definition of food security used by the Food and Agriculture Organization (FAO) is a “situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that needs their dietary needs and food preferences for an active and healthy life” (FAO 2002). Food security is about adequate access to food which can be acquired through trade as well as production (Devereux and Edwards 2004). Thus, once the system of the access is damaged, food security will be in danger and the impacts will cover much wider area beyond rural areas.

Disasters have a direct impact on agriculture, food safety and quality and food and nutrition security, especially in two ways—damage on crops and products and destroy of market access and production capacity. These extreme events tend to have the most severe consequences on the people living in the most vulnerable conditions, and take over their products and livelihood. Most of them live in

rural areas, and depend on agriculture, fisheries, forests and livestock for their livelihoods. These sectors belong to the most affected by extreme weather events, making farmers, fishers, herders even more vulnerable to disaster and impacts of climate change. The alleviation of hunger and poverty is strongly correlated with DRR. In addition, disasters destroy not only crops and production directly, but also entire agricultural infrastructure and production capacity. They interrupt market access, food supply to the cities and reduce income, deplete savings, and erode livelihoods. Not only the production sectors including farming, fishing, herding, but also factories and shops need to have their contingency plan in case the transportation and other shipping lines were destructed (Skees 2000; FAO 2013). Therefore, it is necessary to strengthen the DRR capacity to minimize the disaster risks and impacts on livelihood in case they are hit by disasters.

Food security is also deeply related to a climate change factor as well. Climate change is weakening the resilience of livelihood systems in the face of increasing uncertainty and frequent disasters (O'Brien et al. 2006). Both disasters and climate change are a leading cause of hunger and affect all dimensions of food security including economic and physical access to food availability and stability of supplies and nutrition (WFP and SDC 2011). Maxwell et al. (2010) argues that climate change has already aggravated existing production and consumption constraints in food insecure countries, and will continue to do so. However, the impact of climate change varies from country to country, across livelihood systems, according to urbanization and economic diversification (agriculture versus industrial and service sectors), and many other environmental and socio-economic variables. For instance, in the tropical or subtropical regions that include most of the Asian countries, the negative impact would be more serious by reducing rainfall and shortening growing seasons (Devereux and Edwards 2004). Therefore, it is urgently needed especially in Asia to identify the local risks for both short and long terms to be caused by climate change and disasters, and initiate developing the plans and strategies to reduce the future potential impacts on food security in collaboration with the experts of DRR, climate change and food security from different levels.

CSOs have actively involved in implementing various projects that integrate the climate change concerns into DRR, then eventually such projects contributed to achieving food security. The following is a case study of the project conducted by a national CSO in Cambodia. The Battambang province is one of the highly drought affected and vulnerable provinces in Cambodia. The community members lost their rice crops every year due to drought. The lack of climate adapted agriculture made the community more vulnerable. Save the Earth Cambodia (STEC) initiated the community-based drought resilient project. The project aimed at developing the capacity of the local government officials and community members on climate change and DRR, raising awareness on a climate change adaptation (CCA) measure in particular for drought, and establishing the mechanism of drought resilient community through climate-adapted farming and other livelihood programme. In the Battambang province, the rice-growing is a common agriculture. When crops fail, other problems emerged such as migration and school drop-outs. Villagers were trained in climate risk mapping and drafted a risk reduction action

plan through this project and learned about climate-adapted farming and replaced rice plantations with drought resilient crops that grew faster than rice. The villagers continue using the training and information and sharing it with neighboring communities. In addition, the project included an activity of poultry farming and home-gardening. It was mainly to support women-headed households to have their livelihood through these activities. In this way, the livelihood part provided the families with stable income and fresh nutritious foods, and contributed to decrease of migration in particular of younger women to a city center for work and poverty reduction (Moolio 2010).

Disasters create a heavy impact on their livelihood. In order to secure their living and to recover as quickly as possible after being hit by disasters, it is important for DRR programmes to include the livelihood element. It can be a transformation of the current planned crops such as from rice to vegetables and an establishment of new scheme of livelihood such as poultry farming and home-gardening. The change and promotion of system and production in livelihood requires policy support, capacity development, and improvements in the management of natural resources such as land, forests, water, soil nutrients, and genetic resources. In this way, DRR programme can achieve the sustainable income, make food production systems more resilient and secure sustainable development (Izumi and Shaw 2012; FAO 2013).

9.3 Health

The traditional focus of the health sector has been on the response to emergencies. The ongoing challenge is to broaden the focus from the response and recovery to a more proactive approach which emphasizes prevention and mitigation, and the development of community and country capacities to provide timely and effective response and recovery (WHO and UNISDR 2011). In order to strengthen the involvement of the health sector in DRR, UNISDR has conducted a campaign of “Hospitals Safe from Disasters” as 2008–2009 World Disaster Reduction Campaign. The objective of this campaign was to (1) protect the lives of patients and health workers by ensuring the structural resilience of health facilities, (2) make sure health facilities and health services are able to function in the aftermath of emergencies and disasters, and (3) improve the risk reduction capacity of health workers and institutions including emergency management. Especially, it is emphasized that special attention must be given to ensuring the physical and functional integrity of health hospitals and facilities in emergency conditions (UNISDR et al. 2008).

The growing burden of disasters especially on developing countries impedes the progress of development by the economic impact on nations and regions, therefore, consequently, the living and health conditions of the populations who live in these countries remain being at risk (Merlin 2009). In addition, Peppiat (2006) emphasizes that not only severe disasters normally highlighted by

international media and international organizations, but also the smaller scale of “everyday” hazards such as seasonal flooding and localized events that do not usually require humanitarian assistance make an impact on the health issues. Human health is affected by all scale and types of natural hazards.

What kind of impacts on health is made by disasters? Disasters increase morbidity and mortality and destroy health facilities and infrastructure that enables access to health facilities and hospitals. Few (2007) stresses the serious impact of losing access to health facilities, breakdown of transportation and utilities, and shortages of available personnel, and all of which cause disruption to the functioning of health systems. The disruption of health systems hampers maintaining good health conditions. Having good health enables children to attend school regularly, and people to better cope with, and respond to an emergency when it occurs. Keim (2008) also argues that people in good health are less likely to suffer disaster related morbidity or mortality and are therefore more disaster resilient. Healthy communities minimize exposure of people and property to natural disasters. In this sense, health is indispensable to make communities resilient.

After the country was affected severely by a disaster, Myanmar has initiated the incorporation of DRR into health sector to minimize the future disaster risks based on their experiences from the cyclone Nargis in 2008. According to the Post Nargis Joint Assessment (PONJA), approximately 75 % of health facilities in the affected townships were damaged and lost the function as a hospital and health center. It led to considerable decline in health service provision, in particular for immunization and communicable diseases, health care services for birth delivery and access to medicines. The Myanmar government identified the vulnerabilities in the health sector in Myanmar:

- Environmental and hazards risks at the site are not much integrated in the planning. Therefore, the hazard resistant features in the health facility design is not included,
- Most of hospitals and health facilities do not have a disaster preparedness plan, and
- The medical staff in rural health offices do not have sufficient knowledge on DRR and preparedness.

Based on these vulnerability identifications, the needs were identified to develop the safety of health sector in Myanmar as follows: Health sector development plan, National guideline on building safer health facility, Advocacy for integrating DRR in health sector, Involving the community, Capacity development of health staff, Early warning and response systems, and Inter-disciplinary network (MoSWRR and MoH, Gov. of Myanmar 2010). By incorporating the DRR elements, health facilities and hospitals can be much more effective and can function as a hospital even under a disaster situation that requires medical services and assistance at most.

Not only the initiatives by governments, but also there are a number of health related projects in conjunction with health issues and DRR carried out by CSOs. These projects include construction of health facilities, capacity development of health workers, medical doctors and nurses, and organizing health centers and



Fig. 9.2 BTCLS training for nurses

clinics in the areas with no proper health facilities. There was a joint initiative by several NGOs and other stakeholders implemented across four countries: Indonesia, Sri Lanka, India and Maldives in partnership with UNISDR, European Union, the Asian Disaster Reduction and Response Network (ADRRN), and universities. The project was called “Project Selamat”. The project aimed to build community level coping capacities towards long term resilience. It involved different activities with an overall goal to develop long term resilience and included the activities of making communities aware of their risks, training local stakeholders and medical personnel in appropriate skills, establishing community based infrastructure, developing national curriculum on disaster management and advocacy at policy levels (SEEDS India 2008). It was a unique collaboration and structure of implementation. The international management team was formed by two NGOs—SEEDS India and MERCY Malaysia—that are the members of ADRRN, and they coordinated and managed the activities under the Project Selamat with the partnering organizations. These two NGOs provided advice and guidance to the national and local NGOs that become major implementing actors, and discussed the implementing organizations on the progress and how to improve the activities in the next stage. Not only the project implementation for the communities, but also this project provided an opportunity to national and local NGOs to strengthen their skills of project management, documentation and programme implementation in collaboration with the NGOs that have more experiences and knowledge in the particular topics.

In order to support this initiative, in Indonesia, a project under the Project Selamat was conducted by a national CSO called the 118 Emergency Ambulance Service (118 EAS) in collaboration with another medical CSO called MERCY Malaysia as well as the local health offices (Fig. 9.2). Since 1998 USAID/OFDA has supported the Program for the Enhancement of Emergency Response (PEER). It includes the Hospital Preparedness for Emergencies (HOPE) training course designed to link pre-hospital emergency care to health facilities. HOPE aims to prepare health facilities and staff to respond effectively to emergencies. This training supports hospitals and other health facilities in developing facility-specific

plans that increase their ability to continue providing critical medical care during emergencies (USAID 2012).

The health project by 118 and MERCY Malaysia in Indonesia aimed to improve the knowledge and skills of medical staff and hospital managers in delivering quality health services effectively and efficiently in case of disasters. The community members also participated in the basic life support training and mock drill. The trainings included the HOPE course, disaster management course including disaster response simulation exercise, basic trauma cardiac life support (BTCLS) course and basic life support course.

The above project was a joint effort of CSOs, local governments and communities. It also focused on providing medical staff and hospital managers with the knowledge on why disaster preparedness such as developing a preparedness and response plan and establishing the coordination mechanism is required prior to a disaster strikes. It will be a first step of incorporating the health element into DRR to foster medical personnel to enable to have a strong knowledge on DRR, and eventually they will contribute to developing disaster resilient health facilities and systems that can provide good health to the public even under emergency situation.

In addition to the trainings and safe hospital building, there are other factors and elements that support DRR in the health sector by focusing the underlying causes of the damages to health. Having good health enables children and communities to develop a resilient society and the capacity to recover from emergencies in an effective and efficient manner. In order to sustain good health, the projects of produce clean water and hygiene education also contribute to DRR in order to support sustaining the water production and provision during and after a small scale of disasters. The Dhaka Community Hospital (DCH) in collaboration with MERCY Malaysia initiated the water-related projects such as the installation of dug wells, rainwater harvesting unit (Fig. 9.3), and river sand filter unit (Fig. 9.4) together with the promotion of hygiene education.

9.4 Human Security

The concept of “human security” is characterized by an emphasis on the security of individuals and communities that has moved beyond traditional national security (Jimba et al. 2012). The 1994 Human Development Report by UNDP described seven categories of security: economic, food, health, environment, personal, community, and political (UNDP 1994). Shaw (2012) discusses that disaster management has a direct connotation to human security. Many of natural disasters are directly related to the environmental degradation and climate change. These events affect the poor the most by damaging their lives, properties, and livelihoods. Therefore by creating disaster-resilient communities, it is possible to enhance human security.



Fig. 9.3 Rainwater harvesting unit



Fig. 9.4 River sand filter unit

In order to achieve human security, it requires the engagement and active involvement of multiple stakeholders from individuals and their families to CSOs, to all levels of government, to the international community (Jimba et al. 2012). There are some on-going reconstructions projects after the 2011 Great East Japan Earthquake and Tsunami that eventually could lead to developing a disaster resilient community and enhancing human security. Tagajo City in Miyagi prefecture, Japan was affected heavily by the 2011 Great East Japan Earthquake and Tsunami. 188 people lost their lives and more than 11,000 houses were affected in the city. In the reconstruction process, the city has made tremendous efforts to develop the DRR innovative measures to secure the safety and security of the citizens and has determined to incorporate the DRR measures into

the reconstruction process not to gain the same level of damages even if the city was hit by a tsunami again. One of their reconstruction projects is to rebuild the city with tree planting to regain the same view and environment as before the disaster in 2011. Another one is a housing project for the disaster affected families. The housing complex includes not only houses, but also a childcare center, elderly support center, and a meeting place in order to establish and grow a bond between the residents in the complex. These models of DRR projects put an emphasis not only on the importance of the infrastructure to mitigate disaster risks directly but also the soft-side of the DRR needs that enables the residents to obtain the feeling of safe and security in their living environment, which can be one of the foundation of human security.

In addition, to develop a disaster resilient city, Tagajo city has focused on three aspects in strengthening their DRR capacity in the reconstruction plan: (1) Multiple defenses, (2) Accumulation of technologies, and (3) Promotion of DRR education. The city aims to build seawalls against large scale of tsunamis in order to weaken the impact of tsunamis. In addition, the capacity of communication and early warning is strengthened. In order to evacuate as quickly as possible, evacuation roads to higher places and evacuation towers and buildings to be used as an evacuation centers will be built. The development of these multiple defenses and preparedness system is considered as one of the most effective DRR measures. In addition, the city makes an effort to incorporate the innovation and technology in DRR. One of the on-going projects is producing lettuce with LED artificial lights in a plant factory in collaboration with private sectors. It made possible to produce the crop sustainably under an extreme weather and air pollution. Securing food is one of the priorities in case of emergencies. The city also aims to enhance the DRR education at schools and homes. The DRR handbook is distributed to all households aiming to provide each family with an opportunity to discuss disaster preparedness with family members. In order to share their experiences from the disaster in 2011, the city also has a project to disseminate the information and lessons not only within the city, but also all over the country through the digital archives on their website.

Shaw (2012) describes that human security focuses on analyzing who is vulnerable, how does action by local people in particular place and condition affect vulnerability, and what actions could be taken to reduce or mitigate vulnerability. The vulnerability of Tagajo city was well analyzed prior to planning the reconstruction projects based on the experiences of the disaster 2011 and the vulnerability was reflected in their reconstruction plan. These projects are based on a comprehensive approach and designed to incorporate different aspects of food security, mental health, environment, technology, infrastructure, community, education. This could be one of the key lessons-learn from the 2011 Great East Japan Earthquake and Tsunami that in order to minimize the impacts and damage from a disaster, especially the one with low-frequency and high-impact, it is required to have various types of counter measures, not only the typical types of DRR efforts, but also a combination of different elements. It is possible for such collaborative and comprehensive efforts to achieve human security.



Fig. 9.5 Health support center in Otsuchi town

Another practice is from Otsuchi town in Iwate prefecture. The town claimed tremendous damages from the disaster in 2011. The Japanese medical NGO called AMDA (the Association of Medical Doctors in Asia) send the medical teams to the city right after the disaster hit. Together with MERCY Malaysia that is an international NGO based in Malaysia, they soon initiated a project of developing the health support center in Otsuchi town (Fig. 9.5). The major objective of the center were to provide the medical service and assistance to the people in the temporary houses, to provide the service of acupuncture for both physical treatment and relaxation that can release from the stress, to create and provide a space to the affected people that they can meet, socialize and rebuild their healthy lives, and to develop an opportunity to enhance their knowledge and idea on disaster preparedness and skills for their living. Eventually, the center possessed the free space for various purposes including providing classes such as bread making and craft to develop skills that can generate income, and organizing meetings and seminars for DRR education and disaster preparedness.

The above stories from Tagajo city and Otsuchi town may not cover the whole aspect of human security, however, they explained the important link between DRR and the categories of human security: economic, food, health, environment, personal, community, and political and demonstrated that human security could be achieved on extension lines of DRR.

9.5 Environment

Environment is considered as one of the underlying causes of disasters. The environmental issues are included in Priority 4: “Reducing the risks in key sectors” in the HFA. Implementing Priority 4 requires encouraging the sustainable use and management of ecosystems, land use, and natural resources, and integrating DRR strategies and climate change (UNISDR 2005). Ecosystem degradation is recognized as one of the major factors which interact to cause disasters and one of three

underlying drivers of risk affecting poverty and disasters together with vulnerable rural livelihoods and poor urban and local governance (Emerton 2009; UNISDR 2009). Therefore, without taking serious action against ecosystem decline, the risks to poverty and disasters will never be reduced.

Ecosystems are defined as dynamic complexes of plants, animals and other environment interacting as functional units (Millennium Ecosystem Assessment 2005). They are the basis of all life and livelihoods, and are systems upon which major industries are based, such as agriculture, fisheries, timber and other extractive industries. The range of goods and other benefits that people derive from ecosystems contributes to the ability of people and their communities to withstand and recover from disasters. Environmental degradation is reducing the capacity of ecosystems to meet the needs of people for food and other products, and to protect them from hazards (Sudmerier-Rieux and Ash 2009).

Mangrove forests provide essential functions and services to coastal communities. These include acting as carbon sinks thereby mitigating the effects of climate change, providing nutrients for marine life and enhancing protection to coastal communities from storm surges and erosion. Additionally, “mangroves serve as a nursery and breeding ground for many reef organisms,” while they have also been sustainably used “for food production, medicines, fuel wood and construction materials.” Afforestation was seen as a means to combat the loss of natural coastal protection by safeguarding sea dykes, reducing the risk of flooding and protecting livelihoods (IFRC 2011). The project of mangrove plantation is implemented by a national NGO in Myanmar in conjunction with other preparedness projects. The communities understand the importance and value of the mangrove through the experience of the cyclone Nargis and the project was designed that the communities need to have the ownership to grow the mangroves. Mingalar Myanmar, a national NGO in Myanmar, initiated the project of mangrove plantation after the cyclone Nargis with expectation that the mangroves act as barriers against storms hence reducing loss and damage from natural disasters. They firstly formed a committee that consists of the village people to manage and monitor the activity. Mingalar Myanmar combined this activity with other community-based disaster preparedness projects such as early warning development and evacuation drills as a package of community-based disaster preparedness project. In this way, the communities learned several ways of protecting their lives and assets from disasters and grew their responsibilities in disaster preparedness.

The rise in number and intensity of many extreme hydro-meteorological events is increasingly recognized as being the result of global and regional climate change. More importantly, the underlying risk factors of disaster are increasing: more people living in vulnerable areas, such as low lying coastal areas, steep hillsides, flood plains (Sudmerier-Rieux and Ash 2009). Many vulnerable and marginalized people are directly dependent on ecosystem services for their livelihood activities and are therefore particularly vulnerable to changes in environmental conditions and factors that may limit their access to such resources (Thomalla et al. 2006). Investing in ecosystems and mainstreaming environmental management in DRR is likely to make a major contribution to the goal of achieving sustainable livelihoods.

In addition to the contribution to the livelihoods, there are more roles that ecosystems can play in DRR. At the General Assembly Thematic Debate on DRR held in April 2012 in NY, there was a statement by UNEP on applying ecosystems approaches for DRR and climate change adaptation. In the statement, there are four benefits that people can get from healthy ecosystems: (1) act as natural infrastructure to buffer against common hazards, (2) provide for basic needs such as food, shelter, and water before during and after hazards events, (3) contribute to GDP, support poverty reduction, ensure biodiversity and facilitate carbon sequestration as well as sustain livelihoods, and (4) are viewed to be cost-effective, i.e., forest management can provide protection against mountain hazards such as rockfalls, snow avalanches and landslides and is five to ten times less costly than engineered measures. It is summarized that the benefits from healthy ecosystems include provisioning services, such a food, fuel and water, regulating services such as natural hazard mitigation, erosion control and water purification; supporting services such as soil formation and nutrient cycling, and cultural services such as recreational and other nonmaterial benefits (Sudmerier-Rieux 2012; Munang et al. 2013, Singh et al. 2013).

What needs to be done to protect and sustain ecosystems? Healthy ecosystem cannot be achieved only by efforts from DRR aspects and disaster management; rather it has to be a shared responsibility of the fields of DRR, climate change and sustainable development. In order to connect these three areas of concerns, the ecosystem-based approach needs to be integrated into the policies and regulations of all these three areas. Furthermore, sustainable ecosystem can be developed and sustained on various stakeholder involvement especially policy makers, CSOs, land planning and use experts in addition to scientists and subject experts of DRR and climate change. These are central elements to reducing underlying risk factors for disasters and climate change impacts.

9.6 Microfinance

So far, it has been discussed that various cross cutting issues such as food security, health, human security and environment need to be incorporated into DRR issues and all these themes are closely linked. The DRR capacity can be increased by enhancing the capacity of these cross cutting issues, and the capacity of each cross cutting issues can be strengthened by enhancing the DRR capacity. Microfinance is slightly different from the above four cross cutting issues in a sense that it can be a tool to strengthen the capacity of DRR and other cross cutting issues. In the planning stage of project management, in general, financial resources and arrangement are negotiated among stakeholders as one of the top priorities. Without any funds, it is extremely difficult to develop DRR counter measures especially for the most vulnerable people even if they recognize the importance and needs of DRR capacity in order to protect their lives and properties. Microfinance can support economic and social rejuvenation after natural disasters by providing finance for

rebuilding livelihoods, by strengthening community bonds and by protecting the poorest from income shortfalls (Poston 2010).

The primary target groups of Microfinance Institutes (MFIs) are poor and vulnerable communities that have limited access to credit facilities and are highly vulnerable to natural disasters (Parvin and Shaw 2013). Microfinance is the delivery of loans, savings, insurance and other financial services to the poor so they can engage in productive activities, helping them build assets, stabilize consumption and protect themselves against risk (Hammill et al. 2008). Magner (2007) discusses that over the years, microfinance has demonstrated that its impact goes beyond providing individual with access to capital; it has also helped to protect, diversify and increase their sources of income and assets that enable them to make their way out of poverty. Although microfinance is an effective poverty alleviation tool, it should be utilized as a platform for multiple empowerment approaches. Microfinance and microcredit do not provide consumers with loans to simply increase their consumption; instead, then provide loans for the specific purpose of creating self-employment for the poor, thereby enabling them to build their own microenterprises and move themselves out of poverty. In short, microfinance is an income producing tool rather than a consumption aid.

In addition, MFIs offer different support services to their clients, including the provision of knowledge and information related to education, health, sanitation, and social norms, as well as awareness-building and motivation activities pertaining to disaster preparedness, family planning and maternity and child care (Parvin and Shaw 2013; Hammill et al. 2008). By obtaining sustainable incomes through education and skill training, the most vulnerable people can enhance the livelihood assets.

A wide range of microfinance services are available to help poor individuals and households. Some MFIs offer housing loans to repair or replace roofs, reinforce walls, or rebuild in less hazard-prone area, which can be key for reducing vulnerability to extreme events such as floods, droughts and storms (Hammill et al. 2008). After all, people and families equipped with livelihood assets, knowledge, and healthy environment can help their families reduce their own exposure to risks to disasters. Although MFIs are of different types, NGOs are the prime providers of microfinance to the poor in Bangladesh (Parvin and Shaw 2013). Therefore, NGOs who are a part of CSOs play crucial roles in microfinance. As known widely, BRAC is the world's largest NGO with a large microfinance programme serving more than five million Bangladeshi families. The Income Generation for Vulnerable Groups Development (IGVGD) Programme is collaboration between BRAC, the World Food Program and the Bangladesh government to serve destitute rural women who have little or no income-earning opportunity by offering them free grain, skills training, and microloans. The results of the Programme were very impressive. To date, the Programme has served 1.6 million destitute women, and nearly two-thirds of these participants have graduated from absolute poverty (Magner 2007).

Once a disaster strikes, even the mechanism and system of microfinance will be destroyed in many ways, i.e., by a loss of buildings and records, disruption of meeting habits, dislocation of membership, low levels of liquidity and high levels

of bad debt. MFIs itself may face severe problems following a disaster when their services are most required (Poston 2010). It is obvious that the MFIs system and mechanism are vulnerable to disasters. Therefore it is also crucial for MFIs itself to strengthen their management system to enable for their business to maintain under a disaster situation and the support to the programmes and activities that can enhance the DRR capacity of most vulnerable people.

9.7 Conclusions

DRR refers to the broad development and application of policies, strategies and practices to minimize vulnerabilities and disaster risks through society (Jones et al. 2010; Twigg 2004). However, only the traditional and key DRR efforts, i.e., policy development, early warning, vulnerable and capacity assessment, education, focusing underlying causes and strengthening disaster preparedness capacity as stated in HFA may not be sufficient anymore to tackle various types of natural disasters, climate change, and their underlying causes including urbanization and environmental degradation. Each cross cutting issue discussed in this chapter has different impacts by disasters, and one of the future development and challenges in DRR will be how to integrate a number of cross cutting issues into the traditional and on-going DRR efforts (Table 9.2).

Table 9.2 Disaster impacts on and potential DRR incorporate projects of cross cutting issues

Cross cutting issues	Major impacts by disasters	DRR integrated projects/activities
Food security	<ul style="list-style-type: none"> – Losses of crops – Damage on infrastructure and production capacity – Affect market access, reduce income widely such as business owners 	<ul style="list-style-type: none"> – Climate adapted farming, replaced rice plantations with drought resilient crops – House gardening
Health	<ul style="list-style-type: none"> – Losses of lives – Damage on health facilities – Destroy access to hospitals – Decline people's health in general 	<ul style="list-style-type: none"> – HOPE (Hospital Preparedness for Emergencies)
Human security	<ul style="list-style-type: none"> – Losses of livelihood, income, food, environment, good health, houses and other basic needs 	<ul style="list-style-type: none"> – Comprehensive reconstruction project (a combination of environment, DRR, community development, housing, health, livelihood support)
Environment	<ul style="list-style-type: none"> – Damage on ecosystem – Environmental degradation – Losses of natural buffers to disasters, food, fuel and water that can be benefited by good ecosystem 	<ul style="list-style-type: none"> – Flood restoration for flood reduction – Fire management – Protection forests – Mangrove plantation
Microfinance	<ul style="list-style-type: none"> – Delay of paying back debts – Damage on MFI system and mechanism that causes the interruption of MFI business 	<ul style="list-style-type: none"> – Provision of support services for livelihood, education, health, sanitation and motivation activities for disaster preparedness – Housing loans after disasters

Food security is badly affected by disasters. They destroy crops, infrastructure and production capacity. Also, climate change has a great impact on food security. Due to climate change, the climate-related disasters will be increased. Therefore, food security needs to be enhanced to overcome future extreme events by having a strong livelihood system and mechanism. It is crucial to maintain a strong livelihood that can be recovered after disasters as quickly as possible.

Disasters put a great impact on health such as losses of human lives, damage on health facilities and access to such facilities, and destroy of health system that can provide a regular medical service to the public. It is possible to minimize these risks and damages by having DRR measures including health facilities with hazard resistant feature, hospital preparedness plan and capacity development of medical staff and hospital managers. To develop and maintain good health conditions of community members is also a key to create a disaster resilient society.

Human security is threatened by disasters that deprive human lives, properties, environment, basic needs, safe living condition, livelihood, health etc. It is crucial that the projects are designed with multidisciplinary approach to achieve human security in the reconstruction stage having various aspects such as environment, community development, livelihood, mental health support, community development, technology etc. Human security can be achieved on extension lines of DRR. Environment and healthy ecosystems are damaged by climate change and disasters. Maintaining healthy ecosystem has benefits in having natural buffers to disasters, providing for natural resources, and sustaining livelihood. Healthy ecosystem itself can be a DRR measure. Maintaining the healthy ecosystem requires the knowledge and collaboration of experts from different sectors such as DRR, climate change, development as well as the involvement of multi-stakeholders such as CSOs, governments, communities and scientists.

Microfinance can be an income producing tool that provides a financial support for having loans for livelihood, knowledge, information, healthcare etc., and it can help achieving other cross cutting issues.

A number of projects and activities that target different cross cutting issues in conjunction with DRR have been implemented by CSOs. CSOs are extremely good at making longer-term commitment, developing and disseminating innovations, and that their broad-based approach creates a more holistic approach to disasters (Benson et al. 2001). In addition, CSOs are deeply rooted in community, exposed to local disaster risks and familiar with local knowledge and culture (Heijmans 2009). These characteristics contribute to addressing the needs of different types of cross cutting issues as well as developing innovative projects that target the underlying causes with a holistic and scaling-up multidisciplinary approach. It is obvious that if more DRR projects that integrate cross cutting issues are implemented by CSOs in collaboration with other stakeholders, the overall quality and quantity of DRR efforts will drastically increase.

Acknowledgements Sincere appreciation goes to STEC, MERCY Malaysia, AMDA and Tagajo City that have kindly provided me with the information on their activities and projects for this chapter.

References

- Benson C, Twigg J, Myers M (2001) NGO initiatives in risk reduction: an overview. *Disasters* 25(3):199–215
- Davis I (2006) Learning from disaster recovery guidance for decision makers. International Recovery Platform (IRP)
- Devereux S, Edwards J (2004) Climate change and food security. *IDS Bull* 35(3):22–30
- Emerton L (2009) Investing in natural infrastructure: the economic value of Indonesia's marine protected areas. Coral Triangle Center, the Nature Conservancy, Bali
- FAO (2002) The state of food insecurity in the World 2001
- FAO (2013) Resilient livelihoods: disaster risk reduction for food and nutrition security
- Few (2007) Health and climate hazards: framing social research on vulnerability, response and adaptation. *Global Environ Change* 17:281–295
- Hammill A, Matthew R, McCarter E (2008) Microfinance and climate change adaptation. *IDS Bull* 39(4):113–122
- Heijmans A (2009) The social life of community-based disaster risk reduction: origins, politics and framing. Disaster studies working paper 20. Aon Benfield UCL Hazard Research Center
- IFRC (2011) Mangrove plantation in Vietnam: measuring impact and cost benefit
- Izumi T, Shaw R (2012) Role of NGOs in community-based disaster risk reduction. In: Shaw R (ed) Community-based disaster risk reduction. Emerald, Bingley, pp 35–54
- Jimba M, Hubbard S, Sase E, Suzuki T, Otsuka K (2012) Human security approaches for disaster recovery and resilience. *Int Med Commun* 54(5):338–341
- Jones L, Jaspars S, Pavanello S, Ludi E, Slater R, Arnall A, Grist N, Mtisi S (2010) Responding to a changing climate: exploring how disaster risk reduction, social protection and livelihoods approaches promote features of adaptive capacity. Working paper 319. Overseas Development Institute, London
- Keim ME (2008) Building human resilience: the role of public health preparedness and response as an adaptation to climate change. *Am J Prevent Med* 35(5):508–516
- Levy C (1992) Gender and the environment: the challenge of cross-cutting issues in development policy and planning. *Environ Urban* 4(134):134–149
- Magner M (2007) Microfinance: a platform for social change. Grameen Foundation Publication Series
- Maxwell D, Webb P, Coates J, Wirth J (2010) Fit for purpose? Rethinking food security responses in protracted humanitarian crises. *Food Policy* 35:91–97
- Merlin (2009) Health and disaster risk reduction
- Millenium Ecosystem Assessment (2005) Ecosystem and human well-being: synthesis. Island Press, Washington, DC
- Moolio P (2010) Enhancing drought resilient community development processes through micro insurance in Cambodia. External Evaluation Report. Save the Earth Cambodia
- Munang R, Thiaw I, Alverson K, Liu J, Han Z (2013) The role of ecosystem services in climate change adaptation and disaster risk reduction. *Curr Opin Environ Sustain* 5:47–52
- MoSWRR&MoH, Gov. of Myanmar (2010) Guidance on mainstreaming disaster risk reduction in the health sector, Myanmar – rural settings
- O'Brien G, O'Keefe P, Rose J, Wisner B (2006) Climate change and disaster management. *Disaster* 30(1):64–80
- Parvin GA, Shaw R (2013) Microfinance institutions and a coastal community's disaster risk reduction, response and recovery process: a case study of Hatiya, Bangladesh. *Disaster* 37(1):165–184
- Peppiat D (2006) ProVention Consortium, International Development Committee, Humanitarian Response to Natural Disasters. Seventh Report of Session 2005–2006. House of Commons. HC 1188-II. Evidence, pp 65–70
- Poston A (2010) Lessons from a microfinance recapitalization programme. *Disasters* 34(2):328–336
- SEEDS India (2008) Annual report 2007–2008

- Shaw R (2012) Preface. In: Shaw R (ed) *Community-based disaster risk reduction*. Emerald, Bingley
- Singh S, Nair SS, Gupta AK (2013) Ecosystem services for disaster risk reduction: a case study of wetland in East Delhi Region, India. *Global J Hum Soc Sci Geo-Sci Environ Disaster Manag* 13(4):36–47
- Skees JR (2000) A role for capital markets in natural disasters: a piece of the food security puzzle. *Food Policy* 25:365–378
- Sphere Project (2011) *Humanitarian charter and millennium standards in humanitarian response*
- Sudmerier-Rieux K (2012) *Ecosystem approach to DRR: basic concepts and recommendations to governments, with a special focus to Europe*. A special publication for the council of European and Mediterranean major hazards agreement
- Sudmerier-Rieux K, Ash N (2009) *Environmental guidance note for disaster risk reduction: healthy ecosystems for human security*
- Thomalla F, Downing T, Spanger-Siegrfried E, Han G, Rockstrom J (2006) Reducing hazard vulnerability: towards a common approach between disaster risk reduction and climate adaptation. *Disasters* 30(1):39–48
- Twigg J (2004) *Disaster risk reduction, mitigation and preparedness in development and emergency programming*, Good practice review, vol 9. Humanitarian Practice Network, Overseas Development Institute, London
- UNDP (1994) *Human development report*
- UNISDR (2005) *Words into Action: a guide for implementing the Hyogo Framework for Action 2005–2015*. United Nations
- UNISDR (2009) *Global assessment report on DRR, risk and poverty in a change climate*. United Nations
- UNISDR, WHO and the World Bank (2008) *Hospitals safe from disasters: reduce risk, protect health facilities, save lives*. United Nations
- USAID (2012) *USAID/OFDA health sector update – October 2012*
- WFP and SDC (2011) *Building resilience: bridging food security, climate change adaptation and disaster risk reduction*
- WHO and UNISDR (2011) *Disaster risk management for health: overview, disaster risk management for health fact sheets*

Chapter 10

Microfinance: Role of NGOs in DRR

Gulsan Ara Parvin and Rajib Shaw

Abstract There are a number of Microfinance Institutions (MFIs), which operate development programs in almost every part of Bangladesh including coastal areas. The essential role of microfinance in poverty alleviation has been examined by several researchers. This chapter will cover the role of NGOs in micro-finance, with specific focus on disaster risk reduction in Bangladesh. It is expected that the outcome of this research will give pragmatic guidance to the current efforts of MFIs and thus contribute to enhance the ability of coastal community to withstand against disasters, to prepare for disasters and to recover from disasters efficiently and promptly.

Keywords Bangladesh • Coastal community • Disaster risk reduction • Hatiya Island • Microfinance

10.1 Introduction: Microfinance and Its Common Aspects

Microfinance is defined as the delivery of small loans, insurance, savings, and other financial services to poor people so that they can generate income opportunities, build an assets base, stabilise consumption, and protect themselves against risk (Hammill et al. 2008). In fact, concept of microfinance can be explained by its name itself: “micro”. There exists wide range of implications in the word micro. For instances,

- Small size of loans made,
- Small size of savings made,
- Smaller frequency of loans,
- Shorter repayment periods and amounts,

G.A. Parvin (✉) • R. Shaw

Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: niruorp@yahoo.com; shaw.rajib.5u@kyoto-u.ac.jp

- Micro/local level activities, and
- Micro/local level i.e. community based immediacy.

With the concept of small loan, frequent repayments and compulsory savings, group lending, peer monitoring and joint liability, microfinance institutions are spread all over the world. Pioneered by Professor Mohammad Yunus this novel idea has advanced to Nobel Peace Prize winning concept over last three decades (Carlin 2006, cited in Shillbeer 2008). In this time period microfinance has proved it as an important tool to fight against poverty.

It is noticed that most of the Microcredit Programs of different institutions in different countries follow the mechanism similar with Grameen Bank, successful founder of microcredit approach. Ignoring all the minor variations different aspects of Microcredit Programs have been summarized hereunder.

10.1.1 Target Group

It has already mentioned that microcredit is given to the poor. The poor is defined by most of the programs including Grameen Bank as the person who does not own more than 0.5 acre or 50 decimal of land (Khandker 1998; Pitt and Khandker 1996). In fact, poor household having above mentioned or less than that amount of land or productive assets equal to the value of 0.5 acre of land is considered as the target group of microfinance program. It should be mentioned here that poor women especially female-headed households receive priority from most of the microfinance program.

10.1.2 Group Formation and Its Significance

Lack of physical collateral the prime constraint to give access of credit to the poor was solved with the innovation of “social collateral” approach of microfinance program. For social collateral formation of group is necessary. Including Grameen Bank, BRAC, ASA, RD-12 project of BRDB and almost all other Mc. Programs in Bangladesh rely on group based lending. By relying on peer pressure to monitor and enforce contracts, group based lending provides an incentive to borrowers, thereby improving loan recovery rates Usually each group comprises of five members. Membership is strictly limited to people who own less than 0.5 acre of land, are not members of the same household as another program member, have similar economic resources, therefore equal bargaining strength, enjoy mutual trust and confidence, and live in the same village.

10.1.3 Credit Size and Repayment

It has been mentioned earlier that most of the microcredit scheme are characterized by small loans, a few hundred dollars at most. Borrowers must required to repay this small amount of loans in equal weekly installments over 1 year or 50 weeks with an interest rate varying from 16 to 20 % in different programs and organizations.

Due to having this high level of income generating potentiality microfinance programs prefer their credit disbursement to non-farm sectors though they disburse for livestock, fisheries too. The broader sectors of credit disbursements are mostly trading, then services, manufacturing, livestock rearing and fisheries. Since the poor especially women are not skilled or educated enough to handle or operate technical activities, so after receiving credit they invest it for petty trading, cloth business, poultry rearing, livestock raising, handicraft, grocery operating, and such other activities (Agrawala and Carraro 2010).

10.1.4 Saving Mobilization

In order to enhance the poor for saving generation as well as capital accumulation for productive investment or even to face various uncertainties most of the Mc. Programs have incorporated saving mobilization scheme. Under this Scheme 4–5 % of each loan is deducted and goes to group fund. Each borrower is also bound to save 10 or 20 *Taka* (0.4 US\$) per week as their personal saving which they suppose to get back with the termination of the program. Group savings is used to face any uncertainty or accident among group members or to pay installment of any defaulter among the group. Sometimes the saving is also used to give additional loan to group members and thus earn interest.

10.1.5 Training

Rather giving priority on skill development training most of the Mc. Programs offer social preparation training as a compulsory component of their programs and each member is bound to join that training. Duration of such training vary from 15 days to 3 months in different organizations. But the subject matter of this kind of training is almost the same in all organizations. Through this training the members are trained on writing their own names, credit operating system, group formation and maintenance, basic social norms and values, their rights, health and nutrition, sanitation, family planning and such other awareness building issues. Besides this social preparation training, some organizations offer several skill development trainings, which are mostly on livestock raising, poultry rearing, operating trading and few other very simple economic activities.

10.2 Microfinance and DRR Linkage: Importance and Necessity

Microfinance programs are credited to empower women and to change economic fate of the poor (Shillbeer 2008; Gilberto and Ryu 2006). But natural hazards and disasters poses serious challenge to their development initiatives and the poor and socially disadvantaged group suffer most (Heather Do 2011; Benson et al. 2001). Poverty is considered as one of the major vulnerabilities against any disaster risk, since it drastically reduce the coping ability of a family and make a family poorer after a disaster (ISDR 2008). It is also said that natural disasters are a harsh fact of life of many poor households and therefore, for microfinance institutions that target them (Mathison 2003). Among various external risks, disaster risks are most relevance to both microfinance clients and institutions, particularly in Bangladesh. Experiences of different disasters have demonstrated that microfinance programs of NGOs are highly hazard vulnerable (Benson et al. 2001). Often it is evident that when unmitigated risk translates into a disaster it adversely affect MFIs's portfolio, services, achievements, impacts and their clients' livelihood and loan repayment capacity. Both from the clients and institutions perspectives all achievements induced by MFIs can be erased by a single catastrophic disasters (like cyclone SIDR, Aila, flood in 1998, 2007) (Pantoja 2002). Therefore, most of the MFIs cannot ignore the possibility of being impacted by natural disaster, since they operate in the areas where natural disasters are an annual event. However, MFIs pay little attention to hazard or disaster risks (Benson et al. 2001). Further, yet there are only few studies pay attention to the environmental condition in which the microfinance beneficiaries pursue their livelihood and in which microfinance institutions offer their services. Even in Bangladesh very few studies focused the impact of natural hazards on the client base. Nonetheless, Bangladesh is the birth place of microfinance program and where on an average a disaster occurs every one and a half years (Shillbeer 2008).

The modern paradigm of disaster management emphasizes to limit the losses by efficient and effective risk reduction. Both Government and donors are playing important role to incorporate DRR strategies in microfinance sector. In recent years much has been done to raise the profile of disaster risk reduction within the relief and development process. But researches and experiences claim that still much remains to be achieved before having adequate attention and funding needed to reduce avoidable loss of life, livelihoods and property and to safeguard development gains (ISDR 2006).

10.3 NGOs: The Prime Microfinance Institutions (MFIs)

NGOs are absolutely imperative to form well-ordered society in Bangladesh. At the present day, there is an estimated total of 10,000–20,000 NGOs, among which approximately 1,700 are registered with the NGO Bureau alone (Matin

and Taher 2000). Though the exact number is not always published there are also a large number of NGOs registered with Ministry of Environment and Forest, Social Welfare Department and Ministry of Women affairs of Bangladesh Government.

Though since British period NGOs were working in Bangladesh the first turning point for NGOs was noticed during the devastating cyclone in 1970 and at that time their prime focus was relief and rehabilitation. Then again foreign NGOs joined at the relief operation and local organizations to contribute to post-independence reconstruction efforts of the war-ravaged country (Alam 1998). In 1980s, many NGOs deliberately targeted to breakaway from relief operation as their core activity to more development work in communities (Paul 2003). In the mid-1980s, there were 263 NGOs registered with the Social Welfare Department of the Bangladesh government (Alam 1998) compared to only 40 in 1970. With the innovation of microfinance program for poverty alleviation by Prof. Yunus in 1976 a number of NGOs started their efforts to alleviate poverty by following this approach. Furthermore, NGOs began receiving larger share of external funding than GoB (Matin and Taher 2000). This fact fostered the rapid growth of number of NGOs in Bangladesh. Although MFIs are of different types, Non-Governmental Organisations (NGOs) are the prime providers of microfinance to the poor in Bangladesh (Salehuddin Ahmed 2009, MFI-BD). It is estimated that there are more than 1,200 certified MFIs (NGOs) with in excess of 13 million clients (Agrawala and Carraro 2010).

10.4 What Are MFIs Doing in Disaster Risk Reduction?

Paradigm shift in disaster management from conventional response and relief practices to a comprehensive risk reduction culture and strengthening community capacity has vested extended and crucial role to Microfinance Institutions (MFIs) working for the poor at the grass-root level. It is expected that MFIs can carry out important role in preparedness, reduction or mitigation and risk transfer, response, coping and recovery. However, it is claimed that they have been doing this much less than would be desirable (Islam 2008).

Microfinance institutions mostly involve with post disaster recovery (ISDR 2005). It is experienced that microfinance programs of NGOs play significant role in disaster response and recovery (Islam 2008; Matin and Taher 2000). Nonetheless, it is stated that most of the microfinance programs do not combine risk transfer, prevention plan or risk mitigation strategies along with microfinance. Majority of MFIs have no direct pre-disaster efforts to limit vulnerabilities of their clients (ISDR 2005).

Scholar noticed that at the policy and strategy systems of NGOs Disaster Prevention, Mitigation and Preparedness (DMP) is a rare feature. In Bangladesh, after the lesson learnt from flood 1998, 2007 and devastating cyclone SIDR and Aila most of the leading MFIs and some other national and local MFIs have stated

Table 10.1 Pre-disaster, during disaster and post disaster activities of MFIs

	No. of MFIs	%
Pre-disaster activity types		
Disaster related awareness building and motivation	37	74
Warning dissemination	26	52
Employment generation	2	4
During disaster activity types		
Emergency food and water supply	34	68
Emergency credit supply	10	20
Financial aid for consumption	3	6
Post-disaster activity types		
Credit supply	44	88
Provision rehabilitation facilities	22	44
Provision of medical treatment	4	8
Food and water supply	7	14
Financial aid for consumption	2	4

Source: Field Survey (2008)

Note: Total percentage will not be 100 due to multiple responses

to think about the development of disaster risk reduction plan. Objectives of these plans are to identify, prepare for and mitigate natural disasters so that they can protect their institutions, clients and staffs (Islam 2008; Benson et al. 2001). Till last decades much of the works related to disaster preparedness has centered on the preparedness of MFIs and NGOs themselves rather than the promotion of community preparedness (Benson et al. 2001).

In 2008 a structured questionnaire survey was conducted among 50 MFIs in Bangladesh. With a view to know Disaster Risk Reduction efforts of MFIs they were asked about their pre-disaster, during disaster and post-disaster activities. All of these 50 MFIs are NGOs. They were selected randomly. Therefore, there were large to small all types of MFIs in this sample. Hereunder Table 10.1 presents a brief of their disaster related activities.

It is noticed that microfinance programs of NGOs can support economic and social rejuvenation after natural disaster by providing financial supports for rebuilding livelihood, by strengthening community bond and by protecting the poorest from income shortfall (Poston 2010). MFIs also praised for their significant role in relief and rehabilitation (ISDR 2005, 2006). During and post disaster activities of 50 MFIs also reveal similar findings (Table 10.1). Pre-disaster, during disaster and post-disaster activities of MFIs do not imply their direct role in disaster risk reduction or community preparedness. However, the activities of MFIs, which are applied for poverty alleviation, assets building, reducing household level risks are relevant for reducing disaster risks too (Islam 2008). Employment generation is one of the prime activities of MFIs performed in whole year. By income and employment generation MFIs help the poor to diversify their income sources and seasons

too. By providing loan to the women and facilitating their income generation MFIs also diversify income earners of a poor household. This multiplicity of income earning opportunities generally helps a poor household to face a disaster more efficiently. Previous study of the authors (Parvin and Shaw 2013) also found that support services of MFIs have facilitated their members' disaster preparedness and recovery. Furthermore, housing loan of different MFIs help the poor not only to repair and rebuild their houses but also to make their house more disaster resilient. Awareness and motivation programs of most of the MFIs focus on the disaster preparedness, health, hygiene and sanitation, which play crucial role to reduce disaster impacts. Observation of United Nations and Islam also support these roles of MFIs in DRR.

10.5 Government Policy Support to Strengthen NGO-MFI-DRR Linkage

Disaster management vision of Bangladesh Government is to reduce the risk of people, especially the poor and the disadvantaged from the effects of natural, environmental and human induced hazards. In order to reach to this vision Government has made a paradigm shift from conventional relief and response to more holistic risk reduction culture. To Government's policies and planning are changing to achieve this paradigm shift. For instance, Standing Orders on Disasters (SOD) was revised and National Plan for Disaster Management (NPDM) was introduced in 2010 (IMF 2013). NPDM has recommended for mainstreaming risk reduction efforts within GO, NGOs and private sectors. From District Disaster Management Plan to the Union Level Disaster Management Plan all levels have advised for effective roles of NGOs and civil societies in disaster risk reduction. NGO Affairs Bureau of Government has instructed to all NGOs to include disaster management message in their different skill and awareness campaign (NPDM 2010). Standing Orders on Disaster have advised NGOs to incorporate Disaster Risk Reduction considerations into all policies, plans and programs. Further, NGOs are recommended to allocate resources and arrange training of risk reduction for its staffs and volunteers (SOD 2010). However, there is no clear indication to the Microfinance Institutions or microfinance programs of NGOs to incorporate disaster risk reduction approaches along with their poverty alleviation programs through microcredit. Though it is recognized that the poor are more vulnerable to natural disaster, most often microfinance programs for the poor are not incorporation disaster risk reduction components as the integral part of their programs. Government is still lacking to strengthen the strong linkage among NGOs-Microfinance and Disaster Risk Reduction through effective policies supports.

10.6 Role of Microfinance in DRR-Case Study of Hatiya Island, Bangladesh

Following section of this paper intends to explore the nature of support provided by MFIs to their clients in the most vulnerable coastal communities of Hatiya Island in Bangladesh. It aims to measure the extent of assistance which contributes to the poor's capacity to address disaster risk reduction, recovery and response.

10.6.1 Methodological Approach

Since Hatiya Island is one of the country's most vulnerable coastal zones because of poverty and natural disasters, this study examines MFIs and their clients in this area. Currently, no statistics are available on the number of NGOs or MFIs working in Hatiya. It was observed during a January 2008 field visit that approximately ten MFIs (all NGOs) are operating microfinance programmes in the disaster-prone unions (lowest administrative unit) of Hatiya. Cyclones and subsequent tidal surges and river erosion are the main natural disasters on Hatiya. The whole of the island is vulnerable to natural disasters, but four of its ten unions—Chorishor, Nolchira, Shukchor (all river erosion-affected unions), and Jahajmara (cyclone-affected union)—are particularly at-risk. Consequently, these four unions were selected for this study. These areas accommodate more than one-half of the island's population and cover more than one-half of the territory. From these four unions, a total of 110 households (55 from river erosion-affected areas and 55 from cyclone-affected areas) were randomly selected for a household questionnaire survey.

The total number of MFI clients on Hatiya was not unearthed. However, it was determined from focus-group discussions and consultations with key informants that more than one-half of Hatiya's population are members of an MFI. As a result, a total of 110 households is not a good number for the questionnaire survey. To address this limitation, seven focus-group discussions (three in river erosion-affected areas and four in cyclone-affected areas) also were conducted. Some 20 persons participated in each gathering.

Participatory rapid rural appraisal (PRRA) methods were applied during the focus-group discussions. Information on the socioeconomic realities of MFI clients, the nature and the type of MFI support, the contribution of MFI support to disaster risk reduction, response, and recovery, and the problems and the expectations related to MFIs was collected through the questionnaire survey and the focus-group discussions. Data from the questionnaire survey were verified using information collected from the focus-group discussions; no significant variations were noted. This study analyses only the household questionnaire survey.

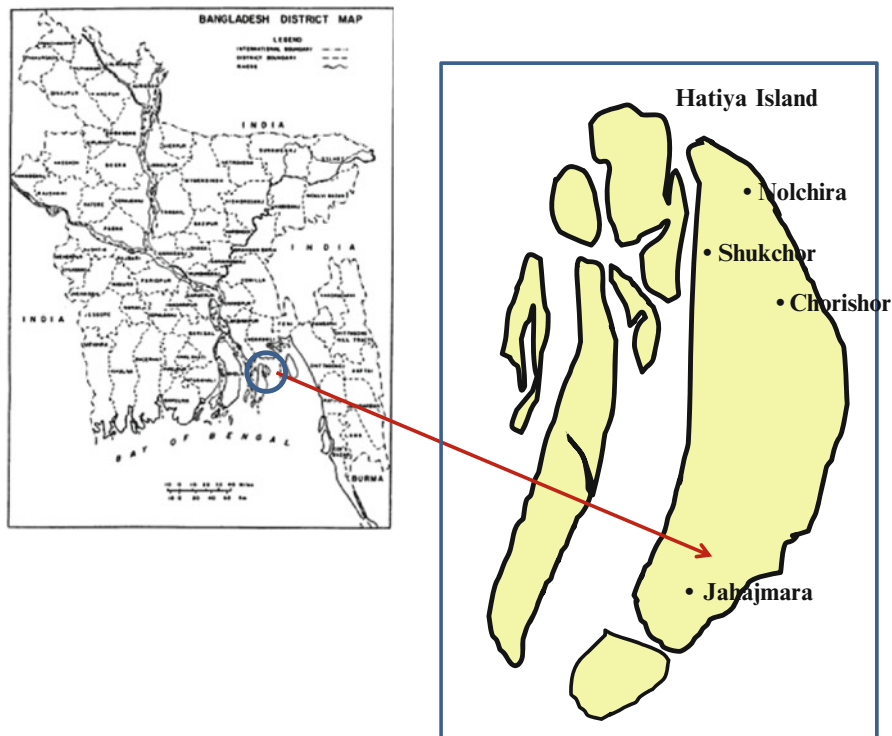


Fig. 10.1 Map of Hatiya Island. *Source:* authors

10.6.2 *Hatiya Island*

Sundarban, the world’s largest mangrove and coral ecosystem, which is both a “world heritage site” and an “ecologically critical area”, has made the coastal areas of Bangladesh a centre of attention and opportunity. Unfortunately, these areas are highly vulnerable to natural disasters. It has been predicted that climate change-related sea-level rise and other hydro-meteorological effects will have a catastrophic impact on coastal areas. The vulnerability due to geographical location is exacerbated by the poor socioeconomic conditions of the coastal communities. The National Adaptation Program of Action (NAPA) (MoEF 2005) has identified coastal communities as the most vulnerable communities in Bangladesh. In fact, the 19 (out of 64) districts delimited as coastal areas are home to more than one-quarter of the population of Bangladesh, more than one-half (52 %) of whom are poor and more than one-third (41 %) of whom are children (Islam 2008a, b).

With regard to geographical and socioeconomic vulnerabilities, Hatiya Island is one of the worst coastal communities. Located in the Meghna estuary in the southern part of Noakhali district (see Fig. 10.1), Hatiya is the largest Upazila (sub-district) of Noakhali district in terms of population and area. According to 2001 figures, a total

Name of MFIs and Distribution of the Respondents according to their Membership

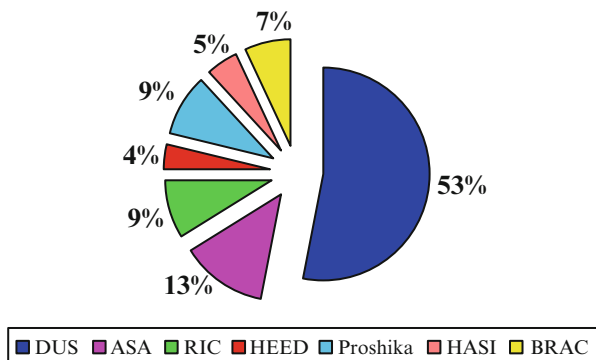


Fig. 10.2 MFIs in Hatiya and the distribution of respondents according to their membership. *Notes:* *DUS* Dwip Unnayan Sangstha (Island Development Organisation), *ASA* Association for Social Advancement, *RIC* Resource Integrated Centre, *HEED* Health, Education and Economic Development, *HASI* Homeland Association for Social Improvement, *BRAC* Bangladesh Rural Advancement Committee

of 346,853 people live on the island in an area measuring 1,508 km² (BBS 2001). The literacy rate (above 7 years of age) there is 21 % (Banglapedia 2006), significantly less than the national average of 65 %. More importantly, income and calorie intake reveals that about 88 % of the people of Hatiya live below the poverty line (Upazila Administration 2005; Banglapedia 2006).

10.6.3 MFIs and Their Clients in Hatiya

It is estimated that more than 400 NGOs are functioning in coastal areas. However, there is no estimate of the number of MFIs operating in coastal areas. In the field investigation, seven NGOs (see Fig. 10.2) were observed running microfinance programmes in Hatiya, along with engaging in other socioeconomic- and disaster management-related activities.

Most MFIs in Hatiya started out with a focus on relief and rehabilitation before gradually shifting towards microfinance and other issues concerning the socioeconomic vulnerability of coastal communities. Although there are only a few MFIs in Hatiya, Dwip Unnayan Sangstha (DUS)—translated as Island Development Organisation—a local NGO, has a major share of the clientele. Among all of the MFIs, DUS was the first to start a microfinance programme on the island. Besides DUS, the Association for Social Advancement (ASA), the Bangladesh Rural Advancement Committee (BRAC), the Homeland Association for Social Improvement (HASI), the Health, Education and Economic Development (HEED),

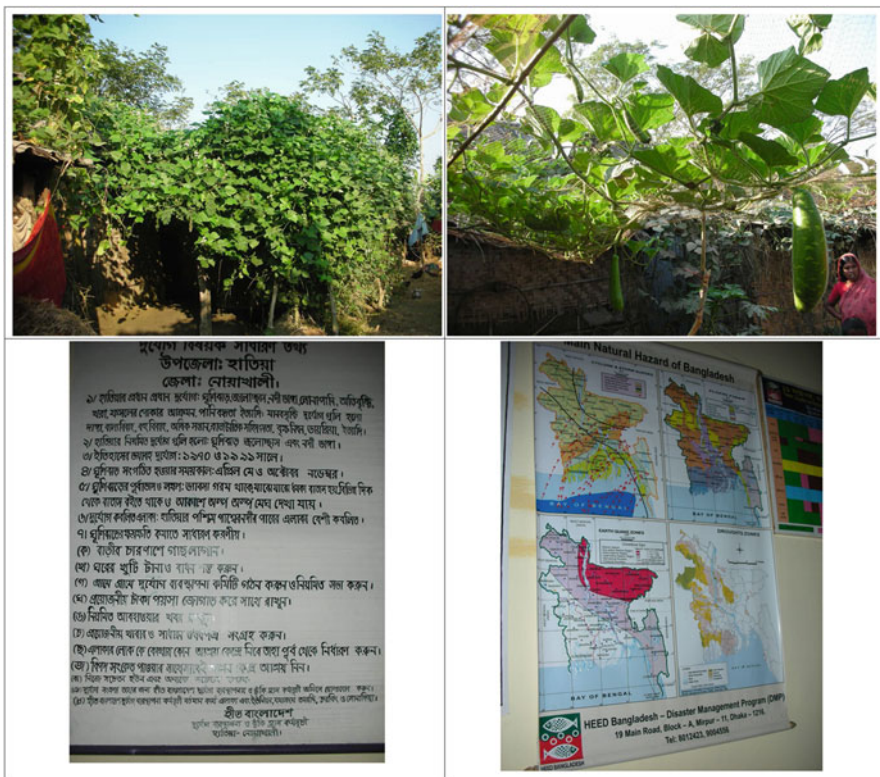


Fig. 10.3 Different efforts of MFIs for disaster risk reductions

Proshika, and the Resource Integrated Centre (RIC) offer microfinance programmes to their clients. ASA and BRAC, which are nationally dominant MFIs, do not play a significant role in community development and disaster management in Hatiya. ASA launched its programme in Hatiya just after the devastating cyclone of 1991, providing a housing facility for affected people. For a long time after that event it had no programme with an emphasis on disaster risk reduction (DRR) and recovery. Meanwhile, BRAC initially supplied health services to the poor and funding for DUS, the local MFI. It started its microfinance programme in 2007 and since then it is operating an elementary school (see Fig. 10.3) for the poor children in Hatiya island, but it does not have much of a focus on disaster management in Hatiya.

An evaluation of the programmes and priority components of different MFIs in Hatiya revealed that, in comparison to the nationally dominant MFIs, local and small MFIs are implementing different programmes on the island. Many of these are either directly or indirectly contributing to the disaster risk reduction, response, and recovery process for local people.

Aside from a microfinance programme, all of the MFIs have other programmes that address environmental and socioeconomic issues in Hatiya. Since the island is highly vulnerable to natural disasters, all of the MFIs try to incorporate disaster management as a programme component. In some instances, however, this is limited to awareness-building whereas in other cases it involves a wide range of activities, such as education, infrastructure development, and training. Nonetheless, most MFI projects do not directly address disaster management, focusing instead on education, housing, income-generation training, health and nutrition, and sanitation, which aim to diversify the livelihoods of the poor, build assets, and develop awareness that will reduce vulnerability to natural disasters. One should note, too, that, while the target groups of the different MFI programmes vary, the clients remain the priority target group for support and facilities distribution.

As with other parts of the country, the clients of MFIs in Hatiya are mostly the poor vulnerable communities—there are few members of the middle- and upper-income groups. Table 10.2 presents the socioeconomic profiles of the clients of MFIs in Hatiya.

In contrast to the general population of Hatiya, the overall socioeconomic conditions of MFI clients do not show much variation, although a few aspects may be slightly different. In Hatiya, 81 % of the people earn up to 5,000 Taka per month (approximately USD 71), whereas 70 % of the clients of MFIs earn up to 5,000 Taka, and the rest earn more. Unlike the general population, the pattern of occupation of MFI clients is different. While agriculture is the principal occupation (60 % of the people) for the general population, the majority of MFI members are from fishing communities (42 %), and the rest are farmers or sharecroppers (27 %) and businessmen (22 %). In the studied union it was observed that, in comparison to agricultural workers or farmers, fishermen demand more microcredit, for the purchase or repair of boats and nets. This is not due to the product bias of MFIs, and there is no product differentiation between MFIs. Generally, whatever the occupation, those who have the potential to pay the weekly installment can get credit from MFIs.

With regard to housing, in contrast to members of the general population (91 % of whom live in temporary houses), more people live in semi-permanent rather than temporary houses. It is noteworthy that, although most MFIs have sanitation programmes, the overwhelming majority of their clients (62 %) use an unhygienic hanging latrine. This is a similar situation to the general population of the island. Even though the GoB set a target of 100 % sanitation by 2010, as of January 2008 (the time of the field visit) more than one-half of the population of Hatiya had not yet installed such a facility. Finally, the illiteracy rate is lower and education trends are higher among MFI client households as compared to the general population.

Table 10.2 Socioeconomic conditions of the households selected for the questionnaire survey

Socioeconomic parameter	Percentage of survey sample (%)
Occupation	
Farming/sharecropping	27
Fishing	42
Business	22
Livestock or poultry raising	2
Day labour	7
Income level (per month)^a	
1,500–3,000 Taka	20
3,001–5,000 Taka	49
5,001–10,000Taka	21
10,001–20,000 Taka	10
20,000+ Taka	2
Housing condition	
Temporary structure (made of bamboo, mud, straw, wood)	73
Semi-permanent structure (made of bamboo, brick, tin)	24
Permanent structure (made of brick, concrete)	3
Toilet condition	
Hanging latrine (unsanitary)	62
Pit latrine (water sealed)	24
Sanitary latrine	14
Education	
Illiterate	45
Grade I–V	24
Grade VI–X	13
Grade XI–XII	18
Family size^b	
1–3	9
4–6	70
7–10	9
10+	12

Notes:

^aAverage income: 5,000 Taka; 70 Taka = 1 USD (as of January 2009)

^bAverage household size is 5.8 and the mode (majority) is 5

10.6.4 MFIs and Disaster Risk Reduction, Response, and Recovery in Hatiya

There has been a longstanding debate on the number of MFIs and NGOs in Bangladesh. It is thought that some 22,000 NGOs are currently operating in the country. These NGOs are the prime providers of microfinance and most of them, the so-called credit NGOs, offer credit and savings services to the poor (Matin and Taher 2001; Ahmed 2009). Along with poverty alleviation-related activities through microfinance, NGOs are involved in a diverse range of disaster management and preparedness (DMP) initiatives (Benson et al. 2001). In the case of

Bangladesh, it is said that NGOs play a significant role not only in poverty alleviation but also in promoting a shift of focus from mere relief response to disaster mitigation and preparedness.

10.6.4.1 MFI Support for and Their Contribution to DRR, Response, and Recovery

There are many studies on the role of microfinance in poverty alleviation as well as on the part played by NGOs in DMP. A few attempts have been made recently to explore the possibility of using microfinance for climate-change adaptation (Hammill et al. 2008; Agrawala and Carraro 2010). However, not much attention has been paid to what MFIs are doing in the area of disaster risk reduction and preparedness, response, and recovery for their clients.

Table 10.3 reveals that MFIs are implementing other projects in addition to microfinance. It was reported during interviews that most MFIs claim to offer skills-development training programmes. It is regrettable, though, that only a few clients of MFIs (16 %) have received such training. It is quite impressive, though, that a majority of those who have received the training is satisfied and contributes to building capacity in the sphere of disaster recovery and preparedness. The training programmes, the duration of which ranges from half a day to 2 weeks, aim primarily to enhance income-generation ability and thus are related to the manufacture of bamboo products, the rearing of livestock and poultry, and the operation of small businesses. However, they need also to provide information on and build awareness of the importance of child care, education, family planning, health, human rights, hygiene, nutrition, sanitation, social norms, and women's rights.

When MFIs form new groups for loan disbursement, officials initially discuss awareness-building activities. In addition, there is a fixed date every week when clients get together at a certain venue to pay their weekly installments. This is often used for information dissemination and awareness building as well as for motivational talks about different life issues. Although this is a common approach of all MFIs, Table 10.4 shows that one-third of clients have not attended an awareness-building activity. The provision of medical facilities to clients is very rare but some MFIs do place emphasis on the child-care, family-planning, pregnancy, and nutrition issues of their clients. For instance, HASI distributes basic food and offers a regular health check-up to pregnant mothers and newborn babies. A pregnant mother receives 12 kg of wheat, 1.5 l of oil, and 0.5 kg of lentils every month from the first 6 months of pregnancy up to the second birthday of the baby.

With regard to the issuance of disaster warnings, MFIs do not perform well in addressing this issue, even though Hatiya is a disaster-prone island. Slightly more than one-half of MFI clients claim to have received early-warning information, especially during cyclones. These people believe that it contributed to their preparedness as well as to their recovery, since the damage was relatively low because they had time to respond. Moreover, a few MFIs, particularly DUS and HASI have

Table 10.3 Evaluation of the support of MFIs and their contribution to disaster risk reduction and preparedness, response, and recovery

Support	Support provided by MFIs (%)		Satisfaction rating (%)		Contribution of support (%)			
	No.	Yes (detail)	Satisfied (f = 16)	Not satisfied (f = 16)	Help with recovery	Help with preparedness	Help with recovery and preparedness	Not helping at all
Skill development training	84	16	62.5	37.5	15	25	50	10
Provision of knowledge and information related to education, health, sanitation, and social norms	34	66	64	36	27	21	39	12
Provision of medical facilities	92	8	0	100	25	0	0	75
Awareness-building, motivation, and support for family planning, pregnancy, child care, and malnutrition	30	70	89	11	40	26	20	14
Disaster warning	42	58	73	27	0	48	44	8
Horticulture and organic agriculture	88	12	83	17	67	0	0	33

Table 10.4 Ways in which MFI credit/in-kind support has aided disaster risk reduction, response, and recovery

	Percentage (%) ^a
Contributed to quick income recovery	22
Provided alternative sources of income	12
Prevented the sale of assets	18
Helped to avoid taking loan from other sources	32
Facilitated the construction of emergency shelters	30
Made it possible to have shelter	20
Helped to rebuild a house quickly after a disaster	16
Protected household assets	8
Supported land acquisition to build a house	14
Assisted in the provision of safe water during and immediately after a disaster	6
Did not help at all	16

Note:

^aPercentages do not add up to 100 due to multiple responses

tried to introduce homestead gardening, horticulture, and organic farming to their clients and HEED uses to display the posters of disaster related awareness (see Fig. 10.3).

It is inspiring that an overwhelming majority of clients are satisfied with the support services (not credit) that MFIs provide and acknowledge that they have contributed to disaster recovery and preparedness, which indicates MFIs great role in DRR. Table 10.4 shows how microfinance (and material support) helps clients to address disaster risk reduction, response, and recovery. Microfinance and the other support services of MFIs are aiding the disaster risk reduction, response, and recovery processes of clients in various ways, as indicated by the multiple responses of clients in the questionnaire survey.

MFI officials share the view that after a disaster, the demand for credit and savings withdrawal increases. Clients try to recover income by using extra credit and sometimes through their savings holdings with the MFIs. Some of them think, therefore, that MFI support has helped them to recover their income quickly. In addition, it has helped them to avoid taking loans from other sources and selling their assets. However, the percentage of clients with this perception is not so significant. Those who have received income-generation skills training believe that it is possible for them to have alternative income sources during a disaster because of the instruction.

With regard to housing and shelter, MFIs such as DUS, HASI, HEED, and Proshika offer housing loan programmes. DUS, HEED, and Proshika have provided houses in a few special colonies or villages that they have constructed for the most vulnerable communities. Furthermore, they have built cyclone shelters for the people of Hatiya.

Table 10.5 Change in disaster risk reduction and recovery after becoming an MFI member

Aspect of recovery	Level of change			
	Easy and rapid	Has been easy	Relatively quicker	No change
1. Recovery of income	20	42	18	20
2. Recovery of housing	5	33	7	55
3. Recovery of water supply	26	9	7	58
4. Recovery of food consumption	22	29	11	38

Aspect of risk reduction/preparedness	Level of change			
	Significantly improved	Improved	No change	Deteriorated
1. Risk reduction and income and occupation		46	54	
2. Risk reduction and shelter		42	58	
3. Risk reduction and water supply and sanitation		44	56	
4. Risk reduction and agriculture/fisheries		38	62	
5. Risk reduction and health		47	53	

Note:

Percentages do not add up to 100 due to multiple responses

All of these MFI initiatives have resulted in clients acknowledging that MFI support has helped them to acquire shelter or land for shelter and to rebuild their houses quickly. Although a number of tube-wells have been sunk by MFIs, only 6 % of the respondents thought that MFIs had helped to provide safe water during or immediately after a disaster. Some of the clients also claim that MFIs do not help at all in dealing with disasters.

10.6.4.2 Change in Disaster Risk Reduction and Recovery Capacity After Becoming an MFI Member

It is assumed generally that the support of MFIs aids the income diversification of clients, the building of an asset base, and the raising of awareness, thereby improving abilities with respect to disaster recovery and preparedness. In this regard, MFI clients were asked about the extent of overall change in their disaster preparedness and recovery capacity after becoming members of MFIs. In addition, they were asked about the extent of change in agriculture, food consumption, health, income, sanitation, shelter, and supply of water. Table 10.5 presents an analysis of the change in disaster risk reduction and recovery capacity based on the responses of clients.

Through membership of an MFI clients enjoy relatively easy access to credit facilities. This credit has enhanced the ability of clients to recover their income after a disaster. A majority attested that it had been relatively easy to do so. Some even

think that income recovery has been easy and rapid. Yet, despite having a positive perception of income recovery, the ability to safeguard income and occupation in the first place has not been improved in most cases. The ability of more than one-half of the clients (54 %) to reduce the risk to income and occupation has not changed. Most of the clients in Hatiya are either fishermen or sharecroppers. Given the climate sensitivity of these areas of employment, occupation and income are highly vulnerable to natural disasters such as cyclones and tidal surges. Moreover, since they are based in nature, they cannot engage in as much preparation to avoid a natural disaster.

In comparison to the number and demands of clients, MFI housing programmes and loans for houses are very limited. Even after a severe disaster, very few people receive support for housing materials or loans to rebuild their houses. This is why many think that their ability to reduce the risk to houses or shelter and to recover has not changed. Similarly, the ability of more than one-half of the clients in the sphere of sanitation and water supply has not changed. It should be noted that MFIs do not pay enough attention to these matters. Although many of the MFIs have distributed tube-wells and sanitary latrine facilities, these are not adequate given the needs of a large number of clients. With regard to health-related aspects, less than one-half of clients (47 %) claim that they could have reduced the risk. Except for the provision of health and hygiene-related awareness-building capacity and maternity care, MFIs do not offer any medical support to their clients. Nonetheless, the health-related preparedness of clients is much improved: now they store water before a disaster as a result of greater awareness of health and hygiene. Furthermore, during or after cyclones and tidal surges, tube-well water is available, although sometimes people need to walk a long distance to collect it. Consequently, they are less vulnerable now to water-borne diseases. Finally, in the area of preparedness and risk reduction, while the capacity of some clients has either increased or stayed the same, none think that there has been a significant enhancement or deterioration.

Following an assessment of the level of change in their abilities in relation to different aspects, clients were asked for their opinion on the overall change in their disaster risk reduction, response, and recovery ability after becoming MFI clients. It is interesting that, in different aspects, about one-half of them claim to have seen no change (see Table 10.5). However, during the assessment of overall ability, a positive relation was found between the year of membership and overall ability with respect to disaster risk reduction, response, and recovery (see Fig. 10.4): the longer the time period of membership the better the level of overall ability in the sphere of disaster risk reduction, response, and recovery. More than one-half of clients said that they are more prepared to face disaster after becoming MFI members (see Table 10.6). One would expect clients to incur less damage if they are more prepared, but only 26 % (one-half of those who are more prepared) claim to have experienced less damage after becoming an MFI member. In fact, they are more prepared in the area of storage of emergency food, water, and medicine; they remain unable to protect their shelter and assets, such as homestead gardens, paddy fields, and trees, which sustain much damage.

Fig. 10.4 Relation between the ability of overall change in disaster risk reduction, response, and recovery and years of membership

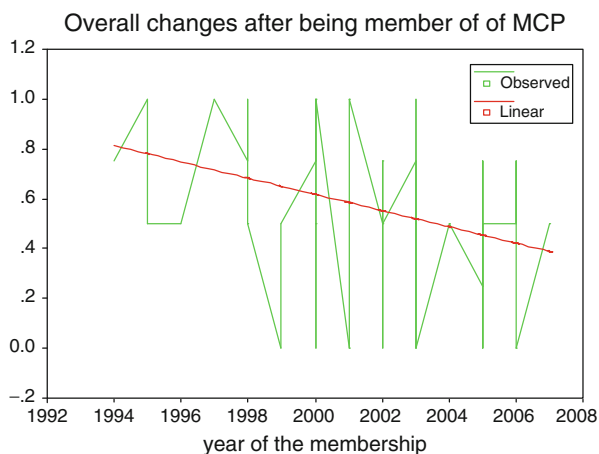


Table 10.6 Overall changes in disaster risk reduction, response, and recovery ability after becoming MFI members

Overall changes	%
1. Quick recovery	16
2. Better preparedness	53
3. Less damage	26
4. More aware	61
5. No change	18

Note:

Percentages do not add up to 100 due to multiple responses

Furthermore, less than one-fifth (16 %) of members think that they can recover quickly, whereas less than one-fifth (18 %) claim to have witnessed no change in their ability to deal with a disaster. A good proportion of clients (61 %) believe that they are more aware of disasters after becoming MFI members. However, the MFIs that offer awareness-building activities are still unable to make 100 % of their beneficiaries conscious of disasters.

One would expect that those who have been members of MFIs for a long time to be more aware of disasters than new members. However, no correlation was found between awareness and years of membership. It is interesting as well to note that overall change in capacity to deal with disasters is significantly correlated with years of membership. A few aspects of risk reduction and preparedness also are correlated with years of membership. Figure 10.5 shows years of membership and Table 10.6 describes the correlation.

A large number of NGOs started their relief and rehabilitation programmes in Hatiya immediately after the devastating cyclone of 1991. However, they realised quickly that relief and material support for rehabilitation is not enough for recovery and future preparedness. In 1993–1994, therefore, a few of them launched

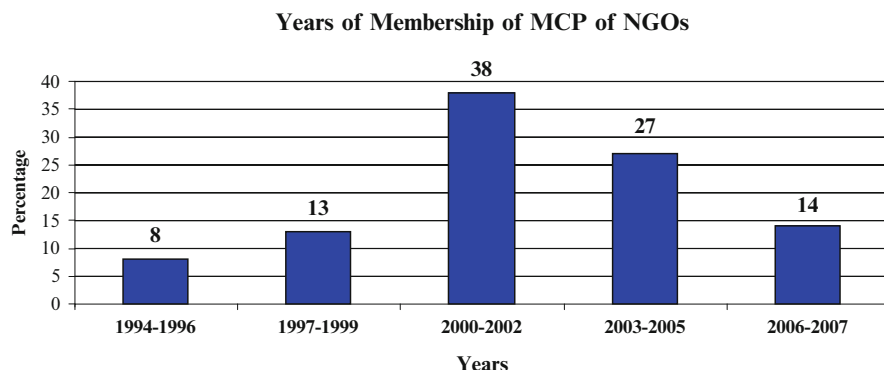


Fig. 10.5 Years of membership of MFIs

Table 10.7 Variables which significantly correlate with each other

Correlated variables	Correlation coefficient	Significance (two-tailed)
Number of years of membership of MFI and overall changes following membership of MFI	0.319	0.018
Number of years of membership of MFI and ability risk reduction/preparedness for health	0.344	0.010
Ability vis-à-vis risk reduction/preparedness in income and risk reduction/preparedness for health	0.379	0.004
Ability vis-à-vis risk reduction/preparedness in income and risk reduction/preparedness for shelter/housing	0.485	0.000

microfinance programmes for income-generation of vulnerable communities. About one-tenth of the study respondents (8 %) have been MFI members since then. The growth in membership of MFIs was highest between 2000 and 2002; during this time period, 38 % of the clients became affiliated with MFIs (see Fig. 10.5). Hence, one can say that some 60 % of the clients have been members of MFIs for around 10 years. As there is a strong correlation between years of membership and overall change in ability, one would expect clients with longer membership to provide more positive responses in terms of overall change. The regression analysis presented in Fig. 10.5 supports this observation. Moreover, those with longer membership have better risk reduction and preparedness ability in the health aspect. Another interesting finding is that clients with better risk reduction and preparedness ability in the income aspect demonstrate better risk reduction and preparedness ability in the shelter and health aspects as well. Table 10.7 shows a significant correlation among these aspects.

10.7 Conclusion

Sustaining and protecting livelihoods of the poor and marginalized is considered as one of the best ways to deal with poverty. However, it requires huge attention and efforts, especially for the poor community who are vulnerable to natural hazards. The primary target groups of MFIs are poor and vulnerable communities that have limited access to credit facilities and are highly vulnerable to natural disasters. Hence, although the microfinance system and disaster management reflect two different fields of development, scholars now recognise a close association between them (Mathison 2003; Hammill et al. 2008; Agrawala and Carraro 2010).

Results from the interviews with MFI officials reveal that most of the MFIs have no disaster preparedness plan. Nevertheless, their income generating microcredit program is indirectly contributing to disaster risk reduction to some extent by diversifying income both in sources and earners. MFIs efforts directly addressing disaster are highly concentrated during and post-disasters time period rather than pre-disaster risk reduction and preparedness. However, questionnaire survey among the MFIs' clients in one of the most disaster prone island of Bangladesh named Hatiya give some optimistic perceptions regarding the role of MFIs in disaster risk reduction. In Hatiya MFIs operate their programs for quite a long time (more than 15 years). Along with microfinance, MFIs offer different support services to their clients, including the provision of knowledge and information related to education, health, sanitation, and social norms, as well as awareness-building and motivation activities pertaining to disaster preparedness, family planning, and maternity and child care (see Table 10.3). On the whole, the majority of clients have received these services and most of them are not only satisfied with the support but also believe that it has facilitated disaster preparedness and recovery.

There is an interesting correlation between the number of years of membership of an MFI and the capacity of clients in the area of disaster risk reduction, response, and recovery: those that have been members of an MFI for a relatively long period of time are more aware of and more prepared for natural disasters. From the standpoint of overall change in capacity to deal with disasters, it should be noted that most of the clients are better prepared and more aware of natural disasters. On the one hand, overall capacity has improved. On the other hand, risk reduction capacity with respect to health, income, sanitation, shelter, and water supply has not changed for more than one-half of clients.

Scholars suggest that promotion of microfinance as risk reduction investment can significantly reduce the total cost of post disaster relief and reconstruction. Further, microfinance can be an effective tool for reducing impacts of disaster on poor. However, it has some limitations and it cannot stand alone. ISDR pointed out few conditions for optimal functioning of microfinance for disaster risk reduction and risk mitigation at grass roots level. These include (a) convergence of microfinance with microinsurance and micromitigation, (b) adaptation of demand driven and decentralized approach, (c) microfinance on a cost recovery basis and (d) increased investment in community based microfinance initiatives (ISDR 2005).

It is advised that microfinance should not focus microcredit only. Need to provide whole range of services for producing long-term productive assets of the poor and thus for the socio-economic empowerment of the poor. Clients of MFIs having diverse ranges of services like savings, house improvement loan, programs for health and sanitation, leasing, insurance, money transfer and overall awareness generation and disaster education program are less vulnerable to disasters and better placed to reduce disaster risks. MFIs in disaster prone areas must have detail plan to prepare for disaster and need to build their institutional and technological capacities.

Based on the overall findings of this study, it is recommended that, along with microfinance, MFIs prioritise disaster risk reduction activities within their regular service delivery apparatus. MFIs themselves are highly vulnerable to natural disasters because they face the problems of dislocation of members, high levels of bad debt, and liquidity crises (Poston 2010). Such circumstances occurred after the devastating flood of 1998 and Cyclones Sidr and Aila in 2007 and 2008, respectively. Some MFIs have started to adopt mechanisms to reduce the vulnerability of their clients to disasters and to facilitate disaster recovery while safeguarding their own portfolios. However, this is still at a rudimentary stage. In reality, most of the NGOs that are prime providers of microfinance rarely incorporate disaster management programmes in their policy strategies. Yet, MFIs appear to have great potential for assisting the disaster risk reduction efforts of vulnerable communities since they target the poor section of society and follow a participatory approach in working at the grassroots (Benson et al. 2001). Since financial services alone cannot address the complex nature of poverty and vulnerability, it is suggested that, rather than concentrating on microfinance disbursement and awareness-building, MFIs should embrace a holistic and multidimensional approach to the enhancement of livelihoods (Jenkins 2003; Hammill et al. 2008). Furthermore, the technical designs of existing microfinance projects and financing modalities should be modified (Agrawala and Carraro 2010).

Given the outcomes of this study, and the recommendations of other scholars, a holistic approach to enhance the disaster risk reduction, response, and recovery capacity of coastal communities is presented in Fig. 10.6. According to the proposed model, MFIs should incorporate disaster management programmes and disaster action plan that place an emphasis on early warning, infrastructure development, micro-insurance, and risk reduction, response, and recovery considerations. The livelihood diversification and assets building programmes of MFIs should focus not only on credit disbursement but also on the generation of skills and incomes that are oriented towards needs and are environmentally sound.

All approaches to skills-development training, the provision of marketing facilities, awareness-building, and savings and assets building have to be prioritised not only in documents and project profiles but also in the sphere of field-level implementation. Wide-scale efforts related to knowledge and information dissemination, awareness-building, and community integration are already part of most MFI programmes. Nevertheless, these efforts have to be modified in order to take account of the present context, especially the threats posed by climate change. If

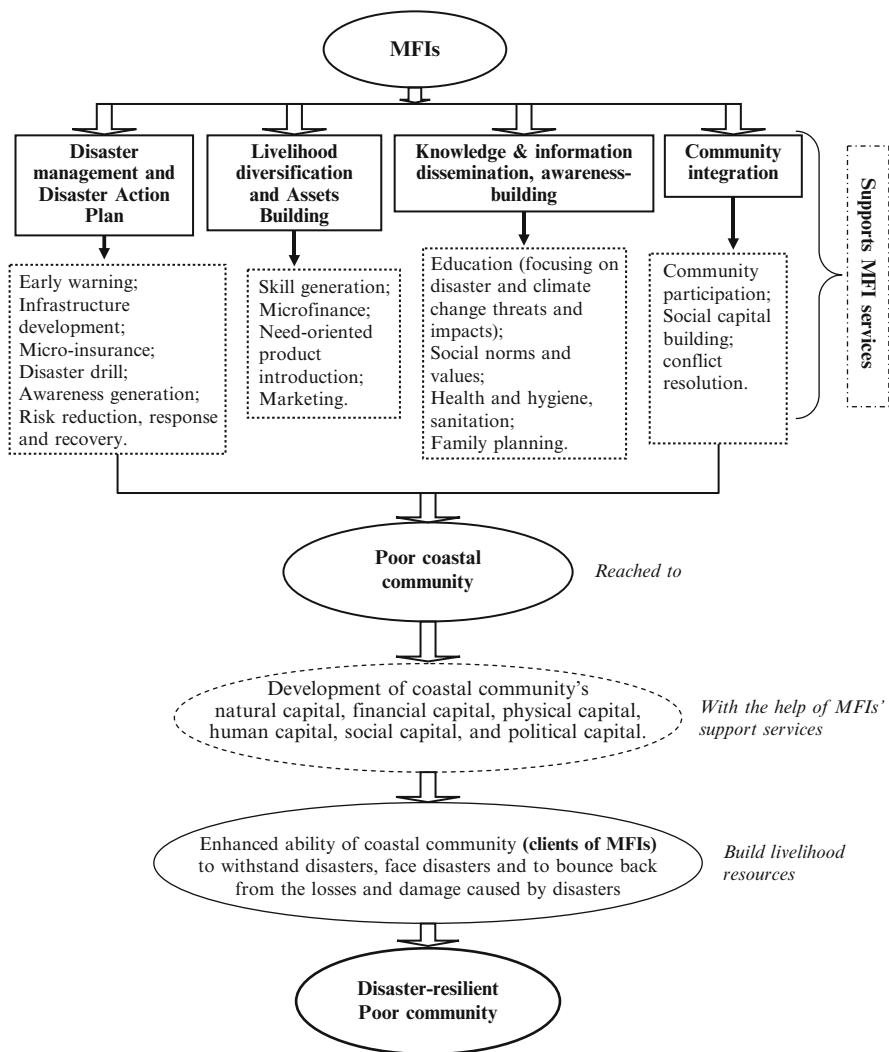


Fig. 10.6 Holistic approach to enhance the disaster risk reduction capacity of coastal communities

this package of support services becomes accessible to the clients of MFIs, it is thought that, by generating livelihoods resources,¹ it will contribute to the building and diversification of assets, the expansion of coping strategies, and a reduction of

¹ Definition of livelihood, which is given by Chamber and Conway (1992) is applicable here and livelihood resources are those mentioned in ,CARE, Household Livelihood Security Assessments—A toolkit for Practitioners, 2002.

vulnerabilities. In addition, it could enhance eventually the ability of clients to withstand, prepare for, and recover from disasters efficiently and effectively.

Acknowledgements This research benefited from a postdoctoral research grant from the Japan Society for the Promotion of Science. The support of the coastal community of Hatiya and the enthusiastic efforts of seven postgraduate students from the Urban and Regional Planning Department, Bangladesh University of Engineering and Technology contributed to data collection. Local NGOs in Hatiya are acknowledged for assisting with the provision of necessary information. In particular, DUS Head Rafiqul Islam assisted greatly by offering accommodation and guidance during a field visit. Finally, Lenee, a PhD candidate at Kyoto University, helped to improve the language in this paper.

References

- Agrawala S, Carraro M (2010) Assessing the role of microfinance in fostering adaptation to climate change. OECD Environmental Working Paper No. 15. OECD, Paris
- Ahmed S (2009) Microfinance Institutions in Bangladesh: achievements and challenges. *Managerial Finance* 35(12):1007–1008 (Emerald Group Publishing Limited). doi:10.1108.0307435091100.0.2
- Alam J (1998) Organizing the rural poor and its impact: the experience of selected non-governmental and governmental organizations
- Banglapedia (2006) Hatiya Upazila. http://www.banglapedia.org/httpdocs/HT/H_0089.HTM. Accessed 2 July 2012
- BBS (Bangladesh Bureau of Statistics) (2001) Statistical year book of Bangladesh. BBS, Dhaka
- Benson C, Twigg J, Myers M (2001) NGO initiatives in risk reduction: an overview. *Disasters* 25(3): 199–215 (Overseas Development Institute, Blackwell Publishers, Oxford)
- Chamber R, Conway Gordon R (1992) Sustainable rural livelihoods: practical concept for the 1st century. IDS Discussion Paper 296, Institute of Development Studies, UK
- Gilberto LM, Ryu F (2006) Innovation in microfinance in Southeast Asia. Philippine Institute for Development Studies, Research Paper, Series No. 2006-02, Makati City, Philippine
- Hammill A, Matthew R, McCarter E (2008) Microfinance and climate change adaptation. *IDS Bull* 39(4):113–115
- Heather Do HR (2011) Successful models of non-governmental organizations in consultative status: best practices on disaster risk reduction. An unpublished internship report prepared at the United Nations Headquarters DESA/NGO Branch
- IMF (2013) Bangladesh: poverty reduction strategy paper. International Monetary Fund (IMF), Washington, DC, pp 187–210
- ISDR (2005) Investment to prevent disaster. International Strategy for Disaster Reduction (ISDR), United Nations
- ISDR (2006) NGOs and disaster risk reduction: a preliminary review of initiatives and progress made. Background paper for a consultative meeting on a ‘Global Network of NGOs for Community Resilience to Disasters’. International Strategy for Disaster Reduction (ISDR), United Nations
- ISDR (2008) Linking disaster risk reduction and poverty reduction, good Practices and lessons learned. A publication of the Global Network of NGOs for Disaster Risk Reduction, International Strategy for Disaster Reduction (ISDR), United Nations
- Islam S (2008) Role of microfinance tools in disaster risk reduction: a study in India, Bangladesh and Sri Lanka, Bangladesh. Country report. INAFI Asia & Bangladesh, Tata-Dhan Academy, Madurai, India

- Islam RM (2008a) Towards institutionalization of global ICZM efforts. In: Krishnamurthy RR (ed) *Integrated coastal zone management*. Research Publishing Services, Singapore, p 23
- Islam RM (2008b) ICZM initiatives and practices in Bangladesh. In: Krishnamurthy RR (ed) *Integrated coastal zone management*. Research Publishing Services, Singapore, pp 81–82
- Jenkins B (2003) NGOs in Bangladesh: are they in a strong position to assist vulnerable people living on low-lying lands to cope with floods? *J South Asian Stud* 26(3):462
- Khandker SR (1998) *Fighting poverty with microcredit, experience in Bangladesh*, published for the World Bank. Oxford University Press, New York
- Mathison S (2003) *Microfinance and disaster management*. The Foundation for Development Cooperation, South Brisbane, pp 8–9
- Matin N, Taher M (2000) *Disaster mitigation in Bangladesh: country case study of NGO activities*. Report for research project ‘NGO Natural Disaster Mitigation and Preparedness Projects: An Assessment and Way Forward’ (ESCOR Award No. R7231)
- Matin N, Taher M (2001) The changing emphasis of disasters in Bangladesh NGOs. *Disasters* 25(3):227–239
- MoEF (Ministry of Environment and Forests) (2005) *National Adaptation Program of Action (NAPA)*. MoEF, Government of the People’s Republic of Bangladesh, Dhaka, pp xv, 11
- NPDM (2010) *National plan for disaster management 2010–2015*. Disaster Management Bureau, Disaster Management and Relief Division, Government of the People’s Republic of Bangladesh, pp 38–52
- Pantoja E (2002) *Microfinance and disaster risk management-experiences and lesson learned*. Draft Final Report, Pro Vention Consortium by World Bank’s Disaster Management Facility, The UN Development Program (UNDP), the UN Capital Development Fund (UNCDF)
- Parvin GA, Shaw R (2013) Role of Microfinance Institutions (MFIs) in coastal community’s disaster risk reduction, response and recovery: a case study of Hatiya, Bangladesh. *Disasters J* 37(1):165–184 (Wiley-Blackwell, Overseas Development Institute, UK)
- Paul BK (2003) Relief assistance to 1998 flood victims: a comparison of the performance of the government and NGOs. *Geogr J* 169(1):75–89
- Pitt Mark M, Khandker SR (1996) Household and interhousehold impact of the Grameen Bank and similar targeted credit programs in Bangladesh, The International Bank for Reconstruction and Development. The World Bank, Washington
- Poston A (2010) *Lessons from a microfinance recapitalization programme*. *Disasters* 34(2):328–336 (Overseas Development Institute, Blackwell Publishers, Oxford, UK)
- Shillbeer MG (2008) Poverty alleviation or poverty traps? Microcredits and vulnerability in Bangladesh. *Disaster Prevent Manag* 17(3):396–409 (Emerald Group Publishing Limited)
- SOD (2010) *Standing orders on disaster*. Ministry of Food and Disaster Management, Disaster Management Bureau, Government of the People’s Republic of Bangladesh, pp 15–175
- Upazila Administration (2005) *Upazila Unnayan (Development) Profile, Hatia, Noakhali*. Upazila Administration, Hatia, Noakhali, pp 1–4, 21

Chapter 11

Role of NGOs and CBOs in a Decentralized Mangrove Management Regime and Its Implications in Building Coastal Resilience in India

Rajarshi DasGupta and Rajib Shaw

Abstract Mangrove forests are the critical coastal ecosystems that are increasingly seen as an effective mean of climate change adaptation *viz-a-viz.* disaster risk reduction in coastal areas. Yet, the very own existence of mangroves in India are vastly challenged due to heavy biotic pressure, unsustainable practices of forest exploitation and environmental degradation despite of significant legislative protection. Following nearly four decades of a state owned conservative management of mangroves, India has emerged with the concepts of community based co-management of mangrove resources (also known as ‘Joint Mangrove Management’) since the last decade. One of the key components of Joint Mangrove Management (JMM) is the involvement of Non Governmental Organizations (NGOs) and Community Based Organizations (CBOs) in development, conservation and restoration of mangrove resources which has been largely described as an ameliorative management of these exclusive coastal resources. Under this backdrop, this chapter critically examines the participation of NGOs and CBOs in JMM over the last decade and attempts to identify their strength, weakness, opportunities and threats in the existing co-management system of mangrove resources. The analysis leads to the conclusion that despite CBOs and NGOs being the two major stakeholders in JMM; their role is largely restricted mostly due to lacking of legal and tenurial rights. The chapter concludes with some key recommendations to enhance their involvement in JMM where sharing of statutory rights and integration of disaster risk reduction with mangrove conservation remains extremely important in the future course of action.

Keywords Community Based Organization (CBOs) • Joint Mangrove Management (JMM) • Non Governmental Organizations (NGOs) • Participatory Mangrove Management

R. DasGupta (✉) • R. Shaw

Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: rajarshidg1@yahoo.co.in; shaw.rajib.5u@kyoto-u.ac.jp

11.1 Introduction

Mangroves are the intertidal coastal forests capable of producing a number of valued ecosystem services that directly or indirectly relate to human wellbeing in coastal areas. Yet the history of coastal development in India or elsewhere largely revolves around the deforestation and degradation of mangroves wetlands. Over a long period of time, mangroves were considered as unproductive wasteland that has been constantly subjected to reclamation in order to develop coastal infrastructure and human settlements. Consequently, approximately 35 % of the world's mangrove forests have been lost from 1980 to 2000 due to anthropogenic interventions on coastal ecosystems (Millennium Ecosystem Assessment 2005). Further, the world continues to lose its mangrove forests at an alarming rate of 1–2 % per year; drastically higher than the loss of tropical rain forests and the adjacent coral reefs (Alongi 2002, 2008; Duke et al. 2007). One critical consequence of such unprecedented loss of mangrove ecosystem services is the increased vulnerability of coastal communities; particularly in coastal rural areas across the developing world (DasGupta and Shaw 2013a). Mangrove provides a range of ecosystem services categorized as provisioning (e.g., timber, fuel wood, honey, wax and charcoal), regulating (flood, storm and erosion control, carbon sink, prevention of salt water intrusion), habitat (breeding, spawning and nursery habitat for commercial fish species, bio-diversity) and cultural services (recreation, aesthetic, eco-tourism) which are essential for human survivability in coastal areas (Millennium Ecosystem Assessment 2005; UNEP 2006; Brander et al. 2012). Apart from the economic benefits that the mangroves provides for the coastal communities, it's role in preventing and mitigating coastal hazards have been proved in several locations during the catastrophic times. There are mounting evidences that the existence of mangrove forest has proved to be crucial in order to minimize the impact of mega disasters in recent past. Particularly in some referred cases, mangroves protected coastal hamlets during the Indian Ocean Tsunami in 2004 which triggered the attention of global communities towards effective conservation and restoration of mangrove forests (Danielsen et al. 2005; Kathiresan and Rajendran 2005; Tanaka et al. 2007). Although, the extent of its capacity to mitigate high waves can be debated, it is a fact that existence of mangrove forests greatly reduces the impact of a series of coastal hazards, such as tropical cyclones, tidal flooding and tsunamis. At the same time, it has also a significant role in disaster recovery. Therefore, with the expanding hydro-meteorological disasters in coastal areas, it is highly imperative that mangroves are conserved and restored in order to enhance ecosystem based resilience of coastal communities.

Importantly, India belongs to a list of top 25 countries that are extensively threatened by climate change and climate induced disasters (Harmeling and Eckstein 2013). Most of these risks, especially in form of climate induced disasters, arise from the eastern coast of India where dense human populations are also encountered along with diverse mangrove forests. According to newspaper and media reports, in many coastal districts of West Bengal, Orissa, Andhra Pradesh

and Tamil Nadu in the eastern coast is experiencing drastic increase in coastal erosion and tidal flooding; although its implication with global climate change is yet to be firmly established. In addition, the eastern coast of India and the Andaman and Nicobar Islands are traditionally prone to tropical cyclonic storms originating from the Bay of Bengal. Over 100 severe cyclonic storms were formed in the Bay of Bengal since the twentieth century (Gopinath and Seralathan 2005). Further, it is also estimated that the intensity of tropical cyclones originating in the Bay of Bengal has risen by 20 % per hundred years for the month of May and November which are the main cyclone seasons in India (Singh et al. 2001). In the recent past, several deadly tropical cyclones in the recorded history have formed in the Bay of Bengal, e.g. Orissa Cyclone in 1999 (Loss of life 9,803 people in India), Cyclone ‘Sidr’ in 2007 (Over 10,000 people lost their life in Bangladesh), Cyclone ‘Nargis’ in 2008 (138,000 fatalities in Myanmar), Cyclone ‘Phailin’ in 2013 (Loss of life was restricted to 45 followed by a massive evacuation drive of nearly 13 million people in Orissa and Andhra Pradesh in India). Although, tropical cyclone formation in the Arabian Sea is comparatively lesser than that of the eastern coast; it also resulted some of the worst cyclonic storms, of which most notably was the Gujarat Cyclone in 1998. In most of the above mentioned cases, mangroves played a pivotal role in minimizing the damage of life and properties as evident from number of case studies (Badola and Hussain 2005; Kathiresan and Rajendran 2005; Das 2012; Parthasarathy and Gupta 2014). However, similar to many other developing countries across the world, India is also faced with several challenges in mangrove conservation and restoration. Part of this challenge evolves from increasing demand of land, over utilization of mangrove resources and environmental degradation of mangrove habitats which are essentially linked with the livelihood issues of the coastal communities. Although, India has long implemented some of the world’s strictest legislations in mangrove protection, yet, the strict conservative management of mangroves could not result in desired level of protection which led to the amendment of the existing forest acts to empower the local and the mangrove user communities to participate in mainstream forest management. This federal government scheme of community based co-management of forest resources launched in early 1990s (also known as Joint Forest Management) opened a new avenue to engage Community Based Organizations (CBOs), Non-Governmental Organizations (NGOs) and other interested stakeholders to jointly manage and develop the forest resources. Undoubtedly this has been a path breaking event in the history of mangrove management in India as several researchers and policy planners describe this as an integrated and ameliorative management of the existing mangrove resources (Selvam 2003; Datta et al. 2012; DasGupta and Shaw 2013b). However, several challenges still exist to effectively implement such strategy on the ground and further to the present understanding, the role of NGOs and CBOs can be crucial in order to enhance Community based co-management approach of mangrove resources. Under this backdrop, this main objective of this chapter is to analyze the existing role of NGOs and CBOs in a decentralized mangrove management regime and to outline some future strategies to enhance the existing co-management approach of mangrove resources.

11.2 Occurrence of Mangrove Forests in India

India has a long coast line of 7,516.6 km which at present hosts 4,662 km² of mangrove forests (Forest Survey of India 2011). Globally, India harbors around 2.7 % of the world's mangrove forests (Giri et al. 2011). Historically, the mangrove extent of the country was estimated about 6,000 km² (1960s), but, owing to massive land reclamation in coastal areas, mangrove forest cover shirked to 4,046 km² in 1987. However, since then mangrove cover has slowly increased and stabilized close to 4,500 km² in 1995 and presently follows a slow but steadily increasing rate (DasGupta and Shaw 2013b). Further, India's National Action Plan on Climate Change sets an ambitious target to increase 1,000 km² of mangrove forests by the end of 2020 (DasGupta and Shaw 2013b). Indian mangrove forests are typically classified into two subtypes—i.e. (a) 4B/TS1 (Mangrove Scrubs) and (b) 4B/TS2 (Mangroves), of these, 4B/TS2 are the finest tidal forests that are found on the low lying coastal plains in the east coast of India (Champion and Seth 1968; Singh 2000). Due to the flat terrain conditions and presence of major eastwardly flowing rivers, the eastern coast of India harbors some of the world's extensive and diverse mangrove forests accounting for 59.4 % of the Indian mangroves which co-exists with dense rural population in the vicinity. It also has the share of the world's largest single block mangrove forest in Sundarbans. While on the other hand, the western coast of India shares 27.37 % of mangrove forests although the diversity of mangroves are not as high compared to the eastern coast. The Andaman and Nicobar Islands of India in the Bay of Bengal, on the other hand, consists of 13.23 % of the mangrove forests in the country (Forest Survey of India 2011; DasGupta and Shaw 2013b). A detailed account of mangrove forests in India is furnished in Table 11.1. Majority of these mangrove forests enjoys strong legislative protection and are conserved under different categories of forest protection. Besides being a national asset of the country, these rich and diverse mangrove forests also form an integral part of culture and tradition of a large population of coastal communities in India.

11.3 Conservation, Restoration and Management of Mangroves in India

Conservation, restoration and management of these extensive mangrove resources in India follows the general norms and protocols of any other inland forests although conservation of mangroves has been precisely emphasized since the Ramsar Convention in 1971, followed by the Convention concerning the Protection of the World Cultural and Natural Heritage in 1972 (DasGupta and Shaw 2013b). In India, conservation of mangroves is mainly governed by the Forest Conservation Act of 1980 and the Wildlife (Protection) Act, 1972. The Wild Life Protection Act essentially categorizes the Marine and Coastal Protected Areas according to their

Table 11.1 Occurrence of mangrove forests in India

Major mangrove habitats ^a (state/union territory)	Very dense mangroves (area in km ²)	Moderately dense mangroves (area in km ²)	Open mangroves (area in km ²)	Total (area in km ²)	% of the total mangrove cover
East Coast				2,769	59.4 %
Sundarban Mangroves, West Bengal	1,038	881	236	2,155	46.22 %
Mahanadi Mangroves, Orissa	82	97	43	222	4.76 %
Godavari-Krishna Delta Mangroves, Andhra Pradesh	0	126	226	352	7.55 %
Pichavaram and Muthupet Mangroves, Tamil Nadu	0	16	23	39	0.83 %
Ariankuppam Estuary, Pondicherry	0	0	1	1	0.021 %
West Coast				1,276.56	27.37 %
Gulf of Kuchh and Gulf of Kambat (Bhavnagar Estuary), Gujarat	0	182	876	1,058	22.69 %
Goa Mangroves, Goa	0	20	2	22	0.47 %
Thane and Raigad, Maharashtra	0	69	117	186	3.98 %
Haladi-Chakra-Kolltur River Estuary, Karnataka	0	3	0	3	0.06 %
Cochin Estuary, Kerala	0	3	3	6	0.12 %
Daman and Diu	0	0.12	1.44	1.56	0.03 %
Andaman Nicobar Islands	283	261	73	617	13.23 %

Source: DasGupta and Shaw (2013b) based on official report published by Forest Survey of India (2011)

^a Official Assessment figures based on Forest Survey of India (2011) summarized by DasGupta and Shaw (2013b)

marine biological diversity and significance. However, this in turn also extends legislative protection of major mangrove habitats in India. In short, these particular legislations are instrumental to categorize existing mangrove resources under the varied degree of protection. Importantly, ever since its independence, India mostly inherited the British stature of Forest Management in colonial India which essentially adheres to a strict 'top-down' approach of forest management. Community's intervention and access was considered as detrimental and a threat to the forest resources of the country. Consequently, declination of forest rights and revenues to the local people was strongly opposed by the forest dependent communities. It further resulted in conflicts and violent outburst of the communities in parts of India. In order to resolve such issues and to involve the local communities, the federal government of India redrafted the Forest Policy in 1988. The National Forest Policy, 1988 encouraged the community participation in forest management. In 1990, the federal government of India passed an important resolution (Joint Forest Management) to the provincial governments and conveyed that the State Governments should create massive people's movement through involvement of village committees for the protection, regeneration and development of degraded forest lands. This piece of resolution provided a paradigm shift in the history of forest management in India through the active participation of stakeholders in the management of degraded forests situated in the vicinity of villages. In 2000, federal government of India passed another important resolution to the provincial governments extending the scope of Joint Forest Management from degraded forest to 'good forests' excluding the 'Protected Areas'. As of 2011, Joint Forest Management (JFM) programs are currently spanned in 29 states, represent 118,213 JFM committees protecting about 22.93 million ha of forests (Singh et al. 2011).

11.4 Evolution of 'Joint Mangrove Management' in India

In line with the federal government resolution on Joint Forest Management, a similar approach evolved in the management of mangrove forests, popularly known as Joint Mangrove Management (JMM). Likewise, small village level committees were formed from the mangrove dependent communities in order to restore the degraded mangrove forests. Joint Mangrove Management was typically initiated in the Pichavaram mangrove forests in the southern state of Tamil Nadu. In fact, the term 'Joint Mangrove Management' (JMM) was coined by a reputed NGO (M S Swaminathan Research Foundation) which started a mangrove restoration drive in Pichavaram mangroves in early 1990s. This was followed by a typical degradation of the Pichavaram mangroves. According to the remote sensing evidences of 1986, about 25 % of the Pichavaram mangrove was degraded (Selvam 2003). Kathiresan (2000) described two major causes behind such degradation; firstly, the area has been subjected to cyclonic storm in almost every alternative year and secondly the degradation was mostly a result of over grazing and high soil salinity. Due to its previous engagement in ecological restoration,

M S Swaminathan Research Foundation (MSSRF) was appointed as a technical consultant to investigate the actual cause of degradation and concluded 'couple felling'—a mangrove management technique adopted by the forest department was the key cause behind the degradation of mangrove. Consequently, MSSRF decided to dig small channels to drain out the tidal saline water which was instrumental for the increment of soil salinity. By this method, it was able to restore about 12 ha of mangrove on a pilot scale. However, in order to implement it over a larger area, MSSRF and the Tamil Nadu forest department formed four village level institutions (CBOs) also known as Village Mangrove Committee (VMC) at Pichavaram in order to restore the Pichavaram mangroves. With the active involvement of forest department and the communities, the effort was instrumental for successful restoration of Pichavaram mangrove forests (Selvam 2003; MSSRF 2003). Consequently in the following years, the same approach was taken up by the MSSRF to different other mangrove habitats. As per their official reports, MSSRF was responsible 28 village mangrove councils (VMC) for Joint Mangrove Management consisting of 5,240 families in the States of Tamil Nadu, Orissa, Andhra Pradesh and West Bengal. These VMCs were responsible of restoration of 1,500 ha and at present jointly manages about 12,000 ha of mangrove forest (MSSRF 2003).

Arguably, in recent years Joint Mangrove Management has evolved as an improved way to facilitate community interest living in mangrove vicinity and the JMM approach has been mostly adopted by the major mangrove habitats in the country and concerned provincial governments. For example, about 65 Joint Mangrove Management Committees (JMMC) have so far been formed with over 35,000 community members protecting 64,000 ha of mangrove forest in the Indian Sundarbans—the largest in the country. These local communities are entitled to collect non-timber forest products freely and are eligible to receive 25 % share of the revenues collected from ecotourism (Vyas and Sengupta 2012). Similarly, in the western coast of India, the state of Gujarat is also promoting community based mangrove restoration projects. As per the official report of Gujarat Ecology Commission (GEC), over 4,000 ha of mangroves were restored with the cooperation of the local communities through the intermediation of 22 Community Based Organizations (CBOs) (GEC 2010). Further, the sub-committee formed by the Ministry of Environment and Forest (MoEF) to review the progress on Joint Mangrove Management highlighted JMM as the best possible approach under the present circumstances (Selvam et al. 2012; DasGupta and Shaw 2013b).

11.5 Role of NGOs and CSOs in Co-operative Mangrove Management

As discussed earlier, the official resolution on Joint Forest Management taken by the Government of India described the necessity for involvement of NGO's in cooperative management of forest resources. The Section 3 of the circular

concerning Joint Forest Management (No. 6-21/89-P.P dated 1st June 1990, Government of India) directed the provincial forest departments of suitable engagement of NGOs as follows

Committed voluntary agencies/NGOs with proven track record may prove particularly well suited for motivating and organizing village communities for protection, afforestation and development of degraded forest lands, especially in the vicinity of habitations. The State Forest Departments/ Social Forestry organizations ought to take full advantage of their expertise and experience in this respect for building up meaningful people's participation in protection and development of degraded forest lands. The voluntary agencies/NGOs may be associated as an interface between State Forest Departments and local village communities for revival, restoration and development of degraded forests

Arguably, the resolution formally acknowledged the role of intermediating agencies (NGOs) to organize and motivate the communities which Sundar 2000 described the role of a 'new social capitalist' because of their ability to create social capital. However, it is apparent that since the past decade, the role of NGOs apart from being a 'successful mediator' has been largely restricted (Tiwary 2003); although some researchers believe that the involvement of NGOs in forest management itself implies a greater representation of the communities and a virtual decentralization of forest management in India. Nevertheless, the role of NGOs has been proactive particularly forming village level community driven organizations and effective intermediation among the forest department officials and the mangrove dependent community.

In case of the Joint Mangrove Management, one could easily visualize three major stakeholders who are involved in the process, i.e. the local forest departments, mangrove user communities and the facilitating NGOs. However, Kathiresan (2011) further classified communities into three categories as the Local User community (Community Living in or around mangrove forests and resource dependent), Local Community (Community Living in or around mangrove forests but resource independent), Remote User Communities (Communities not living near the mangroves yet resource independent, e.g. fishing communities). Therefore, in order to have a successful JMM, co-ordination among these stakeholders is extremely crucial. However, as discussed earlier, the two end of the Joint Forest Management resolution is the Forest Department and the Forest Dependent Communities while the integration of NGOs is vastly a choice of the concerned forest department which may or may not include any NGO in such process. Importantly, both cases are observed when reputed NGOs are involved to mediate the forest department and the local communities; also on the other hand, forest department itself can negotiate with the communities. Further, as per the resolution, formation and desolation of Community Based Organizations such as Joint Mangrove Management Committees (JMMC) is at the sole discrimination of the forest department. Although, the purpose of this chapter is not to conclude that the involvement of NGO makes a better model of Community based co-management of mangroves, however, some researchers expressed that involvement of NGOs indeed can result in better conservation. For example, in Pondicherry, NGO led mangrove restoration projects have resulted in better restoration compared to the local government led projects (Datta et al. 2012).

Existing Role of Different Stakeholders in Joint Mangrove Management			
Steps/ Stakeholders	Forest Department	NGOs	CBOs
Situation Analysis	Main Promoter	Secondary Promoter	
Partnership Development	Legal Capacity	Convincing Ability	
Community Issue Analysis		Technical Capacity	Data Provider
Group Formation	Legal Capacity		Local Governance
Micro-Planning	Legal Capacity	Technical Capacity	
Implementation	Equal Responsibility		
Monitoring	Legal Responsibility		Better Feasibility
Violation Reporting	Equal Responsibility		
Evaluation	Legal Bindings	Technical Capacity	
Extension	Sole Discrimination		

Fig. 11.1 Role of Forest Department, NGOs, CBOs in Joint Mangrove Management

In order to understand the existing roles of NGOs and CBOs in JMM, the chapter conducted a critical analysis of all the three major stakeholders under the existing framework of Joint Mangrove Management. Kathiresan (2011) mentioned about the major conceptual steps of Joint Mangrove Management which starts from a situation analysis and ends at evaluation and extension of co-operative management. Figure 11.1 represents the summary of activities and responsibilities of the stakeholders (*darker shades represent higher responsibilities*). Under the present scenario, the main proposal that a particular piece of mangrove forests can be managed jointly comes from the concerned local forest department officials based on the identification of resources, its utilization, resource dependence, environmental and anthropogenic factors affecting the mangrove conservation. This proposal is generally strengthened by the interested NGOs that are willing to work on mangrove conservation. The second important step is the partnership development with the local communities. The forest department, again, holds the legal authority to form and preside over the Joint Mangrove Management Committee, however, owing to outstanding lack of trust resulted from the earlier ‘top-down’ approach, NGOs are generally allowed negotiating with the local communities (DasGupta and Shaw 2013b). Since, lack of trust is extremely unwanted for any kind of co-operative management; NGOs generally play a crucial role in the negotiation. The third and perhaps the most important step is to analyze the community issues pertaining to mangrove conservation and identification of key issues to resolve. Importantly, NGOs (with hiring of local volunteers) are better capable of

understanding the community issues; socio-economic conditions of mangrove dependent villages while the Joint Mangrove Management Committee (JMCC) can provide essential clues on community structure and use of resources. Forest department, mostly because of their insufficient manpower, does not possess such capacity for detailed community need assessment. In the following step of group formation, forest department has the sole legal right to appoint members to a particular group while the local forest officer usually serves as the 'secretary' to the JMCC. On the other hand, community representation can be both political and voluntary. In some cases, particularly in Orissa and West Bengal, it is observed that the local Panchayet (Village level local governance) usually join and facilitate the formation of a committee representing the community, although this has some negative impact from case to cases. Micro-planning is the most important technical aspect of JMM which sketches the detailed outline of conservation and restoration plan. Undoubtedly, the Forest department has the most sophisticated skills to develop such plans; however, it also seen that such planning is done often without the knowledge of the local community. The local community is mostly unaware about such plan unless an NGO effectively translates the key aspects of the plan to the community members. However, in some cases, reputed NGOs such as Mangrove for Future (MFF) has been involved to development micro plans for ten community based restoration drive in Orissa. Ideally, the micro-plan should be developed through participatory rural appraisal. In order to extend the plan to action, all the stakeholders (Forest Department, NGOs and CBOs) have equal but different responsibilities. While the Forest department generally looks after the technical aspects, NGOs and CBOs are more concerned about the 'day to day' managerial aspects. Despite of the fact that the forest department has official power and legal responsibility to minimize violation (such as forest crime); JMMC are more capable for violation reporting mostly because of their enhanced and regular access to mangrove resources. One typical example can be drawn from the Sundarban mangroves, where poaching of Bengal tigers have greatly reduced due to the presence of Eco-development Committees (EDCs) (Mukherjee 2008). The final two steps of Joint Mangrove Management are the evaluation (based on the performance of stipulated years) and extension of JMM which again remains at the sole discrimination of the forest department although the evaluation can be partly done by the NGOs based on scientific documentation of success and/or failure of the JMM venture.

11.6 Emerging Challenges and SWOT Analysis of Stakeholders

In India, over a decade has been passed since the Joint Mangrove Management or Community based Co-management of mangroves approach has been adopted. Consequently, since the past 10 years, forest statistics shows that the mangrove cover did not further decrease, however, at the same time, it did not increase substantially either. Although some provincial government claims for drastic

increase of mangrove forests, e.g. Gujarat Ecological Commission reported about 30 % increase of mangrove forest since 2009 as a result of community driven mangrove restoration (GEC 2010), the same does not hold true for the entire country. Further, in a global review on sustainability of Community based Mangrove Management (CBMM) approach, Datta et al. (2012) rank India's progress on as 'moderate'. Understandably, there are opportunities to further improve the existing scenario of Joint Mangrove Management in India. Therefore, in order to scrutinize the existing system, a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of is necessary. Hence, this chapter conducts a SWOT analysis for three major stakeholders for Joint Mangrove Management which is summarized in Fig. 11.2.

As discussed earlier, the role of NGOs has been largely restricted apart from their ability to organize the mangrove dependent communities through successful intermediation, which remains by and large as their strength in JMM. At the same time, they are well aware about the legal requirements and therefore capable of taking prompt and smart decisions in favor of the community. This is further backed up by their financial and technical capacity and the ability to manage external funds from international/national organizations. For example, the restoration of Pichavaram mangroves conducted by MSSRF was mobilized by the Canadian International Development Agency (MSSRF 2003). Similarly, part of the reclamation drive conducted by MFF in Orissa was supported by Japan International Cooperation Agency (JICA). However, since the funding is mostly project based, it lacks long term collaboration and involvement. At the same time, NGOs are not always aware of the local conditions; therefore, they largely depend on locally hired volunteers. On the other hand, in some cases, it has also been observed that instead of supplementing the forest departments, it operates on rivalry basis which is detrimental to the basic foundations of 'Joint Mangrove Management'. Yet, global decentralization of mangrove management and increasing concern and awareness provides NGOs with an enhanced opportunity to strongly involve in JMM.

The role of Community Based Organizations (CBOs) in particular JMCCs are more similar to that of the NGOs. Although, CBOs has very strong local knowledge about the mangroves and perhaps are greatly motivated when mangrove conservation are linked with renormalization of their livelihood; however, the fundamental reward, the economic outcome of JMM is not always rewarding. Further, lack of livelihood, legal and technical knowledge about forest conservation makes them a weak proponent among the three stakeholders, although, CBOs can posses hugely unexplored capacity in terms of regeneration and sustainably managed forests. For example, Matang mangrove forest in Malaysia is one of finest mangrove forests with heavy production of timber has been sustainably managed by the dependent communities in association with the forest department (DasGupta and Shaw 2013a). However, lack of tenurial rights is an emerging issue for most of the JMCCs. On the other hand, CBOs sometimes undergo strong political influence under the Panchayet system and guided by the leaders of political establishment. In such cases, it detaches them from the community and directs itself to some vested political interest rather than effective conservation. Nevertheless, with the launch of Forest Rights Act, 2006 which allows more decentralization, a global consensus for

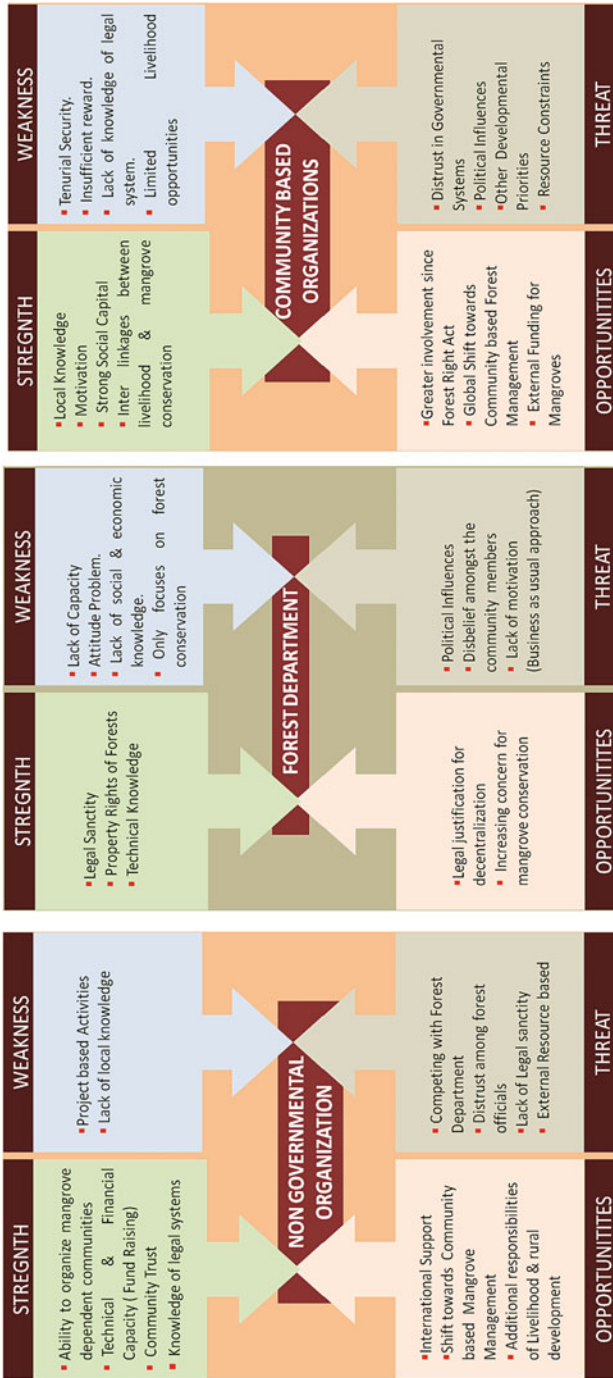


Fig. 11.2 SWOT analysis of the major stakeholders in Joint Mangrove Management in India

Community based Mangrove Management; it is rather evident that in the coming years, CBOs need to play a vital role in JMM.

Under the existing JMM framework, Forest Department (FD) still remains the sturdiest and powerful stakeholder with strong legal rights and can clearly position itself above the CBOs and NGOs. They are technically more sophisticated, legally empowered and remain at the central of mangrove management. Although, since the last decade, the scope for decentralization has widened but still it differs on the ground due to the attitude problems of forest officials, lack of trust and moreover 'business as usual' approach. Arguably, the sole objective of forest department still focuses on only the conservation and they effectively lack the capacity to suitably link the community well being along with conservation. Therefore, under the existing scenario, effective integration, rights sharing among the three stakeholders may prove vital and effective.

11.7 Recommendation and Way Forward

In India, the introduction of JMM, which is a community based co-management model of mangroves, is greatly considered as a step towards the decentralization of mangrove forest management and a process of rapid adaptation in coastal areas across India. This chapter attempted to provide an in depth analysis of the three major stakeholders in JMM and further conceptualize the strengths, weakness, opportunities and threats of these stakeholders. As the new forest legislation (Forest Right's Act in 2006) has envisaged more community participation and sharing of legal rights to the forest dwelling communities, it is widely perceived that the federal government's effort of decentralization of forest management will continue. Consequently, this opens up further opportunities for the NGOs and CBOs direct involvement in mainstream forest management while at the same time it gives immense responsibilities to these two important stakeholders. In line with that it is imperative that some future course of actions need to be formulated in order to enhance the activities of both NGOs and CBOs based on the experiences gained over more than a decade. Therefore, this chapter attempts to draw some key recommendations on Joint Mangrove Management in review of the existing Joint Mangrove Management System in the country.

11.7.1 Diversification of NGO Activities in Overall Socio-Economic Development and Sustainability of Mangrove Dependent Communities

Although in the existing JMM system, the main role of the NGOs remains with the effective conservation of mangroves, however, previous experiences suggest that

conservation work need to be linked with socio-economic development of the community. Therefore, conservational or wild life NGOs needs to diversify their activities to developmental fields on a longer term basis unless the communities are economically more empowered based on sustainable/non-forest based livelihood. Although, the current project based activities of the NGOs initiate such activities, particularly by raising awareness and developing self help initiative, however, lacks the longer term sustainability. On the other hands, NGOs also need to diverse to an authoritative role in dispute resolution largely arising from separate caste, creeds and demand arising from within and outside from the community driven organizations.

11.7.2 Legal Rights and Benefit Sharing of Forest and Forest Resources

Benefit sharing of forest resources, particularly from the Non Timber Forest Products (NTFP) are hugely irregular, insufficient and therefore, not always an attractive alternative among the communities. There are also no uniform guidelines on sharing forest resources and it largely depends on the resolution of the provincial government. Further, there are issues of lack of tenurial rights and legal sanctity of CBOs that are engaged in JMM. This needs a much higher attention in order to translate into policies or future forest resolutions. One important policy recommendation would be to award tenurial and legal rights to the CBOs based on the performance under the stipulated years. The role both CBOs (JMMC) and NGOs can be crucial in order to voice and resolve such outstanding issues.

11.7.3 Link JMM to Disaster Risk Reduction and Enhancing Coastal Resilience

The implications of Community based Co-management of mangroves (CBMM) distinctly differ from other Community based Natural Resource Management (CBNRM) initiatives mainly because the uniqueness of mangrove resources and it's strong and diverse socio-economic and socio-ecological implications (Datta et al. 2012). Conservation and restoration of mangroves has direct consequences on reducing economic, ecological, disaster and climate vulnerability of coastal areas particularly in coastal rural areas. Therefore, mangroves have intrinsic linkages with fostering coastal resilience. However, conservation of mangroves is by and large promoted by the conservational NGOs and supported by the environmental legislations and protocols of the country. There are immense scopes to diverse the existing system towards an integrated system of Climate Change Adaptation and disaster risk reduction. Integration of JMM with such activities will not only ensure increased attention, better technical and financial capacity, and allocation of funds

but also strongly motivate the coastal rural communities of India who remain at perilous condition due to climate change and climate induced disasters. Undoubtedly, this would further encourage them to promote, conserve and restore mangrove forests.

Acknowledgements The first author greatly acknowledges MEXT (MONBUKAGAKUSHO) scholarship provided by the Japanese Government for conducting research in the Graduate School of Global Environmental Studies of Kyoto University. The authors also acknowledge the support of GOCE-ARS (Sustainability/survivability science for a resilience society to extreme weather conditions) and Studies on the Connectivity of Hilltop, Human and Ocean (CoHHO) program of Kyoto University.

References

- Alongi DM (2002) Present state and future of the world's mangrove forests. *Environ Conserv* 29(3):331–349
- Alongi DM (2008) Mangrove forests: resilience, protection from tsunamis and response to global climate change. *Estuar Coast Shelf Sci* 76:1–13
- Badola R, Hussain SA (2005) Valuing ecosystem functions: an empirical study on the storm protection function of Bhitarkanika mangrove ecosystem, India. *Environ Conserv* 32(1):85–92
- Brander ML, Wagtendonk JA, Hussain S, McVittie A, Verburg PH, de Groot RS, van der Ploeg S (2012) Ecosystem service values for mangroves in Southeast Asia: a meta-analysis and value transfer application. *Ecosyst Serv* 1(1):62–69
- Champion HG, Seth SK (1968) A revised survey of the forest types of India. Government of India Press, New Delhi
- Danielsen F, Sørensen MK, Olwig MF, Selvam V, Parish F, Burgess ND, Suryadiputra N (2005) The Asian tsunami: a protective role for coastal vegetation. *Science (Washington)* 310(5748):5643
- Das S (2012) The role of natural ecosystems and socio-economic factors in the vulnerability of coastal villages to cyclone and storm surges. *Nat Hazards* 64:531–546
- DasGupta R, Shaw R (2013a) Cumulative impacts of human interventions and climate change on mangrove ecosystems of South and Southeast Asia: an overview. *J Ecosyst*. <http://dx.doi.org/10.1155/2013/379429>
- DasGupta R, Shaw R (2013b) Changing perspectives of mangrove management in India—an analytical overview. *Ocean Coast Manag* 80:107–118
- Datta D, Chattopadhyay RN, Guha P (2012) Community based mangrove management: a review on status and sustainability. *J Environ Manag* 107:84–95
- Duke NC, Meynecke JO, Dittmann S, Ellison AM, Anger K, Berger U, Cannicci S, Diele K, Ewel KC, Field CD, Koedam N, Lee SY, Marchand C, Nordhaus I, Dahdouh-Guebas F (2007) Letter: A world without mangroves? *Science* 317(5834):41–42
- Forest Survey of India (2011) State forest report
- Giri C, Ochieng E, Tieszen LL, Zhu Z, Singh A, Loveland T, Masek J, Duke N (2011) Status and distribution of mangrove forests of the world using earth observation satellite data. *Global Ecol Biogeogr* 20:154–159
- Gopinath G, Seralathan P (2005) Rapid erosion of the coast of Sagar island, West Bengal-India. *Environ Geol* 48(8):1058–1067
- Gujarat Ecology Commission (GEC) (2010) Socio-economic and ecological benefits of mangrove plantation: a study of community based mangrove restoration activities in Gujarat

- Harmeling S, Eckstein D (2013) Global Climate Risk Index 2013; who suffers most from extreme weather events? Weather-related loss events in 2011 and 1992 to 2011
- Kathiresan K (2000) A review studies on Pichavaram Mangroves: Southeast India. *Hydrobiologia* 430:185–205
- Kathiresan K (2011) People participation (training course on mangroves and biodiversity, UNU open course ware). http://ocw.unu.edu/international-network-on-water-environment-and-health/unu-inweh-course-1-mangroves/Course_listing
- Kathiresan K, Rajendran N (2005) Coastal mangrove forests mitigated tsunami. *Estuar Coast Shelf Sci* 65(3):601–606
- Millennium Ecosystem Assessment (2005) Ecosystem & human well-being: wetland & water-synthesis report. World Resources Institute, Washington, DC
- MSSRF (2003) Joint Mangrove Management in Tamil Nadu: process, experiences and prospects; Part 1: situation analysis: Pichavaram and Muthupet Mangrove
- Mukherjee S (2008) Participatory forest management—case study of Sundarban Tiger Reserve. *Wetland News* (May–July 2008)
- Parthasarathy R, Gupta M (2014) Mangrove management and cyclone risk reduction in Kachchh, Gujarat. In: Disaster recovery. Springer, Japan, pp 301–315
- Selvam V (2003) Environmental classification of mangrove wetlands of India. *Curr Sci* 84 (6):757–765
- Selvam V, Ramasubramanian R, Ravichandran KK (2012) Genesis and present status of restoration practices in saline blanks in India in sharing lessons on mangrove restoration. In: Proceedings and a call for Action from an MFF regional Colloquium, pp 133–140
- Singh HS (2000) Mangroves in Gujarat: current status and strategy for conservation. Gujarat Ecological Education and Research (GEER) Foundation
- Singh OP, Khan TMA, Rahman MS (2001) Has the frequency of intense tropical cyclones increased in the north Indian Ocean? *Curr Sci (Bangalore)* 80(4):575–580
- Singh VRR, Mishra D, Dhawan VK (2011) Status of Joint Forest Management in India. In: Proceedings on national workshop on Joint Forest Management, 27–28 June 2011
- Sundar N (2000) Unpacking the ‘joint’ in joint forest management. *Dev Change* 31(1):255–279
- Tanaka N, Sasaki Y, Mowjood MIM, Jinadasa KBSN, Homchuen S (2007) Coastal vegetation structures and their functions in tsunami protection: experience of the recent Indian Ocean tsunami. *Landscape Ecol Eng* 3(1):33–45
- Tiwary M (2003) NGOs in Joint Forest Management and Rural Development: case study in Jharkhand and West Bengal. *Economic and Political Weekly* 5382–5390
- UNEP (2006) Marine and coastal ecosystems and human wellbeing: a synthesis report based on the findings of the Millennium Ecosystem Assessment
- Vyas P, Sengupta K (2012) Mangrove conservation and restoration in the Indian Sundarbans in sharing lessons on mangrove restoration. In: Proceedings and a call for Action from an MFF regional Colloquium, pp 93–101

Chapter 12

Disability-Inclusive DRR: Information, Risk and Practical-Action

Alex Robinson and Sae Kani

Abstract The chapter argues that although risk and vulnerability are central to the disaster risk reduction (DRR) community's collective endeavours, to date scant attention has been paid to the most at-risk within our work. Disability is a cross-cutting issue that significantly increases risk for individuals who are often already living with exclusion. While many DRR interventions claim to be participatory in their approach, interventions that recognise and respond to the needs of people with disability remain paradoxically few.

The chapter draws on practitioner experience of implementing DRR education projects for people with disability between 2007 and 2012 in Indonesia. The current state of play regarding disability and DRR policy is outlined and an explanation for the lack of engagement by DRR actors in the field is suggested. In response, a simple model, drawing on Richard Heeks' Information Chain (1999), is presented as a way to practically reconsider disability from a DRR perspective and to guide the planning and implementation of more inclusive DRR programming.

Keywords Disability • Disaster risk reduction • Education • Inclusion

12.1 Introduction

The idea that disaster risk reduction (DRR) efforts rarely include those most at-risk appears, at best, paradoxical. However, this is more often than not the case. People with disability make up 15–20 % of the world's population (WHO and World Bank 2011) and are at significantly higher risk than their non-disabled peers in times of

A. Robinson (✉)
Arbeiter-Samariter-Bund Deutschland, Yogyakarta, Indonesia
e-mail: alex.robinson@asbindonesia.org

S. Kani
Malteser International, Tokyo, Japan
e-mail: sae.kani@malteser-international.org

disaster. This increased risk may stem from sensory impairments that limit access to potentially life-saving information prior to disaster or from mobility impairments that may hinder evacuation during a disaster. Recent figures for Miyagi prefecture following the Great East Japan earthquake show that while the general mortality rate was 0.8 %, the mortality rate for people with disability was 3.5 % (UNESCAP 2012a). Despite the increased risk that people with disability face, disability has been conspicuous in its absence from DRR policy and practice.

The Hyogo Framework for Action (HFA) provides the international template for moving from a disaster response paradigm to a DRR approach that emphasises prevention, preparedness and mitigation. Under the General Considerations of the HFA reference is made to gender, cultural diversity, age and the catch-all ‘vulnerable groups’ (ISDR 2005). Reference to disability within the HFA is confined to Priority for Action 4 ‘Reduce the underlying risk factors’ (*Ibid*). Article ii, g of the HFA states the need to ‘Strengthen the implementation of social safety-net mechanisms to assist the poor, the elderly and the disabled [*sic*], and other populations affected by disasters.’ (*Ibid*). It is not overtly clear whether clause ‘g’ actually reflects the overall holistic approach to DRR that the HFA sets forth or remains more grounded in a post-disaster understanding. As such, this reference to disability seems to be somewhat of an afterthought.

The lack of clear and specific reference to the inclusion of people with disability in DRR within the HFA is viewed as a contributing factor to the dearth of disability-inclusive DRR practice and policy to date. The development studies and DRR literature also reflects this lack of prioritisation. With the adoption of the HFA there have been concerted efforts to justify the rationale for DRR actions and policy. This has largely been via cost–benefit analyses. Such analyses address vulnerability as a core concern; however, disability remains absent (Venton and Venton 2004; Vorhies 2012). The disproportionate risk that people with disability face is neither highlighted nor addressed. One explanation for this omission is that organisations concerned with DRR will tend to focus on established institutional interests and focuses (Twigg 2002). For the vast majority, this has not included people with disability. From a broader development perspective it should also be noted that the Millennium Development Goals, as the primary international mechanism for directing development policy and practice, also do not include disability (UN 2000). While not addressing disability directly John Twigg notes the need for ‘inclusiveness’ in DRR approaches and the importance of ‘breaking down cultural resistance among specific groups of disaster professionals towards adopting approaches from other disciplines.’ (*Ibid*: 7).

In terms of disciplinary focus this paper takes DRR as its primary point of reference; however, the paper is influenced by broader and evolving trends in understanding disability. A significant barrier to moving towards disability-inclusive DRR is the lack of data on the impacts of disasters on people with disability (UNESCAP 2012a). As noted, recent studies from Japan indicate that the mortality rate for people with disability is significantly higher than for the general population. As is common, comprehensive data on disability was not collected following the Padang, 2009 earthquake. However, Sudaryo et al. (2012) highlight consistently

higher disability incidences among injured survivors. A further concern is that lower mortality rates can lead to higher morbidity rates. Estimates suggest that 300,000 people survived the Haiti 2010 earthquake with injuries. An estimated 2,000–4,000 people became amputees following the earthquake (Landry 2010).

Lack of consideration, and participation, of people with disability in the drafting of the HFA, and in DRR in general, is a double-edged sword. While the DRR community has yet to engage with disability, it should be noted that the disability movement has yet to engage effectively with DRR. However, precedents exist. Of paramount importance is the landmark United Nations Convention on the Rights of Persons with Disabilities and as ratified by Indonesia in 2011. Article 11 of the CRPD is concerned with ‘Situations of risk and humanitarian emergencies’ and reads as follows:

States Parties shall take, in accordance with their obligations under international law, including international humanitarian law and international human rights law, all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including situations of armed conflict, humanitarian emergencies and the occurrence of natural disasters (UN 2006).

The emphasis of language within Article 11, stressing ‘humanitarian emergencies’ and the ‘occurrence of natural disasters’, may again be read as not being in line with current DRR understandings that stress the importance of acting prior to the onset of a potential emergency or disaster. Nevertheless, the UNCRPD offers a strong and universal rights-based call for more disability-inclusive DRR.

12.2 Participation, Inclusion and Risk

The concept of participation forms the staple of much DRR. The HFA stresses localisation and the involvement of citizens and communities under Priority for Action 3 (ISDR 2005). Similarly, it would appear a natural progression for many moving into the ‘new’ DRR sector to focus their energies, existing skills and resources at the community level. Community-based DRR (CBDRR), or risk management (CBDRM), initiatives are commonplace. The concept of participation, as popularised by Chambers (1997), seeks to prioritise the positioning, understandings and participation of the poor, or marginalised or excluded, within a process of development. For Chambers, this is a political process that seeks to redress imbalances of power and voice. It is also worth noting that the shift towards DRR, away from a focus on response, re-emphasises the relationship between DRR and development. DRR is after all, and particularly at the community level, about changing attitudes and practices and such changes require concerted efforts over time. As such, initiating behavioural change appears more in line with extended development actions rather than shorter-term humanitarian response. The understanding that DRR is better viewed as a cross-cutting issue within development is indicated

by the recent commitment by the UN to integrate DRR into all programmes and activities (UNSPIDER 2013).

Returning to Chambers' understanding of participation, the concern is that if we accept that community-based actions are a worthy aim within DRR, and development in general, and that such actions should be participatory both in principle and practice, why are we not prioritising those at most risk? The answer to this question most probably lies somewhere between two explanations. Firstly, it has been argued that the concept of participation has, for some time, become detached from its political roots (Cooke and Kothari 2001). Participation as an approach has become, contrary to its original vision, something that 'we' in development all too simply do. Our participatory tools and methods are applied to those that we have become comfortable working with. Our understanding of participation within DRR has yet to be extended to those outside of our institutional comfort zones. This deserves reflection. The bi-directional link between poverty and disability is well-documented (Stapleton et al. 2006). Disability increases the chances of a life in poverty and being poor increases the chances of being born with, or acquiring, a disability. It is also well-documented that people with disability face lower educational attainment, fewer meaningful work opportunities and, clearly, increased social exclusion (UNESCAP 2012b). If we add the lack of security that people with disability all too-frequently face, it would seem that challenging such inequities was what participatory approaches were designed for. And yet, people with disability are rarely engaged within, or contribute to, CBDRR initiatives.

The second issue relates to individual and institutional understandings of disability. Disability has received little attention by 'mainstream' development actors in general and DRR is little different. Disability appears to be viewed as the preserve of a small group of disability focused actors; including, international and national non-governmental organisations (NGOs) and disabled people's organisations (DPOs). Disability is thus treated as something separate and distinct. The more acceptable contemporary view of disability being a rights-based issue, as captured within the CRPD, has been some time coming. With earlier charity-based models giving way to a medical approach to disability, an aura of technical minded solutions appears to have swept into the imaginings of many. It appears that disability is largely viewed as a technical issue that requires specific expertise and no inconsiderable resources to address. For those that are more rights inclined, there is still the concern that institutional capacities do not yet exist and a potential perceived risk of failure may thwart any desire to begin. This paper suggests an alternative point of departure.

12.3 Delivering School-Based DRR

In 2009, the Chair's Summary of the 2nd session of the Global Platform for DRR stated a commitment to ensure DRR was established within national education curricula by 2015 (ISDR 2009). This initiative builds on HFA Priority for Action

3 to 'Use knowledge, innovation and education to build a culture of safety and resilience at all levels' (ISDR 2005). The 2009 Chair's Summary also highlighted, albeit with somewhat narrow specification, 'Reduced risk for all' and noted the importance of community-based initiatives and the contribution of children to DRR. The latter is notable as children were not simply described as belonging to a particular 'vulnerable group', but rather highlighted as key DRR actors and contributors. This change of emphasis, as further reflected in the shift from vulnerability to resilience in the Chair's Summary of the 4th session of the Global Platform, suggests promise for those concerned with increasing the active participation of people with disability within DRR (ISDR 2013).

Following the 2006 Yogyakarta and Central Java earthquake, the authors and Arbeiter-Samariter-Bund Deutschland e.V. (ASB), in partnership with the Indonesian Ministry of Home Affairs, were also considering the way in which DRR information could be delivered through the education system. This interest was set against a backdrop in which the idea of school-based DRR was gaining ground as was the concern to integrate DRR into the school curriculum. With regard to the latter, two significant, and seemingly separate, initiatives were underway at the national level by early 2008. Initial enquiries at the local level, however, highlighted a number of concerns. Firstly, the administrative complexity of synchronising curricula at the national and sub-national levels since the granting of autonomy to the district level in Indonesia in 2001 and the resources that such an approach would ultimately require. Secondly, the general unpopularity of the idea with local administrators and teachers who foresaw changes to the curriculum as translating into increased workloads on top of what were considered already low salaries.

There is arguably value in integrating DRR into school curricula in terms of establishing a basis for institutional sustainability as emphasised, in general terms, under HFA Priority for Action 1. There is also potential for instilling interest in a future generation of DRR related professionals. However, there appeared room to justifiably question the received wisdom of treating DRR as an academic subject for the majority in schools. The alternative was the delivery of practical DRR procedures to all students in school with a focus on practical-action rather than the academic leanings that curriculum integration suggests. It was also clear that existing school-based DRR initiatives in Indonesia were limited in terms of geographical reach. Many school-based DRR initiatives focused on the delivery of unnecessarily complex information to a limited number of schools. Again, the substantive content that a focus on curriculum integration implies seemed to tend towards complexity rather than a fundamental concern to deliver practical life-saving DRR information and procedures. In a highly earthquake prone country of 230 plus million people there was clearly an issue of limited supply in relation to demand.

The approach that was subsequently developed by ASB viewed the delivery of DRR education as an informational problem. It was considered that there was plenty of sound DRR information content available, but it was not clear that this content was being delivered optimally and at scale at the local level. Clearly,

the education system and structure is highly suited for such delivery purposes. As the overall information delivery system was therefore in place, prioritisation focused on developing simple practical content that could be delivered economically and at scale to schools. ASB was later to extend the model to the delivery of multi-hazard information; however, the initial focus was on earthquakes due to their unpredictability and the potential scale of impacts in the target region. Programming was also directed at the primary school level in order to avoid, as much as possible, the difficulties inherent in changing the behaviour of older individuals with potentially more entrenched attitudes and practices.

Borrowing from the Japanese experience, a programme was developed to introduce the accepted drop, cover, hold-on earthquake procedure and evacuation drills to schools. A training of trainers approach was used to establish DRR focal point teachers who, with guidance, would then train teachers in schools. The materials used were engaging large picture or flash cards that told a story of what to do, and what not to do, in an earthquake in order to introduce to pupils the key messages and the drills. Supplementary materials such as concept-check quiz cards were also included to test whether the information had been delivered effectively. In anticipation of the variable capacities of teachers in rural areas, the story was provided step-by-step on the back of each picture with key points highlighted. More technical information, such as covering plate tectonics, was provided to DRR focal point teachers (master trainers) who could act as an information source for teachers as and when required. Such information was not emphasised within actual schools. Ultimately, the focus was to contribute to preventing injury and loss of life. It was decided, therefore, to not be overly concerned if people understood earthquakes as geological phenomena or viewed them as, for example, acts of God. As an anecdotal aside, personal experience of one author vividly illustrated that hours of studying plate tectonics in school does little to prepare oneself for what to do when first experiencing an earthquake; a point that often seems overlooked in discussions of school curriculum integration. The primary concern was, therefore, on how individuals should act to reduce the risk to themselves and to their peers.

Using this approach the project targeted all primary schools in a district (*kabupaten*). Such coverage was an important consideration. Following regional autonomy the district in Indonesia is primarily responsible for the delivery of development programming and services. The district is also the lowest administrative level at which initiatives can be effectively formalised. In collaboration with local education authorities, and with support from the German Federal Foreign Ministry, the project went on to cover over 6,000 primary schools (ASB, 2012, Project documentation. Arbeiter-Samariter-Bund, unpublished). Additional benefits of not focusing on the curriculum were found. For example, some districts found it more realistic, less costly and easier to integrate drills into extra-curricular activities. The new school curriculum for Indonesia was recently launched in early 2013 (Ministry of Education and Culture 2012). DRR is not included. The risk of catastrophic loss and damage from earthquakes remains, in contrast, ever present. Whether DRR is integrated into the Indonesian school curriculum in the future remains to be seen. Regardless, practical earthquake drills will still need to be

conducted routinely and warrant on-going attention within DRR; integration into school curricula should not distract us from this.

12.4 Challenges to Participation Within School-Based DRR

During the implementation of the school-based DRR programme outlined, a situation was encountered that was to challenge the underlying conceptualisations of DRR that were being applied and to force the authors to rethink our work. A teacher noted that although she very much liked the materials that had been produced for the classroom they had one major drawback. One of her pupils was visually impaired.

This conversation triggered an ethical and professional dilemma. Firstly, it was clear that the programme was not adhering to anything but a selective understanding of participation with regard to the children who could engage with, and benefit from, the programme. Secondly, the idea of covering all schools in a district became meaningless if the procedures could not be delivered to all children in those schools. Thirdly, it was apparent, from a DRR perspective, that the child in question was potentially at most risk among their peers. Not only could this child not access the information provided on an equal basis, but that child would face considerable barriers during evacuation following an earthquake due to disruption to the built environment. Such disruption would dramatically impact upon the child's everyday points of spatial reference. Evidently, the programme was failing to deliver necessary information to all children and was reinforcing already existing barriers to access for that child.

It should be pointed out that at this time there was little in the way of literature to guide the design and implementation of DRR programming for people with disability. Handicap International was in the process of developing a manual on mainstreaming disability into DRR at around the same period (Handicap International 2009). This manual approaches disability-inclusive DRR from a disability, rather than DRR, perspective and outlines the rationale for mainstreaming disability into DRR. The manual primarily focuses on providing information relevant to the overall design of community-based DRR interventions. Within the programme described, awareness of the need for including people with disability had been, in effect, self-generated; it was the next step towards implementation that presented the concern. From the literature, examples of practical DRR tools and approaches that could be adapted for use by trainers and facilitators in field were, and remain, limited. More recently CBM, in partnership with the Disability-inclusive DRR Network (www.didrrn.net), published good practices in disability-inclusive disaster risk management in preparation for the 4th Global Platform for DRR (CBM 2013).

This gap in available resources indicated there was a need to consider approaches to fostering inclusion from the perspective, constraints and aims of

DRR practitioners themselves. Returning to the programme and its specific weaknesses, upon reflection it was decided that the overall programme framework was sound. The benefits of delivering practical DRR information as efficiently and economically as possible in order to minimise injury and loss of life remained convincing. Also, it was agreed that delivering such information at scale remained a priority. The overall delivery mechanism to schools did not appear inherently flawed. It was decided that the information content that was being delivered had value and furthermore that all children could, and should, benefit from such content. The issue, on balance, was the way in which content was being delivered to the final beneficiaries.

The solution was to develop new media for delivering the DRR content in the classroom. This went on to include the development of audio materials for children with visual impairments and to the revision of existing ASB materials by adding video materials for Deaf children. In practice this was easier said than done. Although disability-inclusive DRR has since become a core area of ASB's work, at that time and like many others, the Indonesia office had no direct experience to draw upon. ASB was simply a concerned 'mainstream' NGO that had expertise in the field of DRR and not disability. The solution, however, turned out to be straightforward. The programme team sought the advice, help and personal expertise of people with disability themselves. This included teaming up with a small local DPO, Matahariku, who were working locally on Deaf youth issues. Members of Matahariku later extended their work and established the Deaf Art Community (DAC), Yogyakarta, who recently went on to demonstrate non-verbal DRR communication at the 4th Global Platform for DRR, 2013.

Working in collaboration with these individuals it was possible, and relatively straightforward, to redesign how the programme delivered DRR information content in schools. On reflection, it is also reasonable to say that there was no institutional resistance to moving into the disability field; the primary concern lay in not fulfilling core institutional DRR objectives. That is, the programme was not reaching those potentially at most risk. Subsequently, the programme was extended to deliver DRR information and procedures to 91 special schools and 150 inclusive schools and to children with disability outside of school in 235 villages with support from the German Federal Foreign Office, European Commission Directorate General for Humanitarian Aid and Civil Protection (DIPECHO) and the Australian–Indonesian Partnership for DRR. This experience of implementation also led to further consideration of the function of information in disability-inclusive DRR.

12.5 Disability-Inclusive DRR as an Information Issue

Heeks' (1999) concept of the information chain (Fig. 12.1) presents a simple model for understanding the function of information in development. The information chain identifies key stages from the accessing of information (data) to the resultant desired development outcome or act. The acquisition of actionable knowledge is

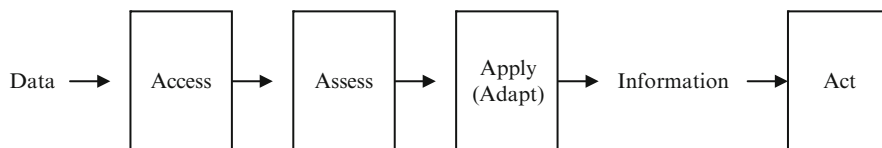


Fig. 12.1 The information chain. Heeks (1999)

presented as a development process that can be broken down for individual attention within information-based programming.

For the purposes of implementation, the information chain was broken down to the components deemed essential to the programme. That is, access and the desired act. This is not to down-play the importance of the way in which the source and content of any information will be assessed by an individual. Nor the way in which individuals may adapt information received to their context and circumstances in order to add relevance and better apply that information. The primary concern was focusing attention within the institution and across teams. Issues of access, whether physical or to services or to information, will not be uncommon to those from a disability background. Crucially, it was access to information, as described above, which presented the major stumbling block. Similarly, the outcome or act that we sought to deliver was of core concern; the establishment of basic earthquake safety procedures and drills in schools. Distilling the information chain to its basics enabled attention and concentration to be paid to these fundamentals.

Issues relating to assessment and adaptation were not, however, ignored. These considerations were addressed as an integral part of the programme design and became the everyday work of facilitators in the field. Materials were trialled, as a matter of course, and facilitators and trainers actively encouraged the adaptation of information and its delivery to local contexts. Examples of such adaptation included the use of local languages or, for some more creative teachers, the inclusion of additional props, such as traditional shadow puppets, during the story-telling component. The way in which information (and its delivery) may be assessed by recipients similarly warrants attention, particularly in the early stages of the project cycle, to ensure both information content and information delivery are appropriate. The way in which individuals may adapt information in order to apply that information, and the resources required to do so, within their particular environment forms an integral part of on-going monitoring, evaluation and review throughout the programme cycle.

Initially, it was considered that teachers themselves were best placed to deliver information effectively in primary schools and there was a concern to not be overly prescriptive in this regard. This was also influenced by the preference to use existing structures and resources in order to facilitate delivery at scale. As programme implementation moved into special needs and, particularly, inclusive school settings there was a need to respond to the varied capacities, experiences and prior (or lack of) training of teachers. With no clear standards or criteria for what an inclusive school should be, many teachers lacked capacity in adapting the

teaching-learning setting and process to respond to the educational needs of children with disability. Again, local expertise was sought as a preference. In collaboration with the State University of Yogyakarta basic DRR education was introduced into the university's training for special needs teachers. In turn, trainee teachers were placed in inclusive schools to provide assistance to teachers on general ways to improve information delivery to children with disability. It should be noted that many of the recommendations provided were relatively simple. For example, it was often the case that children with disability would be seated at the back of the class. Just simply rearranging where children sat in the class could contribute to significantly improving access to the lesson content for some children.

Drawing on Heeks, the subsequent Information-Action, or IA, model developed by ASB became a practical and relevant guide for the planning and implementation of more disability-inclusive DRR. Throughout programme design and implementation two simple questions were regularly reflected upon:

1. Can everyone access the DRR *information* you are providing?
2. Can everyone *act* on the DRR information you are providing?

These two questions drew and focused attention to key considerations essential for better establishing practical disability-inclusive DRR programmes within schools and communities.

A further advantage of the IA model is that these two questions can be effectively combined with the Washington Group on Disability Statistics' short set of questions on functioning. The Washington Group short set of questions seek to form a comparable basis for data collection that can be used in non-disability focused surveys, such as, national censuses. The strength of the questions is that they can be applied by a non-specialist while at the same time providing a common basis to overcome variations in classifications of disability between countries. The purpose of the questions is to address 'equalisation of opportunity' through gathering data on 'limitations in basic activity functioning' (Washington Group 2010a). The questions, which may be addressed to the person with disability (ideally) or to the carer (if needed), are presented below. The primary potential relationship to the IA model, and its guiding, questions is provided in brackets.

1. Do you have difficulty seeing, even if wearing glasses? (Information/Action)
2. Do you have difficulty hearing, even if using a hearing aid? (Information)
3. Do you have difficulty walking or climbing steps? (Action)
4. Do you have difficulty remembering or concentrating? (Information/Action)
5. Do you have difficulty (with self-care such as) washing all over or dressing? (Action)
6. Using your usual (customary) language, do you have difficulty communicating, for example understanding or being understood? (Information) (Washington Group 2010b)

Through focusing on activity functioning, the Washington Group questions provide a practical, non-technical and relevant approach to addressing disability in DRR. It was also found that within a DRR context the focus on functioning

widened the scope of potential beneficiaries to include those who may not consider themselves to be a person with disability. These groups may include the elderly or those temporarily disabled through injury or illness. When combined with the IA model, the Washington Group short questions proved an effective foundation for conceptualising and communicating strategies for not only disability-inclusive DRR, but towards the broader ideal of inclusion for all within DRR in general.

12.6 Implications of the IA Model for Disability-Inclusive DRR

Further clarification of the relevance of the IA model to DRR programming requires addressing each component, and related question, in turn. With regard to the first question concerning information access, some people with disability may have no more difficulty in accessing DRR information than their non-disabled peers. For example, a wheelchair user may be as able to access and understand the concept of what to do during, for example, an earthquake or flood as their non-disabled peers. With regard to the second question, a wheelchair user may face considerable, and potentially life-threatening, barriers to acting on that information within a disaster situation. For Deaf individuals, accessing information may be more challenging. This is all the more the case in the absence of a commonly used sign language as in Indonesia where many use regionally modified American Sign Language. Furthermore, in the Indonesian context few teachers outside of a special school setting focusing on Deaf children may be able to sign. Outside of school, and 74 % of children with disability in Indonesia are estimated to not be in school (Directorate General of Special Education and Special Services 2011), many Deaf children develop *ad hoc* home signing to communicate with family members. As described, the solution in practice was to utilise visual aids and video and also the use of gesture, mime and demonstration with Deaf DPO colleagues taking the lead wherever possible.

Once information has been accessed a Deaf child may be perfectly able to protect themselves and to evacuate independently. A child in a wheelchair may need assistance on both counts. As such, an integral part of disability-inclusive DRR programming must fall back to raising awareness, altering perceptions and encouraging collaboration within and between households and communities. A core aim of establishing routine earthquake drills is to minimise possible panic through repeat simulation and familiarisation. Minimising the panic of an individual also psychologically frees that individual to assist others. Such assistance may include protecting the head of a child in a wheelchair with a helmet, or similar, and ensuring that all can, and do, evacuate safely. It is, perhaps, worth reiterating that the primary aim of DRR is to reduce the risk of death or injury. It is undoubtedly preferable that all should be able to take preventative measures independently; however, the issues that this raises in terms of ideal physical accessibility, built to

earthquake resistant standards, and equal access to information forces us to be cautious in our immediate goals. The IA model assists by adding two further components for consideration and reminds us to ask if, realistically, people with disability in our working areas can take preventative measures *independently* in the event of a disaster or if *assistance* is required.

As elsewhere, people with disability in Indonesia face considerable barriers, stigma and exclusion. All too many children with disability outside of school are hidden within households. It was also found that children with behavioural disorders were all too frequently chained or locked away. From a narrow DRR perspective the implications of such actions are all too self-evident in the event of a disaster. From a rights-based perspective they raise deeper concern. From an informational perspective the implication is such children's access to information is severely curtailed. Parents not wishing to raise attention to the fact that their child has a disability through their silence further limit the child's and family's ability to access information or support from outside of the household. This compounds the situation further. It was not uncommon to find households that did not know one of their neighbours was a child with disability. Similarly, it was also not uncommon for parents of children with disability to not be aware of the fact that their child could actually go to school. They, simply, had never asked or never been told.

Importantly, while working with children with disability outside of school the programme did not address the issue of disability head-on within communities. The programme, after all, was primarily concerned with delivering practical DRR information and procedures to all. It was found, however, that DRR can be an effective point of entry for addressing disability and broader concerns of inclusion. This was particularly the case in areas which had recently experienced a disaster, but also proved effective in areas that had not. Discussions of how people had acted in disasters, and how people should act, presented a common and shared experience that all could relate to. For example, if someone in a group had difficulty evacuating, how about an elderly relative, a pregnant woman or yourself if you had had a motorbike accident (and were temporarily disabled)? In this way, the issue of disability could be gently introduced from the perspective of functioning. Disability was no longer something distant or unspoken. Disability became something that held relevance amongst collective experiences and common understandings of disasters. The possibility of disasters are a fact of life for many in Indonesia and, similarly, disability 'is part of the human condition' (UNESCAP 2012a:ii).

12.7 Placing Disability-Inclusive DRR in Context

For the purposes of programme design and planning, it is helpful to place, and consider, the IA model in a broader context. Heeks (1999) stresses the importance of placing information in context and of viewing the information chain as a part of a larger system. This allows us to better highlight and anticipate, from a practitioner perspective, the potential factors and interactions that may impact upon accessing

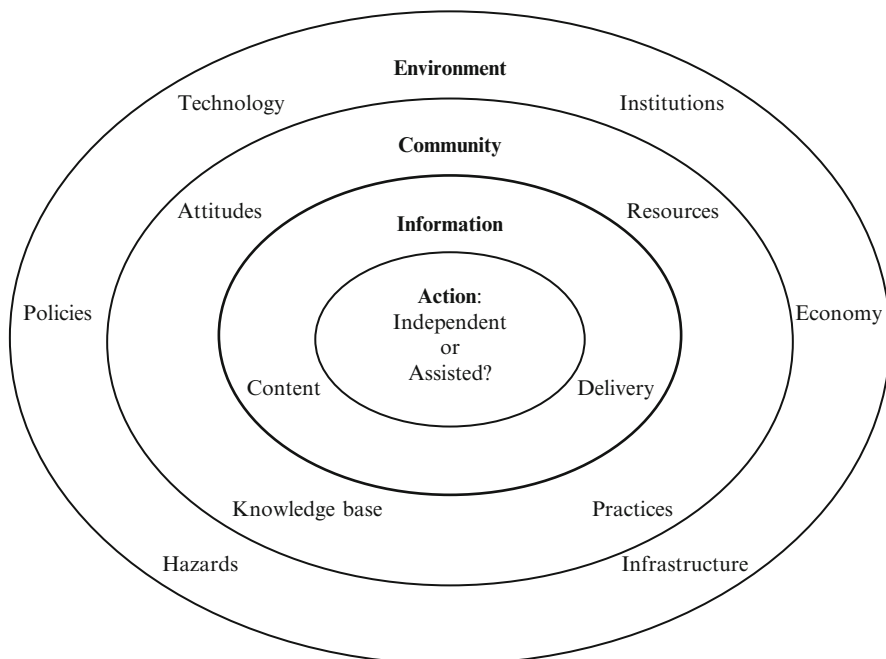


Fig. 12.2 An information systems approach to disability-inclusive DRR

information and, in turn, achieving the desired act. Information and the resultant outcome that the provision of information aims to achieve need to be placed within the prevailing environmental and socio-cultural context to provide more complete understandings. Figure 12.2 presents an information systems approach to assist in understanding, and realising, disability-inclusive DRR. The key elements of the IA model, as described above, are placed central and within a community. In turn, the community is placed in a broader environmental sphere to draw attention to prevailing socio-economic and political contexts as well as hazards that may impact, positively or negatively, upon a programme.

At the centre of this information system (Fig. 12.2) is the development outcome, or act, that is to be achieved. As noted, in a DRR process that aims to include people with disability the resultant act, such as routine evacuation drills, may be conducted independently by the individual concerned. Alternatively, that individual may require assistance on the part of others. This act is, in turn, dependent on the individual being in a position to access information; the information chain also reminds us that any information accessed will be assessed for relevance and, if considered of value and necessary, adapted. To improve the chances of a positive assessment of the value of the information accessed attention to both relevant content and appropriate delivery is required. Any adaptation will depend on the available resources that an individual or, via collaboration, community can command. As such, this contextualisation can assist in better identifying and responding

to potential barriers and constraints and to optimise the incorporation of available local resources in programme design.

The immediate context that information-based DRR programming is introduced into is often the community. Community in this sense is interpreted broadly and may equally apply to a geographically bound rural village setting or to a school as a community of teaching-learning practice. As schools are, invariably, institutions situated within, and central to, communities it is not considered overly helpful in practice to draw arbitrary lines between school-based and community-based DRR interventions. The two, and the issues that both give rise to, are interconnected and should ideally be addressed in unison. This consideration becomes all the more pertinent in light of prevailing community attitudes and practices towards people with disability. For example, focusing on school-based DRR to target children with disability will be of limited value if stigma, barriers to social interaction and impartial or questionable existing knowledge bases give rise to practices and attitudes that prevent children with disability from attending school in the first instance.

Working with children with disability outside of school also requires the engagement of household members, neighbours and the wider community. Without establishing broader understandings and collaboration within communities many children with disability will simply not receive the assistance they require in the event of a disaster. A major challenge to disability-inclusive DRR programming is often the lack of data on people with disability and the difficulties of identifying what is often a hidden population. The incorporation of simple research methods such as snow-ball sampling, and combined with the Washington Group questions, are useful in this regard. Work in Indonesia also highlighted that established disaster related actors at the local and community levels, such as first response groups, are often not the most effective groups to deliver DRR information to children with disability or to assist in their identification. Individuals from these groups are often male, young and geographically mobile. Members of women's groups were found, in comparison, to be consistently more enthusiastic and engaged over time. The availability of potential resources at the community level that can over time effectively deliver information, therefore, requires careful consideration.

Establishing working linkages between women's groups and DPOs at the sub-district or district levels proved effective in raising awareness within communities and for maximising the potential for the sustainability of disability-inclusive DRR initiatives at the community level. For many families with children with disability outside of school, simply meeting another person with disability, who was in a position to provide information in collaboration with non-disabled colleagues, could have profound impacts. The idea, for some parents, that their child may also be able to interact and contribute to society was not something they had previously given much serious thought. Such an idea, simply, appeared too distant and the prevailing community attitudes concerning disability often became fatalistically adopted within households. Conversely, it was found that these attitudes were often not as entrenched as they might at first appear. During a DIPECHO

funded DRR project targeting children with disability outside of school, 70 children were later placed in schools. These initiatives came from community members themselves. The broader benefits to society as a whole of ensuring that people with disability participate in, and contribute to, DRR programming cannot be overstated. The same naturally applies to all development programming.

A further resource issue that was encountered within schools concerned improving physical access. Minor physical infrastructure improvements can, for example, contribute to removing significant barriers to independent evacuation. Although this was, again, approached from a DRR perspective, building ramps for evacuation purposes clearly has broader accessibility benefits within schools. However, the building of ramps was found to be problematic. Firstly, ramps need to be built to earthquake resistant standards. This, in turn, assumes that the school building that ramps are to be attached to is built to similar standards. Constructing ramps to earthquake resistant standards is currently often outside the financial scope of school budgets. Building to earthquake resistant standards also requires a skill set that is not always available locally. While transferring such skills to local builders is an effective medium for raising both awareness on DRR and also inclusion, there was a concern that this would be difficult for schools and administrators to replicate over the short to medium term. The concern that an earthquake could strike at any time urged timely adaptation.

A further consideration was that to ensure an angle that is accessible to wheelchair users, ramps often have to extend considerable lengths into the school yard depending on the height of the building. As such, considerable resistance to building ramps was encountered in some schools. Schools in Indonesia are generally centred around a common school yard which is surrounded by classrooms in a U-shape on three sides. Resistance to ramps was found to a particular concern in inclusive schools where there was a trade-off between establishing access and maintaining the space available for outside activities. Ramps would encroach on and limit such available space. The practice of pupils moving classrooms each year also meant that, ideally, multiple ramps should be built for evacuation purposes. The solution, again, was relatively simple. Instead of building ramps schools and community builders were assisted to use concrete blocks to make the whole school yard into a concave dished-shape. This had the advantages of preserving the space available for outside activities in the school yard while making all rooms accessible. As such, the potential of independent evacuation (or action) was increased from all classrooms. This approach was also considerably cheaper and local builders were comfortable working with this medium with a minimum of additional training.

The final factor for consideration is the broader context, or environment, that the community and the IA model are situated within. This not only includes the hazards that a community may face, but also the availability of relevant institutions; the policy environment; existing infrastructure; availability of technology and the resources available. The latter is evidently linked to the general health of the overall economy and the level of equity of distribution of the economy's benefits. Although, Indonesia is now ranked as a middle-income country (UNDP 2013) there are large regional disparities and increasing polarisation between rich and

poor. The availability of resources at the sub-national level is also constrained by institutional constraints with on-going administrative adjustments following the introduction of regional autonomy. While there has been significant progress at the national policy level in terms of DRR policy, there remain significant challenges concerning the implementation of national policy at the district levels.

At the time of writing, it seems reasonable to say that the broader policy and institutional environment is becoming more conducive to the implementation of disability-inclusive DRR. In fact, at the policy level it is becoming recognised as a necessity. As noted, Indonesia has recently ratified the CRPD with Article 11 addressing risk. Regional governments also adopted the Incheon Strategy to 'Make the Right Real' for Persons with Disabilities in the Asia-Pacific in 2012 (UNESCAP 2012b). Goal 7 of the Incheon Strategy is specifically concerned with disability-inclusive disaster risk management. On the basis of the success of the Disability-inclusive DRR Network (www.didrrm.net) and partners, the declaration of the 5th Asian Ministerial Conference on DRR held in Yogyakarta, Indonesia in 2012 was the most disability-inclusive to date. This initiative, along with the work of other concerned actors and governments, contributed to the Chair's Summary of the 4th Session on the Global Platform mentioning disability for the first time (UNISDR 2013). Through looking at the wider context in which DRR interventions are placed it is not only possible to identify potential constraints and opportunities for making DRR more inclusive, practitioners must increasingly face an uncomfortable conclusion. That is, if people with disability are not included in DRR programming, such programmes we may well be falling behind the game.

12.8 Conclusions

This paper has described how the DRR community, as a collective whole, has yet to adequately engage with disability within its work and in spite of the growing evidence base that people with disability are at increased risk. This, it has been argued, is a serious short-coming if we are concerned, as we are, with issues of reducing risk and if we are concerned, as we maintain, with issues of participation. The paper has also suggested possible reasons for the lack of engagement with people with disability in DRR practice to date. These reasons relate to conceptions that addressing disability involves particular technical expertise, which implies expense, and may be considered beyond the institutional capacity of organisations. However, if organisations are, for example, working on gender issues or age related issues, and do not include women with disability, children with disability or elderly people with disability, the questioning of such a selective and partial approach appears justified. Within a DRR context, it has been argued that such selective participation undermines the basic premise of DRR as, inadvertently or not, those most at risk are ignored.

In response to the above, this paper has outlined experiences of implementation and suggested a model for practically considering inclusion within DRR. A simple

alternative framework for addressing disability within DRR as an information issue, the IA model, has been suggested as a relevant point of entry towards achieving the participation of people with disability within DRR. Although, examples from school-based DRR have been emphasised, it has also been noted how this approach maintains relevance within CBDRR actions in general. The IA model forms the foundation of this approach. As DRR practitioners ourselves, we have found this a useful place to begin and to guide teams, focus attention and to develop capacities. The paper has also considered how the IA model may be placed within a systems approach to enrich our overall understanding and to provide the necessary context for effective design and planning. Context inevitably gives rise to complexity. Such complexity is helpful in considering issues such as, for example; sustainability, the establishment of linkages and for identifying resources. However, readers are urged to return to the two simple IA model questions that lie at the heart of this system. Can everyone access your DRR information and can they then act on it either independently or with assistance? This is a point from which to begin.

The best resources to assist in answering these two simple questions, and of incorporating them into programme design and implementation, are locally available. That is, people with disability themselves. Viewed in this light, it is hard to justify not striving to make DRR more disability-inclusive. Inclusion is, if nothing else, a process. To embark on this process simply requires a willingness to begin.

References

- CBM (2013) Disability-inclusive disaster risk management: voices from the field and good practices. http://www.cbm.org/article/downloads/54741/Disability_Inclusive_Disaster_Risk_Management.pdf. Accessed 26 Oct 2013
- Chambers R (1997) *Whose reality counts? Putting the first last*. Intermediate Technology Publications, London
- Cooke B, Kothari U (2001) *Participation: the new tyranny?* Zed Books, London
- Directorate General of Special Education and Special Services (2011) *Buku kerja 2011 DIT PPKLK DIKDAS*. Kementerian Pendidikan Nasional, Jakarta
- Handicap International (2009) *Mainstreaming disability into disaster risk reduction: a training manual*. http://www.preventionweb.net/files/24772_18591hitrainingmanualenglish1.pdf. Accessed 26 Oct 2013
- Heeks R (1999) *Information and communication technologies, poverty and development*. Development informatics, Working paper 5. University of Manchester. http://www.sed.manchester.ac.uk/idpm/research/publications/wp/di/documents/di_wp05.pdf. Accessed 5 March 2013
- ISDR (2005) *Hyogo Framework for Action 2005–2015: building the resilience of nations and communities to disasters*. http://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf. Accessed 6 July 2013
- ISDR (2009) *Chair's summary second session of the global platform for disaster risk reduction, 16–19 June 2009*. http://www.preventionweb.net/files/10750_GP09ChairsSummary.pdf. Accessed 6 July 2013
- ISDR (2013) *Chair's summary fourth session of the global platform for disaster risk reduction, 21–23 May 2013*. http://www.preventionweb.net/files/33306_finalchairssummaryoffourthsessionof.pdf. Accessed 6 July 2013

- Landry MD (2010) Physical therapists in post-earthquake Haiti: seeking a balance between humanitarian service and research. *Phys Ther* 90(7):974–976. <http://ptjournal.apta.org/content/90/7/974.full.pdf+html>. Accessed 26 Oct 2013
- Ministry of Education and Culture (2012) Kurikulum 2013. Kementerian Pendidikan dan Kebudayaan, Republik Indonesia, Jakarta
- Stapleton DC, Bonnie L, O'Day G, Livermore A, Imparto AJ (2006) Dismantling the poverty trap: disability policy for the twenty-first century. *Milbank Q* 84(4):701–732
- Sudaryo MK, Besral, Endarti AT, Rivany R, Phalkey R, Marx M, Guha-Sapir D (2012) Injury, disability and quality of life after the 2009 earthquake in Padang, Indonesia: a prospective cohort study of adult survivors. *Global Health Action* 2012(5):1–11
- Twigg J (2002) Lessons from disaster preparedness. In: International conference on climate change and disaster preparedness, 26–28 June 2002. The Hague, Netherlands
- UN (2000) Millennium project; goals, targets and indicators. <http://www.unmillenniumproject.org/goals/gti.htm>. Accessed 26 Oct 2013
- UN (2006) Convention on the rights of persons with disabilities and optional protocol. <http://www.un.org/disabilities/convention/conventionfull.shtml>. Accessed 6 July 2013
- UNDP (2013) Human development report 2013 the rise of THE SOUTH: HUMAN PROGRESS IN a diverse world. http://hdr.undp.org/en/media/HDR_2013_EN_complete.pdf. Accessed 6 July 2013
- UNESCAP (2012a) Disability at a glance: strengthening the evidence base in Asia and the Pacific. <http://www.unescap.org/sdd/publications/DG2012/SDD-Disability-Glance-2012.pdf>. Accessed 6 July 2013
- UNESCAP (2012b) Incheon strategy to 'make the right real' for persons with disabilities in Asia and the Pacific. <http://www.unescapsdd.org/disability/publication/incheon-strategy-%E2%80%9Cmake-right-real%E2%80%9D-persons-disabilities-asia-and-pacific>. Accessed 6 July 2013
- UNSPIDER (2013) UN family agrees on plan for disaster risk reduction, 8 March 2013. <http://un-spider.org/about-us/news/en/6537/2013-03-08t142100/un-family-agrees-plan-disaster-risk-reduction>. Accessed 6 July 2013
- Venton CC, Venton P (2004) Disaster preparedness programmes in India: a cost benefit analysis. Humanitarian Practice Network. http://www.preventionweb.net/files/1068_networkpaper049.pdf. Accessed 26 Oct 2013
- Vorhies F (2012) The economics of investing in disaster risk reduction. United Nations Strategy for Disaster Reduction Working Paper. <http://www.preventionweb.net/posthfa/documents/dreconomicsworkingpaperfinal.pdf>. Accessed 26 Oct 2013
- Washington Group on Disability Statistics (2010a) Statement of rationale for the Washington Group general measure on disability. http://www.cdc.gov/nchs/washington_group/wg_ratio_nale.htm. Accessed 6 July 2013
- Washington Group on Disability Statistics (2010b) Census questions on disability endorsed by the Washington Group. http://www.cdc.gov/nchs/data/washington_group/WG_Short_Measure_on_Disability.pdf. Accessed 6 July 2013
- WHO, World Bank (2011) World report on disability. http://www.who.int/disabilities/world_report/2011/en/index.html. Accessed 6 July 2013

Chapter 13

Community-Based Response and Recovery: Role of Civil Societies

Takako Izumi and Rajib Shaw

Abstract Community-based approach can contribute to addressing the root cause of vulnerability and to making sustainable the community initiatives that help strengthen disaster resilience. The definition of disaster resilience has been studied from a number of viewpoints and no single definition is accepted. In addition to the traditional definition that understands resilience as the capacity and capability to absorb and recover from some shocks, to maintain function and to return to pre-disturbance state, it is crucial to see it as process rather than outcome that includes the aspects of advancing the state through learning and adaptation that often requires the change and innovation. By understanding resilience as process, more attentions to the importance of disaster preparedness and mitigation that require responding effectively and recovering from shocks quickly will increase and the DRR capacity will be enhanced. CSOs can play an important role to develop a programme of the community-based disaster response and recovery especially combining and linking more than two disaster management phases such as response, recovery and mitigation, or recovery, mitigation and preparedness, and eventually to strengthen the disaster resilience of community, city and country.

Keywords Community-based • Disaster management • Disaster response and recovery • Resilience

T. Izumi

International Research Institute of Disaster Science, Tohoku University, Sendai, Japan
e-mail: izumi@irides.tohoku.ac.jp

R. Shaw (✉)

Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: shaw.rajib.5u@kyoto-u.ac.jp

13.1 Introduction

“Community-based” approach has been considered as most effective and critical as a common approach to build resilient communities. According to Heijmans (2009), towards the end of the 1990s, the approach became an alternative to top-down approaches in disaster management. With this approach, people’s awareness of disaster risks was raised by using intimate local knowledge, and pre-existing local capacities and institutions were well-recognized. Therefore, it became possible to improve the position of impoverished, vulnerable, disaster-affected people by addressing the root cause of their vulnerability, and by recognizing their fundamental right to participate in decisions that impact on their lives.

The approach has been initially implemented in the developing world by NGOs followed by international organizations like the International Federations of Red Cross and Red Crescent (Benson et al. 2001; Maceda et al. 2009). The approach is now increasingly promoted among local governments in order to strengthen the links between the official disaster management system and community-based organizations (Kafle and Murshed 2006). The effectiveness and reasons of promoting the community participation and involvement is not only for adopting local knowledge and addressing the root causes of their vulnerability. The key aspect of community involvement is the sustainability of community level initiatives. A number of external agencies such as governments, NGOs often initiate and implement community level programmes, however, such initiatives are discontinued once the external support is ended. Unless the disaster risk management efforts are sustainable at individual and community level, it would be difficult to reduce the vulnerability and losses. It is therefore important to involve people in decision making on policies and strategies that should be followed for their development in the community (Shaw and Okazaki 2004; Kafle and Murshed 2006).

The activities of disaster response and recovery are parts of disaster risk management. Disaster risk management or disaster management aims to reduce, or avoid the potential losses from hazards, assure prompt and appropriate assistance to affected people, and achieve rapid and effective recovery (Warfield 2008). It can be a framework for the systematic application of management policies, procedures and practices to the tasks of identifying, analyzing, evaluating treating and monitoring risk (Pearce 2003). Therefore, it has to include all activities, programmes, and measures which can be taken up before, during and after a disaster with the purpose to void a disaster, reduce its impact or recover from it losses (Khan et al. 2008) and involves a cycle which should consist of an organized effort to mitigate against, prepare for, respond to, and recovery from a disaster (Mansourian et al. 2006; Montoya 2003; Janssen et al. 2010). The four disaster management phases do not always, or even generally, occur in isolation or in this precise order. Often phases of the cycle overlap and the length of each phase greatly depends on the severity of the disaster.

- Mitigation: Activities which reduce vulnerabilities of society to the impacts of disasters and eliminate or reduce the change or the effects of a disaster. Example:

risk assessment, building codes and zoning, vulnerability analysis, public education.

- Preparedness: Activities and planning to respond effectively in case an emergency or disaster occurs and to increase resource available for response. Examples: preparedness plans, emergency exercises/training; warning systems.
- Response: Activities necessary to address the immediate and short-term effects of a disaster, which focus primarily on the actions to save lives, to protect property and to meet basic human needs. Examples: search and rescue, emergency relief.
- Recovery: Activities that bring communities back to normal and they should be toward meeting mitigation and preparedness needs. Examples: temporary housing, grants; medical care (Mansourian et al. 2006; Montoya 2003).

This chapter focuses mainly on the community-based disaster response and recovery that are the activities implemented after a disaster strikes as well as the importance of the definition and measurement of disaster resilience. It is extremely important to understand what resilient means to evaluate the capacity and the level of resilience in each community, city and country. Based on the measurement, it is possible to develop a programme and strategy to fulfill the needs and gaps that exist. The case studies of the community-based projects by CSOs in Thailand and Myanmar are shared to highlight the crucial roles of CSOs in strengthening the community resilience.

13.2 Resilience to Disasters

Different aspects of the concept of resilience are currently being studied from a number of viewpoints (Zobel 2011). The concept of resilience is both multidisciplinary and multifaceted. The notion of resilience is firmly grounded within ecology and the original research relating to ecosystem stability was done by Holling (Bhamra et al. 2011). Holling (1973) first used the term resilience to describe a measure of the persistence of systems and their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables.

Like vulnerability, multiple definitions of resilience exist within the literature, with no broadly accepted single definition (Klein et al. 2003; Manyena 2006). All the possible definitions provided from the 1990s to nowadays have been evaluated by various scholars. From these numerous definitions reviewed earlier, in many cases, resilience is defined as “the ability” or “the capacity” to recover from some shocks, insult or disturbance (Chimellaro et al. 2010). Fundamentally, the concept of resilience is closely related with the capability and ability of an element and a system to absorb the occurrence of a hazardous event and shocks, and still maintain function and to return to a pre-disturbance state after a disruption (Gunderson and Holling 2002; Berkes et al. 2003; Djalante and Thomalla 2010; Bhamra et al. 2011).

The definitions also reflect how the subject of interest is identified in the “Domain” such as physical, ecological system, community, responds to a crisis (Plodinec 2009).

In addition to the popular definitions of resilience as ability and capacity, there are other perspectives and views added to examine the term of resilience including focusing on the capacity for renewal, re-organization and development that use the disaster experience as a window of opportunity, eventually that leads to developing a new system and mechanism beyond the capacity of return to the original function (Gunderson and Holling 2002; Berkes et al. 2003)

13.2.1 Process or Outcome

One of the discussions is whether to see resilience as “Process” or “Outcome”. Determining whether resilience is an outcome or a process is an important step toward its application to disaster reduction (Cutter et al. 2008). Resilience has been generally defined in two broad ways: as a desired outcome or as a process leading to a desired outcome (Kaplan 1999). For example, resilience is considered an outcome when defined as the ability to bounce back or cope with a hazard event and is imbedded within vulnerability, and the capacity to avoid, reduce, minimize impacts of disaster and recover quickly and effectively (Manyena 2006; Djalante and Thomalla 2010). McEntire et al. (2002) addresses the concern when resilience is considered as outcome. Disaster resilience is arguably about people’s capacity far beyond the minimum of being able to cope. The danger of viewing disaster resilience as an outcome is the tendency to reinforce the traditional practice of disaster management which takes a reactive stance. Activities such as community capacity building, mitigation and emergency preparedness planning, which impact greatly on response and recovery operations, may be neglected.

Manyena (2006) argues that a gradual refinement in the way of conceptualization of disaster resilience: from more outcome oriented to more process oriented. Resilience is considered a process when it is defined to be the ability to learn to mitigate future disasters (Djalante and Thomalla 2010). Process-related resilience is defined more in terms of continual learning and taking responsibility for making better decisions to improve the capacity to handle hazards which includes further strengthening the capacity of disaster management (Cutter et al. 2008; Manyena 2006). In short, the concept as process has promoted a new way focusing on building something up rather than just reducing something. Disaster resilience activities can lead to actions such as enhancing community coping capacity and livelihoods and put further emphasis on the human role in disasters (Manyena 2006). Furthermore, by understanding resilience as a process, people will understand that the activities in the pre-disaster phase are extremely important, and never stop to make efforts to increase the capacity of disaster risk management even if the disaster damage by the shocks was minimized after one disaster event. Resilience can develop an incentive and motivation to further scale up their capacity and

learning ability as well as not to satisfy with the current level of capacity leaving an idea and consideration that there may be a possibility of occurrence of larger scale of disasters and they need to prepare for that.

13.2.2 How to Measure and Evaluate Resilience

Despite its popularity and frequent use, it is not clear how this concept should be assessed, measured and/or mapped. The main challenge is how to define and develop indicators that can adequately measure this concept or how this concept should be mapped and what unit of analysis should be used (Mayunga 2007; Cutter et al. 2008). It is because of the multi-dimensional nature of resilience and its different component parts (Cumming et al. 2005).

The majority of assessment techniques is quantitative and use selected indicators or variables as proxies since it is often difficult to quantify resilience in absolute terms without any external reference with which to validate the calculations (Schneiderbauer and Ehrlich 2006). The usefulness of quantitative indicators for reducing complexity, measuring progress, mapping and setting priorities makes them an important tool for decision makers (Cutter et al. 2008). Cutter et al. (2008) identified six dimensions to assess and measure the community resilience, and Norris et al. (2008) did four (Table 13.1).

However, despite these varied conceptualizations for describing and assessing resilience, these metaphorical and theoretical models have not been well progressed to the operational stages where they effectively measure or monitor resilience at the local level (Cutter et al. 2008).

In fact, a model of assessing the climate disaster reliance and its study has already existed, which is called that the Climate Disaster Resilience Index (CDRI). Joerin and Shaw (2011) discusses that it aimed to measure the existing level of climate disaster resilience of the targeted areas using the index developed considering five resilience-based dimensions: Natural, Physical, Social, Economic and Institutional (Table 13.2).

The first CDRI study was conducted in 15 cities in Asia based on the questionnaire forms. CDRI was developed not only to be a tool to measure the condition of a city at a certain point of time, but it also has the wider ambition to lead communities and local governments onto a path of sustainable development that ought to increase the overall resilience level of their city to climate-related disasters. As a result, the CDRI tool shall serve as an urban planning tool depicting the sectors within an urban context that area more or less resilient.

As the challenges and potentials of the CDRI, it is addressed that although the CDRI covers a large variety of aspects that represent either vulnerability, or resilience, or both of a parameter, the large number of variables is posing a great challenge for local authorities to answer the questionnaire adequately. Since local authorities are the target group for filling up the CDRI questionnaire, the CDRI depends on data and views coming from local authorities that may not sufficiently

Table 13.1 Community resilience indicators

Dimensions (Cutter et al.)	Candidate variables (Cutter et al.)	Dimensions (Norris)	Candidate variables (Norris)
Economic	<ul style="list-style-type: none"> – Property loss, effects of business disruption 	Economic development	<ul style="list-style-type: none"> – Fairness of risk and vulnerability of hazards – Level and diversity of economic resources – Equity of resource distribution
Social	<ul style="list-style-type: none"> – Improvements in communications, risk awareness and preparedness – Development and implementation of disaster plans, purchase of insurance, sharing the information sharing including early warning – Access to resources 	Social capital	<ul style="list-style-type: none"> – Received social support – Perceived social support – Social embeddedness – Organizational linkage and cooperation – Citizen participation, leadership and roles – Attached to place – Sense of community
Ecological	<ul style="list-style-type: none"> – Biodiversity, redundancies, response diversity, spatiality, governance and management plans 	Information and Communication	<ul style="list-style-type: none"> – Narratives – Responsible media – Skills and infrastructure – Trusted sources of information
Community competence	<ul style="list-style-type: none"> – How well the community functions pre- and post-disaster including a sense of community and ideals as well as attachment to place and to desire to preserve pre-disaster cultural norms and icons. 	Community competence	<ul style="list-style-type: none"> – Community action, Critical reflection and problems solving skills – Flexibility and creativity – Collective efficacy and empowerment – Political partnerships
Infrastructure	<ul style="list-style-type: none"> – Number of pipelines, road miles, dependence and interdependence on other infrastructure 		
Institutional/organizational	<ul style="list-style-type: none"> – Number of members, communications technology, number of emergency assets – Organizational structure, capacity, leadership, training and experiences 		

Table 13.2 List of variables considered in CDRI five dimensions

Dimensions	Parameters/indicators
Physical	Electricity, water, sanitation and solid waste disposal, accessibility of roads, housing and land use
Social	Population, health, education and awareness, social capital, community preparedness during a disaster
Economic	Income, employment, household assets, finance and savings, budget and subsidy
Institutional	Mainstreaming of DRR and CCA, effectiveness of zone's crisis management framework, knowledge dissemination and management, institutional collaboration with other organizations and stakeholders, good governance
Natural	Intensity/severity of natural hazards, frequency of natural hazards, ecosystem services, land use in natural terms, environmental policies

Source: Joerin and Shaw (2011)

reflect communities' view on the urban areas condition. Also, the CDRI approach is that only hydro-meteorological hazards or climate-related hazards are reflected (Joerin and Shaw 2011). In case of measuring the resilience, as Joerin and Shaw indicated, it will also depend on who will answer the questionnaire and interview if it is done based on these hearing of voices from stakeholders. The same challenge is seen in the review of the Hyogo Framework for Action (HFA). The national report scores the progress of HFA at national level higher than the progress evaluated at local level. While the CDRI may have some challenges and limitations, it became a first step of showing the possibility of measuring the resilience and identifying the issue and setting the targets and goals to achieve the resilience.

In order to understand the current level of implementation of the selected actions and how important the roles are of the involved key identified stakeholders (local government, communities, academia, private organizations and CSOs), Joerin et al. (2012) conducted another survey to follow up with the CDRI and revealed the importance of different actors in the implementation of selected action measures which have the potential to enhance the disaster resilience of communities. Based on the survey result, it was identified that CSOs are expected to take particular responsibility in actions about developing sustainable urban development strategies and awareness campaigns about the threats of climate change. They should also play a role in provisions which are traditionally not or only partially delivered by the local government, such as affordable micro-credits, development of community health centers or post-disaster support (Joerin et al. 2012).

The focuses of Table 13.1 are on measuring the community resilience, and the ones of Table 13.2 is on measuring the climate disaster resilience, therefore, the dimensions to measure each of the targeted areas are different depending on its domain and focus. In order to measure the level and progress of resilience, it is crucial to be carefully examined and set the specific indicators and dimensions on which part of domains/areas/societies of resilience to be evaluated.

Table 13.3 Critical themes to strengthening community resilience

Norris et al. (2008)	IFRC (2012)
Community must develop economic resources, reduce risk and resource inequities, and attend to their areas of greatest social vulnerability	Meeting basic needs (food, water, shelter, health) is a prerequisite to building resilient communities
Must be engaged in every step of the mitigation process	Building assets (physical, natural, financial, social, political and human) are seen as critical buffers to withstand shocks and stresses
Pre-existing organizational networks and relationships are the key to rapidly mobilizing emergency and ongoing support services for disaster survivors	Ensuring the quality of assets and resources which determines the safety and resilience of a community
Interventions are needed that boost and protect naturally occurring social supports in the aftermath of disasters	Capacity of the community to adapt to change, self-organize, act and learn from experience, factors which ultimately enable communities to mobilize their asset and resources
Must exercise flexibility and focus on building effective and trusted information and communication resources that function in the face of unknowns	

13.2.3 Community Resilience

Plodinec (2009) examined 46 definitions of resilience published from 1973 to 2008 and identified that the definitions vary depending on a domain. As such, the community resilience has its particular definition. According to Plodinec (2009), Community resilience is the capability to anticipate risk, limit impact, and bounce back rapidly through survival, adaptability, evolution, and growth in the face of turbulent change. It is the key that the definition of community resilience clearly includes the aspect of “evolution and growth” aiming to scale-up as well as “anticipating risk” not only to absorb and cope with the shocks, and to respond to and recover from the damage. Community resilience to natural disasters includes not only a system’s capacity to return to the state that existed before the disturbance, but also to advance the state through learning and adaptation (Cutter et al. 2008; Adger et al. 2005; Klein et al. 2003; Folk 2006).

In order to be a resilient community, what types of elements are required? The International Federation of Red Cross and Red Crescent Societies (IFRC) and Norris et al. (2008) identified the themes critical to strengthening community resilience (Table 13.3).

The themes of IFRC highlights the importance of rather physical preparation and inherent community resilient characteristic while the ones of Norris addresses the importance and needs of the mechanism and systems based on the community-

based approach, strong communications and networks among the communities as well as securing social supports in order to achieve the community resilience.

In addition, IFRC (2012) identified six characteristics of a safe and resilient community. A safe and resilient community:

1. Is knowledgeable and healthy. It has the ability to assess, manage, and monitor its risks. It can learn new skills and build on past experiences.
2. Is organized. It has the capacity to identify problems, establish priorities and act.
3. Is connected. It has relationships with external actors (family friends, faith groups, government) who provide a wider supportive environment, and supply goods and services when needed.
4. Has infrastructure and services. It has strong housing, transport, power, water, and sanitation systems. It has the ability to maintain, repair and renovate them.
5. Has economic opportunities. It has a diverse range of employment opportunities income and financial services. It is flexible, resourceful and has the capacity to accept uncertainty and respond (proactively) to change.
6. Can manage its natural assets. It recognizes their value and has the ability to protect, enhance and maintain them.

No community is ever free of risks or absolutely resilient against all hazards. Building resilience is therefore an ongoing process, rather than an outcome. A safe and resilient community is the result of various actions and interventions for many years, involving multiple stakeholders across multiple sectors. Community-based programmes are one component of the process to develop community resilience. Greater impact can be achieved if the involvement and leadership of communities are strengthened in overall disaster management programmes. In the next sections, the case studies of the community-based response and recovery programmes in Thailand and in Myanmar that contributed to enhancing the community-resilient and sustainability.

13.3 Community-Based Disaster Response

It cannot be forgotten that communities already have a degree of resilience including knowledge and skills on disaster management, leadership, networks and community structure which can be defined in terms of their primary survival values or assets. The goal of any disaster resilience programme will be to utilize the existing resilience and enhance the fundamental values assets and resources that can be applied to the process of adapting to adverse circumstances (Manyena 2006). Even in case of disaster response, it is crucial to understand the existing community resilience and to provide assistance to enhance and support their existing capacity if possible, not only to consider a short-term assistance but rather a longer-term assistance.



Fig. 13.1 Flood situations in Bangkok



Fig. 13.2 Flood situation in Singburi province

The floods in Thailand in 2011 caused unprecedented damage. Given the important positions of the Thailand in the global supply chains, the disaster caused significant disruption both domestically and worldwide. Not only that, it impacted people's lives and the social, health and environmental aspects of the country (Fig. 13.1). The monsoons brought continuous heavy rains causing floods in the Central Region, which experienced the worst floods ever. In particular, Chinat and Singburi provinces (Fig. 13.2) were severely impacted located in the Central Regions. There has been extensive damage to houses, residential properties and agricultural lands. In response to the sudden and acute flooding situation, local and national government agencies as well as international organizations, local and international NGOs, community-based organizations joined the response efforts to provide the effective and efficient assistance.



Fig. 13.3 Meeting with the communities and CSOs

One of the national NGOs in Thailand “Rural Elderly Entrepreneurship Development Association” (REEDA) initiated their relief activities in Chinat and Singburi provinces in cooperation with the Thai Red Cross and MERCY Malaysia. The assessment team was sent to these two provinces jointly by REEDA, the Thai Red Cross and MERCY Malaysia to identify the immediate needs and the potential assistance that they could provide. As the result of the assessment, it was found out that lack of drinking water was a great deal of concerns among the communities. The communities from Chinat and Singburi provinces participated in the consultations and meetings during the response stage to discuss the most urgent needs and the best potential support by REEDA and MERCY Malaysia (Fig. 13.3). The highlight of the discussion among the communities was whether it was the best way to receive the drinking bottled water or to fix the damaged water filtering system for a longer-term use. The decision by the communities was to fix the water filtering system that might take a few months, not to be provided the bottled water immediately which would have been able to solve the major concern of lack of drinking water and reduce their suffering from making a long trip by boat every day to receive the bottled water provided as emergency supply by the military. The water filtration system project was a sustainable solution that provided high-impact results directly affecting every person in the community. It was also an environmentally low-impact solution that requires low energy usage. It was a sustainable alternative to providing drinking water through bottles. In addition, the usage and maintenance can be conducted by the layman. Consequently, the water filtration system managed to bridge emergency assistance and long-term development that promotes independence, self-sufficiency and empowerment among the flood-affected population.

IFRC (2012) addresses that one of the characteristics of a safe and resilient community is to be knowledgeable and healthy which includes the ability to assess, manage, and monitor its risks and to be able to learn new skills and build on past experiences. The communities in Chinat and Singburi had been already equipped by such knowledge, therefore, they were able to make the crucial decision to enhance their capacity considering and preparing for the next disaster. The communities had understood to receive the clean water through the filtering system would be more effective to maintain their health condition for longer-term. Although it was still the response stage, the communities paid attentions to sustainability and chose the way to enhance their resilience. It was also important for CSOs to include the communities in the discussion process, listen to their voices and needs and incorporate their decision into the implementation.

The following approaches taken by REEDA and MERCY Malaysia helped the communities to make such decision:

1. To give the authority to the communities to make a choice and decision and respect the ownership of the communities through the entire process. In order to do that, communities need to have a certain level of knowledge on sustainability and the importance of their participation and involvement in the process.
2. To provide a technical advice for the decision making.
3. To build the trust between the communities and CSOs. This requires socialization among them even before a disaster strikes. Therefore, it is crucial to involve a national and local CSOs and groups into the community consultations and meetings.

13.4 Community-Based Disaster Recovery

The above case study in Thailand showed that it is possible even during the response stage to provide a sustainable assistance not only distributing relief items for emergency needs through working together with local organizations and incorporating the voices from the communities into a decision making process. As stated earlier in this chapter, all the disaster management phases overlap quite often. Considering resilience is a process, the activities of each disaster management phase are important to develop the resilience and consider as the windows of opportunities for resilience. In this context, it is ideal for the recovery stage if it includes the elements of disaster preparedness and mitigation. There are many case studies of the combination of the projects of disaster recovery and mitigation/preparedness by CSOs.

The health sector is a major part of recovery. The recovery phase can be used to strengthen existing health systems to manage emergencies and to enhance the capacity of the medical personnel and hospital staff. In addition, a comprehensive recovery plan for the health facility will encompass not only disaster resilience of



Fig. 13.4 Health center with cyclone-proof structure by MERCY Malaysia

buildings, but also focus on emergency preparedness at the level of the health facility, including response planning, training of health facility staff and conducting simulations of the plans (WHO 2010).

Cyclone Nargis struck Myanmar and left tremendous casualties and destruction claiming the lives of more than 22,000 people. An estimated 2.4 million people were affected by the cyclone. Thirty-seven townships in Ayerayawady and Yangon Divisions were badly damaged by the cyclone. The people in the affected region lived in poor conditions with hardly any access to proper health care, and the access to clean water, proper hygiene and sanitation and facilities were also limited.

MERCY Malaysia is an international NGO that has a focus on medical assistance and sustainable development. MERCY Malaysia committed to the relief work in providing emergency health services and later at the recovery stage in reconstructing damaged health facilities, in developing the capacity of health workers, and in raising the awareness of hygiene and health. These activities were initiated during the recovery stage, however, the ultimate objectives of most of these activities were to reduce the potential risks from future disasters. The activities mainly consisted of two components:

13.4.1 Reconstruction

MERCY Malaysia committed to construct 13 health facilities in the delta region. These include rural health centers and hospitals. The design of these hospitals and health centers are made cyclone-proof with extra safety measures including the design and construction of all buildings (Fig. 13.4). The key features of the structure include 16 mm reinforce steel bar for cyclone and earthquake resistance, stir-up at different angle to increased resistant, semi-slab roof around the building which allow people to escape during flash flood and rain water collection (Government of Myanmar 2011). It can be used as a cyclone shelter in the event.



Fig. 13.5 Training for health workers and medical personnel on hospital preparedness



Fig. 13.6 Hygiene awareness and education for children

13.4.2 Capacity Development of Hospital Staff, Health Workers and Communities for Health and Hygiene Promotion

Hospital and community preparedness programmes were also included in a part of the project. One of the activities was the training for the Myanmar Medical Association on hospital preparedness (Fig. 13.5). In consultation with the Association and the communities, it was identified that the capacity development of the health workers and the hospital staff and the hygiene education among the communities are important associated with the hospital reconstruction. The training included a combination of lecture, activities, group discussions and presentations on what disaster risk reduction is and how it can be achieved through hospital preparedness as well as on the development of hospital preparedness and response plan and the guide of simulation exercise.

For the community members, the hygiene awareness and education were conducted at the townships, especially for children (Fig. 13.6). With the proper knowledge on hygiene, the frequency for the community members to go to health facilities and hospitals is reduced and their regular health is protected.

Consequently, to maintain a good health leads to enhance disaster resilience by limiting the impact and damage on their health and bouncing back rapidly through survival adaptability in the face of disasters.

The recovery project by MERCY Malaysia did not focus only on the recovery of infrastructure which were the buildings of health facilities, but focused also on how to develop the good health condition of the communities in order to adapt and be bounced back from the future disasters. It also included the capacity development of the health workers and the medical personnel who need to recognize the importance of hospital preparedness to continue providing medical support and care even under emergencies. By such recovery work that integrates the elements of disaster preparedness and mitigation, it is possible to strengthen the disaster management capacity as a whole and make the communities more resilient to reduce the damage if they are hit by another disaster in the future.

13.5 Conclusions

Over the past 10 years, work on disasters has increasingly focused on the capacity of affected communities to recover with little or no external assistance. This requires a stronger focus on risk reduction and humanitarian development work that put an emphasis on resilience rather than just on need or vulnerability (IFRC 2004). To understand resilience as process is extremely critical. McEntire et al. (2002) addresses that if the crucial element is overlooked, there may be the tendency to reinforce the traditional practice of disaster management which takes a reactive stance and activities such as community capacity building, mitigation and emergency preparedness planning may be neglected. The communities may lose the opportunity to evolve and scale-up their capacity of disaster management.

Resilience is often used as an objective and a goal of disaster management, i.e., aiming to build a resilient community or a culture of resilience. The question is when the term of resilience is used in and for the countries that have strong DRR capacities such as Japan and the US or the countries that do not have any disaster management law, agencies and education though they are disaster-prone, do they have a vision of the same level of resilient societies and are their goals the same? If resilience is seen as an objective, in fact, the countries equipped with sufficient laws, education and systems should be considered that their level of resilience is already high and what their aiming for in disaster management is rather vague. However, resilience is not only that. Resilience as process is to scale up from the present condition despite the current level of capacity and status. Therefore, even the countries and cities considered sufficiently resilient are still aiming to be further resilient on their own measurement and scale. Unless the difference of outcome or process in resilience is understood, the usage of resilience still causes confusion easily and the question as above could be addressed.

Furthermore, as it is considered the level of resilience of each country varies, first of all, in order to understand the level of their progress in resilience and what

kind of objectives and activities are exactly planned in achieving their resilience, it is extremely critical to develop indicators that can measure this concept. Bhamra et al. (2011) emphasizes that there are few organizations that focus on the empirical methods such as case study a survey on how organizations can achieve degrees of resilience. The model of measuring the level of resilience has been already developed and studied in the Asian cities by Joerin and Shaw (2011). It proved the resilience can be measured if the targeted domain is very clear—community resilience, climate resilience, ecological resilience, or economical resilience etc and the specific indicators and variables are developed under the domain. The result of the survey and assessment could be different depending on which level is assessed and who answered to the questionnaires and interviews. It further requires the research and study on the evaluation and measurement of the level of resilience.

The community-based approach helps communities achieve disaster resilient. A safe and resilient community is the result of cumulative actions and interventions, involving various stakeholders operating across multiple sectors (IFRC 2012). What are the roles of CSOs in implementing the Community-based response and recovery? In order for CSOs to support these processes, it is suggested based on the case studies in Thailand and Myanmar, the following preparation is necessary:

1. To have broaden ideas and experiences for all the phases of disaster management—disaster response, recovery and disaster risk reduction, and make efforts to develop a program and project that can lead to the comprehensive and sustainable effects in close consultation with governments, local organizations and communities. It requires the capacity development of CSOs as well.
2. These holistic approach and works require strong cooperation, support from and coordination with various government agencies in charge of health, disaster management and also other line ministries such as education and public works as well as local organizations, therefore, the networking in advance would be extremely helpful.
3. To plan and implement the project and programme together with the communities to enable them to take an ownership of the programmes, and maintain the activities by the communities and ensure the sustainability, especially, the capacity development in various areas cannot be forgotten. All the communities have a different level of resilience, and CSOs would be in the best position to understand what it is and what are the gaps and missing from the existing capacity.
4. To be resilient often requires accepting the transformation and change if necessary and agreed through a learning process and lessons-learned. In addition to traditional and local knowledge and culture, a new idea and innovation have to be understood by the communities if it is proposed. It requires the technical knowledge and skills of CSOs and communication skills with the communities.

No community is free of disaster risks or absolutely resilient against all hazards, therefore, there is a meaning and value to keep advocating the concept of resilience widely in a broader context to make them continuous efforts aiming for one-step higher level of resilience. Whatever its focus is on response, recovery or risk

reduction, all the phases are linked and they can contribute to strengthen disaster resilience using the community-based approach. It is a crucial role of CSOs to be responsible for their own capacity in disaster management, to propose and implement the most suitable programmes to enhance the disaster management capacity of the communities and monitor their sustainability.

Acknowledgements Sincere appreciation goes to REEDA and MERCY Malaysia that have kindly provided me with the information on their activities and projects for this chapter.

References

- Adger WN, Hughes TP, Folke C, Carpenter SR, Rockstorm J (2005) Social-ecological resilience to coastal disasters. *Science* 309(5737):1036–1039
- Benson C, Twigg J, Myers M (2001) NGO initiatives in risk reduction: an overview. *Disasters* 25 (3):199–215
- Berkes F, Colding J, Folke C (2003) *Navigating social-ecological systems: building resilience for complexity and change*. Cambridge University Press, Cambridge
- Bhamra R, Dani S, Burnard K (2011) Resilience: the concept, a literature review and future directions. *Int J Prod Res* 49(18):5375–5393
- Chimellaro GP, Reinhorn AM, Bruneau M (2010) Framework for analytical quantification of disaster resilience. *Eng Struct* 32:3639–3649
- Cumming GS, Barnes G, Perz S, Schmink M, Sieving KE, Sounthworth J, Binford M, Holt RD, Stickler C, Van Holt T (2005) An exploratory framework for the empirical measurement of resilience. *Ecosystems* 8:975–987
- Cutter SL, Barnes L, Berry M, Burton C, Evans E, Tate E, Webb J (2008) A place-based model for understanding community resilience to natural disasters. *Global Environ Change* 18:598–606
- Djalante R, Thomalla F (2010) Community resilience to natural hazards and climate change impacts: a review of definitions and operational frameworks. In: 5th annual international workshop and expo on Sumatra tsunami disaster and recovery
- Folk C (2006) Resilience: the emergency of a perspective for social–ecological systems analyses. *Global Environ Changes* 16:253–267
- Government of Myanmar (2011) *Guidance on mainstreaming DRR in the health sector, Myanmar – rural settings*. Ministry of Social Welfare, Relief and Resettlements and Ministry of Health
- Gunderson LH, Holling CS (2002) *Panarchy: understanding transformations in human and natural systems*. Island Press, Washington, DC
- Heijmans A (2009) *The social life of community-based disaster risk reduction: origins, politics and framing*. Disaster studies working paper 20. Aon Benfield UCL Hazard Research Center
- Holling CS (1973) Resilience and stability of ecological systems. *Annu Rev Ecol Syst* 4:1–23
- IFRC (2004) *World disasters report 2004: focus on community resilience*. IFRC, Geneva
- IFRC (2012) *Understanding community resilience and program factors that strengthen them—a comprehensive study of Red Cross Red Crescent Societies tsunami operation*
- Janssen M, Lee J, Bharosa N, Cresswell A (2010) Advances in multi-agency disaster management: key elements in disaster research. *Inform Syst Front* 12:1–7
- Joerin J, Shaw R (2011) Mapping climate and disaster resilience in cities. In: Shaw R, Sharma A (eds) *Climate and disaster resilience in cities*. Emerald, Bingley, pp 47–61
- Joerin J, Shaw R, Takeuchi Y, Krishnamurthy R (2012) Action-oriented resilience assessment of communities in Chennai, India. *Environ Hazards* 11(3):226–241
- Kafle SK, Murshed Z (2006) *Community-based disaster risk management for local authorities: participant’s workbook*. Asian Disaster Preparedness Center (ADPC), Pathumthani

- Kaplan HB (1999) Toward an understanding of resilience: a critical review of definitions and models. In: Glantz MD, Johnson JL (eds) *Resilience and development*. Kluwer, NY, pp 17–83
- Khan H, Vasilescu LG, Khan A (2008) Disaster management cycle – a theoretical approach. *Manag Market* 1:43–50
- Klein RJT, Nicholls RJ, Thomalla F (2003) Resilience to natural hazards: how useful is this concept? *Environ Hazards* 5(1–2):35–45
- Maceda E, Gaillard J, Stasiak E, Le Masson V, Le Berre I (2009) Experiential use of participatory 3-dimensional models in island community-based disaster risk management. *Int J Res Island Cult* 3(1)
- Mansourian A, Rajabifard A, Valadan Zoj MJ, Williamson I (2006) Using SDI and web-based system to facilitate disaster management. *Comput Geosci* 32:303–315
- Manyena SB (2006) The concept of resilience revisited. *Disasters* 30(4):433–450
- Mayunga JS (2007) Understanding and applying the concept of community disaster resilience: a capital-based approach. Working Paper for social vulnerability and resilience building, 22–28 July 2007, Germany
- McEntire DA, Fuller C, Johnston CW, Weber R (2002) A comparison of disaster paradigms: the search for a holistic policy guide. *Public Admin Rev* 62(3):267–281
- Montoya L (2003) Geo-data acquisition through mobile GIS and digital video: an urban disaster management perspective. *Environ Model Softw* 18:869–876
- Norris FH, Stevens SP, Pfefferbaum B, Wyche KF, Pfefferbaum RL (2008) Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *Am J Commun Psychol* 41:127–150
- Pearce L (2003) Disaster management and community planning, and public participation: how to achieve sustainable hazard mitigation. *Nat Hazards* 28:211–228
- Plodinec MJ (2009) Definitions of resilience: an analysis. Community and Regional Resilience Institute
- Schneiderbauer S, Ehrlich D (2006) Social levels and hazard (in)dependence in determining vulnerability. In: Birkmann J (ed) *Measuring vulnerability to natural hazards: towards disaster resilient societies*. United Nations/University Press, Tokyo
- Shaw R, Okazaki K (2004) Sustainable community based disaster management (CBDM) practices in Asia: a user’s guide. Disaster Management Planning Hyogo Office, United Nations Center for Regional Development (UNCRD)
- Warfield C (2008) The disaster management cycle. Retrieved 20 September 2013 from http://www.gdrc.org/uem/disasters/1-dm_cycle.html
- WHO (2010) Hospitals safe from disasters: reduce risks, protect health facilities, save lives. United Nations
- Zobel CW (2011) Representing perceived tradeoffs in defining disaster resilience. *Decis Supp Syst* 50:394–403

Chapter 14

Community Based Response and Recovery: Specific Issues

Shivangi Chavda and Manu Gupta

Abstract The chapter deals with the two projects set in the post disaster scenario of Kosi floods in year 2008, in State of Bihar, India. The chapter depicts the experience of the authors, who have faced the challenges during its implementation, specifically while linking recovery to larger rehabilitation and mainstreaming DRR process in the developmental plans of the state. The chapter realizes the fact that the while the key identified areas such as shelters and health were important, it was more important that these sectors were also assessed in light of the prevalent socio economic conditions, eco systems and governance. The chapter also lays emphasis on the need to strengthen the resilience of the communities through knowledge enhancement and training and capacity building.

Keywords Recovery • Rehabilitation • Resilience • Training and capacity building

14.1 Introduction: Kosi Floods (2008)

Bihar Kosi floods on 18th August 2008 burst its embankment about 13 km upstream—resulting into water running straight down at 1,66,000 cubic feet per second (cusec). The flow was running straight down south through a new course 15–20 km wide and 150 km long north to south. 3.3 million people approximately were affected in the Kosi sub basin districts of Saharsa, Madhepura, Supaul, Araria and Purnea. A total area of 3,700 km² was affected and almost 30 % of the affected districts were inundated, affecting 412 panchayats and 993 villages. The floods further accentuated poverty of the people who already were living below human and development index. Also, the institutional capacities of the government of Bihar were challenged and both the district and state level government

S. Chavda (✉) • M. Gupta
SEEDS India, Delhi, India
e-mail: shivangi@seedsindia.org

functionaries were stretched on public infra structure, public services and financial resources. While the emergency services were swift and effective from all the stakeholders including government and civil societies, the larger challenge was long-term recovery and rehabilitation. The need for recovery and rehabilitation were enormous and required mass scale capacity building.

The history of Kosi Embankment breaches leading to floods goes way back to 30 years. The floods often called “Sorrow of the river” have witnessed vast devastations due to channel migrations. The kosi was embanked on both the sides to control the flow of the water and trap the sediments, however, this has not helped much and since then it has posed a challenge in terms of long and recurring flood hazard, especially the northern part of Bihar. The state has faced severe floods in year 1963, 1971, 1984, 1991, 1995 and the latest 2008 (Box 14.1).

Box 14.1 Box of Koshi Embankment Breaches

The Kosi River presents a challenge in terms of long and recurring flood hazard. A major flood in 1953-54 led to the ‘Kosi project’ which was aimed at flood control and irrigation. The project led to the creation of a barrage and embankments on each side were designed to protect approximately 2800 km² of land in north Bihar and Nepal. Despite this intervention and a long history of flood control management in the basin for more than 5 decades, the river continues to cause extensive flooding due to breaches.

1963: The first breach on the western embankment in Nepal

1968: Five breaches in north Bihar

1971: Collapse of the 1969-built Bhatania Approach Bund

1980: Eastern embankment breach

1984: Eastern embankment breach

1991: Breach in the western embankment near Joginia in Nepal

2008: Breach in eastern embankment

SEEDS, a national humanitarian organization from India, developed an early recovery intervention and built on the strategy, which had long-term developmental impacts. SEEDS has worked in more than eight reconstruction and rehabilitation programs across India and has been instrumental in demonstrating the integration of traditional wisdom with the modern technologies especially in field of disaster resilient shelter construction.

The need assessments conducted post kosi floods, 2008, indicated that there were three million people affected and almost 100,000 shelters required to be constructed. Moreover, the health situation in the districts had completely deteriorated and there was specific need to cater to the needs of those deprived of the basic health facilities in their vicinity. SEEDS played a significant role; as a part of network Owner Driven Reconstruction Collaborative (ODRC); in developing and implementing a model of “Facilitation Hubs” in the Kosi Shelter Reconstruction and Rehabilitation Program. SEEDS established a health center with an outreach program spread across 25 villages. The aim of this intervention was to strengthen the coping capacities of the communities; while taking into consideration the existing eco systems, the vulnerabilities and the overall hazard profile of these flood affected districts.

The chapter looks into the strategy, activities and challenges faced by SEEDS while linking response to recovery and rehabilitation in one of the worst affected districts in Kosi floods 2008—Saharsa. When SEEDS intervened the government had only few schemes that supported the communities to develop long-term disaster resistance and preparedness. Moreover the focus was more on the response and remained largely on the food and relief distribution. The loss in terms of housing was immense and wide scale. The challenge was not only implementation but drive the state and the district level governance at the same pace through policy intervention. The other critical sector was health. There were very few health facilities, even in the pre disaster scenario. The health services were largely affected as many villages stayed cut off due to flooding. The health services, therefore, had to be restored.

The community was critical and therefore, a strategy had to be evolved that would help the local communities to build their resilience through training and capacity building, raising their awareness and elevating their understanding for the need to reduce risks by taking right decisions especially related to Shelter reconstruction. Community alliance was therefore necessary and an important vehicle for advocacy.

However, the context of intervention requires to be understood, given the geographical and socio economic vulnerabilities of this Kosi sub region. The accentuated vulnerability is more attributed to the underlying causes, which makes communities vulnerable and challenged to cope up with the frequent floods.

14.2 Flooding in Kosi Basin

Extending across Tibet (China), Nepal and India, the Kosi river represents the largest river basin in Nepal. The Kosi river is a powerful river system with a history of shifting direction and causing havoc both in Nepal and India. In 2008, the Kosi river broke its embankment near Paschim Kusaha in village in Sunari district in Nepal. The ensuing flood affected 70,000 families in Nepal and 3.5 million people in India.

Floodings in the Kosi region are attributed to the breaching of embankments, erosion of banks, and over bank flooding. The rivers of Kosi basin have their catchment in the Himalayan region. The Kosi river's upper basin in the Southern Tibet and Eastern Nepal drains some 60,000 km² of mountainous terrain. The silt produced is extensive and the landslides and soil erosion continuously feeds in the perennial river flow to the downstream. Average sediments carried downstream amounts to 600 million m³. The velocity of the river decreases and becomes low as they enter the plain region, thereby depositing silt on the riverbeds. The silt deposition is as high as 9.3 cm/year (Jain and Sinha 1998).

The rivers that are not protected by the embankments, the aggradations of the rivers can reduce the carrying capacity of the river and it increases the velocity. The river, thereby, completely erodes the banks. The settlements on the banks therefore become highly vulnerable. In another scenario, the course becomes higher than possible adjacent paths leading to shift of the course over a period of time.

The preventive flood control measures mainly consists of downstream embankments, which is meant to confine the river to a fixed channel. Such embankments, in theory, helps to carry high flows away and keep sediments in suspension.

Where rivers are within the embankments, due to continuous depositions of silt, the carrying capacity of the river decreases. The heavy rainfall therefore increases the risks of the over bank flow or breach of embankment (Fig. 14.1). In order to protect from over bank flow, the embankments are often raised. The raised embankment affects the natural drainage of the river and thereby leads to water logging for almost 3–4 months during monsoons.

On 18th August 2008, the man made embankments failed. The river reverted from the prescribed western channel to an old channel; shifting laterally about 150 km. The river spread out widely and inundated towns, villages and cultivated fields on the densely populated alluvial fan of Kosi region. The otherwise "safe districts" were affected due to breaching of embankment. The floods were largely due to breaching of the embankment, however, the otherwise "safe districts" were also flooded. The worst affected were Supaul, Madhepura, Saharsa, Araria and Purnia. The floods left people homeless and without livelihoods. The loss of infrastructure was immense and several hundreds of villages were marooned.



Fig. 14.1 Breach in Embankment at Kusaha and flood affected districts, 2008

14.3 Profile of the Areas of Intervention

SEEDS intervened in all the three districts. However, the chapter specifically focuses on Son Barsa Block of Saharsa District. Sonbarsa block is situated in the southeast corner of the district and one of the second largest blocks in the district. Sonbarsa block is uniquely placed, considering the fact that the location is along the old channel of river Kosi, which is no more active and the settlements and the habitats are growing on the riverbeds, thus, leaving the Block and villages exposed and threatened to more risks.

14.3.1 General Profiling of Saharsa District

Saharsa is one of the districts of Kosi Sub division. The District lies between 86.20 and 86.80 East longitudes and 25.60 and 26.20 north latitudes, with an area of 1,702 km². According to census of India 2011, population of Saharsa is 18,97,102 with a population density of 1,125 per km². Almost 10 % of this population belongs to the Mahadalits (Scheduled Caste), who are marginalized and most vulnerable amongst the communities. Saharsa is further divided into two sub divisions viz. Saharsa Sadar and Simri Bhaktiyarpur. Saharsa Sadar sub division is divided into three blocks viz. Simri Bhaktiyarpur, Salkuha and Banma-Itahari.

14.3.2 Hazard Profile

14.3.2.1 Seismicity

The whole district is vulnerable to earthquakes. Munger Saharsa fault line passes through this region. Northern Saharsa District falls under seismic Zone V and the southern zone falls under seismic hazard zone IV.

14.3.2.2 Flood Hazard in the District

The flood hazard map of Bihar reveals that those areas, which are parallel to river, Kosi falls under Flood prone zone. Kosi flows through the western part of the district and therefore the eastern part of the district is considered “safe”. However, the embankment of the breach during 2008 and the river changing its course and flowing in its old course on the east of the district near sonbarsa block, have made this part of the district also “unsafe”.

14.3.2.3 River Erosion

River erosion is one of the major hazards in the district. The siltation on the western part of the district, where Kosi flows is very high. However, the channels and tributaries carry the silt and sediments, which are meandering its ways through eastern part of district and thereby creating large depositions in the district.

14.3.3 Geographic Area

The terrain is flat with occasional flat mounds. Many channels of Kosi flow through this region. Some of them are perennial channel while some of them have waters only during monsoons. Also, the water from the region drains into those channels of Kosi as well as east of Kosi. The river keeps shifting its course and it has remained just one of the tributaries of the main river. Network of canals is spread across the region. The canals are raised creating embankments.

Some settlements are located on natural higher ground. Flat low-lying areas usually farm lands. Many settlements also located at the same level as farms. At some locations, the level of settlements has raised through landfill done by the communities. Many such settlements are on the main road. Often this main road and its branches are raised creating an embankment and blocks the natural water flow of the region.

14.3.4 Socio Economic Vulnerabilities

14.3.4.1 Socio-Economic Disparity and Livelihood Issues

The disparities are evident in these communities. The social fabric indicates that the upper caste communities have large land holdings, whereas marginalized and lower caste communities are either landless or have small land holdings. Similarly, the access to the livelihood options such as livestock etc are limited for the lower caste communities. The Batiadari farmings (leasing systems) are commonly prevalent in these communities; where in the landowner provides lands, seeds and other inputs on contract to the farmers. The profit is shared between the landowner and farmers. Farmers get part of profit after deducting the proportionate costs of investments made by landowner. However, social excluded communities such as Mahadalits and other scheduled castes are excluded from such systems. These socially excluded poor people resort to activities, which are seasonal, largely trying to cope up with the changing varsties such as climate, weather or disasters. Seasonal migration is also very common amongst these communities. More than one member of the family goes out of the village to earn their livelihood in the neighboring state. The marginalized communities do not have access to the government welfare schemes and therefore they resort to moneylenders, who give them money on high rate of interest. Perpetually, these communities are in debts.

14.3.4.2 Public Infra Structure Facilities

The overall public amenities and their structures are in depleted state. This public infrastructure actually reveals the state of governance in the district, which lacks good monitoring and regulation. The public facility such as health, education, transportation, drainage systems and communication lubricate the functionalities of the communities and thereby reinstates confidence amongst the communities. Also public buildings are often used as flood or safe shelters, since they are assumed to be in good conditions. The schools are used as relief distribution centers and camps most of the times. However, in Saharsa District, both the public facilities and their service delivery are neglected. The risk quotient therefore increases in such scenarios, as the communities are not being able to cope up even with the daily stresses.

Road Network: The road network is poor in the region. While the large settlements are connected with roads, the internal roads to small villages are either earth filled and lack proper compaction. During heavy rains, these internal roads get washed away or are water logged, which creates issues related to accessibility. These smaller villages or hamlets—also known, as “tolas” are remote and largely marginalized communities such as Maha dalits settle in them. When the river water rises, all these internal roads gets submerged, making it difficult for these communities to commute for more than four months.

Schools and Education Delivery: The infra structure of the school building vary from place to place in the district. Education, however, is one of the key sectors that government promotes and by virtue of these there is Schools are available in almost all the villages. However, the school facilities and delivery of the education is the biggest limitation in the district. Often the teachers are not available and if they do, they are not apt for the job. The physical structures are fragile and vulnerable. The existing schools are in depleted state, some of them are just huts, while some of them run under the trees.

Health Facilities: The Public Health Services is the main governmental health facility in the rural parts. At the district headquarters, there are referral hospitals. However, the state has very poor health facilities and limited practitioners. Some of the PHCs are adequate in terms of space; however, the services are irregular due to inadequate doctors and support staff. The government does have facility of Emergency Ambulance (108 and 102); however; one this facility is available only where there is road connectivity and second the communities still stay unaware of any such information. The lack of information has also led to eruption of much fraudulent practice.

Electricity: Most of the villages of Saharsa District are cut off from the main power supply. Almost 85 % of the district is without electricity supply. The rural belt only gets 5 % of electricity supply. The approximate power supply in this region is for 3–4 h. The power situation is grim, thereby impacting not only domestic needs but also the livelihoods of the people. The farmers, in order to draw water out for the irrigation purposes have to pay for generator. It is definitely economic loss to these farmers. Moreover, public places such as schools are deprived of electricity. During harsh summers, these schools face problems and children often fall ill.

Public Buildings: The community halls, panchayat bhavans are the common public buildings found at the village level. These buildings are used for common social purposes and local governance activities. However, the construction quality of these buildings is bad. Most of the buildings are in depleted state. These buildings are ill equipped and therefore are not usable for disaster purposes such as safe shelters.

14.4 Vulnerabilities: Ecosystems

Kosi sub basin is fertile with ample natural resources. However, with the growing population and density, there is over stress on these natural resources. The communities are largely dependent on the resources to fulfill their basic needs of food, shelter, water, fodder and livelihood. Over exploitation of these natural resources; with no alternative strategy, have resulted into eco fragility, adding to the underlying vulnerabilities and thereby for the community.

Built Environment: The recent trends amongst the communities have shown that the communities prefer RCC roofing and Brick walls instead of traditional Bamboo structures. The shift is primarily related to the notion that the RCC and Brick walled shelters would remain stable and stronger even during disasters. However, these shelters are very expensive. Although, the material is available adequately in the region, there is dearth of skilled trained masons, who can construct resilient and safe shelters with RCC and Bricks. Also, the construction of such shelters is expensive and therefore communities prefer to do it in phases. As a result of which the construction quality suffers. Often the material is eroded due to its exposure to the extreme weathers. This in turn impacts the construction quality.

On the other hand the Bamboo construction is prevalent, easily available and there are trained skilled masons called “Dabiya mistris” available in the communities. These masons have acquired the traditional skills to construct shelters using Bamboo. Bamboo therefore becomes the right choice of material for low cost and effective construction. However, there is requirement of appropriate technologies to be introduced to use Bamboo in a way that it becomes earthquake and flood resilient.

Water—Access and Quality: The water table is high in the district. However, closer to the surface, the water is less contaminated. The main source of water is under ground. Largely, hand pumps draw out the water. The water contamination is high with iron and arsenic content. The water also has bad odor and therefore is not drinkable. Besides, hand pumps, the other source of water is wells, which have less arsenic and iron contents. However, these wells are not cleaned regularly and therefore are dysfunctional. The well water is used for non-drinking purposes such as farming, washing, fishing etc.

Sanitation: Sanitation facilities are almost non-existent in the rural belt at the household level. Open defecation is the normal practice. Although, women on account of privacy and security issues do demand for sanitation facilities at home. However, largely it is a social and behavioral problem. In the monsoon, the low-lying area gets water logged. Hence, the open defecation areas get closer to the habitats. This creates threat for epidemics. Due to high flood levels and longevity of water logging, there is more risk towards health problems.

Vulnerability of Infrastructure: The quality of services is a huge challenge, however, the larger concern is of the depleted physical infra structure facilities in the community. In the recent time, some of the facilities especially the transport and communication are fast growing. The outreach of the mobile phones is good in the region; however, there appropriate use to prepare communities for disasters is still a huge gap. The physical infra structure such as school and community buildings, sanitation and drinking water still pose a challenge to the development of the district and sub district level. At places, where there are good school buildings, there are not enough schoolteachers. The sanitation facilities are not available in most of the villages. Some of the schools do have toilet facilities, however they are not functional. There is lack of knowledge on safe hygiene practices as well.

Similarly, there is lack of health systems and quality medical practitioners in the rural areas. Due to lack of roads and since the health facilities are not in the vicinity, sometimes the emergency health services cannot be provided on time.

Vulnerabilities of Social Dynamics: Social dynamics play a very vital role in this area. Besides other vulnerabilities, the caste based social systems play important role in these areas. The poorest of the poor communities are Mahadalits; at least 10 % of the 14 % of Scheduled castes communities is constituted of these Mahadalits. Owing to lack of safety nets, social network and capital being low, these communities has no mechanisms in place to cope up with the disasters. The post disaster trauma is much more, since they are secluded from the benefits of the social welfare schemes. Secondly, since the employments opportunities of these men are usually less, they migrate to nearby cities and states; leaving behind their old family members, physically challenged members and women.

Land Management and Land Patterns: The state is densely populated. Moreover, the districts such as Saharsa faces lack of habitable land due to nature of Kosi river and its tributaries. Because of the given complexities, the district faces huge challenge to provide land for habitats and homestead plots. Due to constraint in availability and access of homestead lands, usually the growth of settlements has been haphazard. The higher grounds are rare and often occupied by the upper caste communities. While the low lying areas, dry river channels or even in the overflow areas of the river channels are occupied by the marginalized communities.

14.5 Need for Long Term Response and Recovery

SEEDS early recovery strategy emerged based on the set of vulnerabilities and under lying causes mentioned in the above section. The scale was huge and the problems were inherent of the combination of several social and institutional factors. Therefore the recovery had to be planned for long term. The root causes of poverty and vulnerability are often the same. The structural factors such as social and political exclusion, economic marginalization and perennial unsafe conditions forces communities to stay vulnerable, exposed to hazard shocks and have absolutely no coping capacity in event of major disaster. Early recovery programs therefore require to be strategized in order to provide communities with safety nets, accurate information and access to resources and opportunities and capacity to rebuild their lives. Early response and recovery mechanisms also plays an important role to safeguard these vulnerable communities from destitutions, adopt solutions not leading to adverse coping mechanisms and prevent them to return to the pre disaster situation. Early recovery interventions helps to build over all resilience of the communities and serves as entry point to integrate disaster risk reduction in the recovery processes, such that it reduces the exposure of communities to hazard threats and thereby reduces the impact of the impending threats.

SEEDS intervention in the early recovery phase was a well thought out strategy along with the members of ODRC.¹

It was deduced that while the immediate need for the affected communities were Shelters and Health; the root cause for disaster risk lied in the degraded environment, settlement patterns and existing eco systems. Failing to take into account these factors would further deteriorate the conditions of the communities and lead them to the vicious circle of poverty.

The recovery framework was specific and was based on the needs assessment carried out by SEEDS. The need assessment revealed that while the immediate needs are met with, the vulnerabilities otherwise was so acute that it had to be restructured and uplifted technically to meet the current environment and socio economic needs of the communities. SEEDS looked into various factors that would contribute to long-term response and recovery in both the segments.

14.6 Factors Contributing to Building Strategy for Long-Term Response and Recovery

14.6.1 Shelter

The factors contributed to build strategy for long term response and recovery were as follows:

(a) Shelter interventions considering environmental factors:

Shelter Reconstruction was the ultimate need, however, the implementation required to take into several environmental factors such as local available material, water channels, dry riverbeds and actual site of the constructing shelters. The assessment had to ensure that the construction of shelters did not further jeopardize the eco systems and thereby generated range of issues, which would aggravate the vulnerability of these marginalized communities.

(b) Customized disaster risk reduction strategies:

Although the designs would be holistic and equal for all the communities, the solutions required from case to case basis, considering the cross sectoral risk assessment. The disasters offers an opportunity to ‘build back better’; if the eco systems are assessed and monitored along the lines of building long-term resilience. This is only possible if there are customized disaster risk mitigation strategies.

¹ ODRC—Owner Driven Reconstruction Collaborative is the network of group of NGOs, UN and government representatives.

(c) Local and culturally appropriate solutions:

The long-term recovery plans have often failed due to its lack of cultural appropriateness. This factor plays an important role to build ownership of the communities on the services provided. Shelter is one sector, where in the local and culture based solutions plays a very important role. The shelter strategy therefore had to address these issues and make it contextualized and long term.

(d) Integrated water resource and flood management plans:

Having realized the inherent problems and underlying causes of the Kosi floods and its impacts, the long-term response and recovery plans had to be framed taking into consideration the prevailing organic systems. Human interventions to control river systems have many consequences. Shelter being one of the components of the overall development, however, had to be strategized by integrating the water resource management and flood management plan such that over long term it assists in poverty reduction and over all vulnerability of the communities.

(e) Owner driven approaches:

Kosi floods 2008 were one of the largest floods in recent years. The scale of the floods was wide and had affected more than 3.3 million people. In the given scenario, there was need to strengthen the coping capacities of the communities through training and capacity building. However, the scale was so huge that it was required that the communities actually participate in the rebuilding process across the sectors. Such participation across levels generates awareness amongst the communities and it helps an easy transfer of knowledge to these communities. Owner Driven Approaches also helps to build accountability and transparency at all levels.

14.6.2 Health

The factors contributed to build strategy for long term response and recovery were as follows:

(a) Considering the overall health status:

The overall health environment of the Kosi region and over all at the state level was grim. The basic health indicators such as crude birth rate, crude death rate, infant mortality rate and total fertility rate were already above the national and state level average. The kosi floods further stretched the health infra structure and regular and preventive health sector services. Also, almost 48 % of the sanctioned positions for doctors were vacant in the flood-affected areas. It was therefore needed to strengthen the basic health facilities in the affected area.

(b) Accessibility to health services:

The existing Public health centers were damaged. However, the floods had cut off the remote villages and therefore the accessibility even to the centers, which were running, then, was a problem. The floods had further jeopardized the health of the people affected because of food shortages, depleting purchasing

power and spread of water borne diseases. It was imperative that the mobile clinics were put in place especially for such places where accessibility was larger issue. Secondly, the stationery clinic for a long term at the central location had to be established, such that the deprived communities could access and take health services.

(c) Community outreach programs:

The basic health services, while, was a larger necessity, there was a larger requirement of generating awareness on the issues related to the underlying risks which would lead to health problems. The recovery strategy required to consider going to the communities through community outreach programs and sensitize communities on basic sanitation, monitoring of water quality, surveillance for epidemic prone diseases and pre natal and post natal requirement for women and new born children.

14.7 Community Based Response and Recovery

The community based response and recovery was strategized based on the above parameters. SEEDS response and recovery was largely based on two aspects (1) training and capacity building and (2) knowledge enhancement.

SEEDS planned the shelter intervention along with the other members of Owner Driven Reconstruction Collaborative (ODRC). The owner driven strategy was formulated under Kosi Rehabilitation and Reconstruction Project (KRRP); which would help the local communities to build their resilience through training and capacity building and raising their awareness about reducing risks while considering the prevalent eco systems. The Government of Bihar initiated KRRP, while ODRC facilitated the implementation; where in 30,000 affected households were covered. KRRP focused on reducing the vulnerability of the flood hit districts through restoring and rebuilding of appropriate infra structure and livelihoods, which can improve socio economic life of the communities while helping them to mitigate the impacts of future floods. The process of owner driven reconstruction was not only about providing shelters in form of physical space. The key to appropriate implementation was through social mobilization and coordination with various stakeholders. The strategy also laid stress on Community Alliance that was necessary and an important vehicle for advocacy.

The health intervention was planned to build community driven approaches to address the community needs on primary health care, safe water, sanitation and safety for future disaster. The aim was to address the underlying risk factors to reduce the vulnerability especially of women and children and help them build practice of good hygiene at the household level.

14.7.1 Shelter

14.7.1.1 Owner Driven Reconstruction Strategy

The owner driven reconstruction strategy leads to a cost effective and timely reconstruction process, which leads to highest level of satisfaction of the communities. The communities under the owner driven approach builds cumulative strength to rebuild their lives, strengthens the local economy through use of local materials and the housing patterns which are as per their needs.

The role of ODRC consortium members was very important and critical in the whole process. The consortium members brought in their strength and expertise for restoration and rehabilitation in Kosi floods. The process of KRRP included not only construction, but involved a dialogue and advocacy with the state and district government for policy intervention, training and capacity building and a socio technical facilitation with the community to result into construction of shelters. The consortium members also carried out various other exterior activities to the construction, which could help the local government in the long run. This included making GIS based settlement plans and developing infra structural designs for community.

The scale of Bihar floods was large. Almost 3.3 million people were affected and 1,00,000 houses were to be constructed. This wide spread construction required a concerted effort, a common and integrated approach with the state and district government's scheme of rehabilitation. The consortium approach therefore was beneficial in reaching out to the maximum beneficiaries. As a result of the consortium effort, uniformity could be maintained in terms of shelter design options, training modules and operational processes. Since the process was uniform, it was also useful for the state and district government to monitor the project with common indicators across the flood affected districts.

The government played a critical role under the project. The state government has provision to provide the families; living below the poverty line; with a core shelter under its developmental scheme "Indira Awas Yojana". The government agreed to leverage this developmental scheme and added extra resources to ensure that these shelters are disaster resilient. The key point of this arrangement with the government was to integrate the recovery and rehabilitation processes with mainstream developmental process. This allows to optimally utilize the resources and reduces the economic burden on the exchequer, especially during emergency.

Under KRRP, the enabling mechanisms were created along with the State government at all levels, to ensure that the end beneficiary is satisfied and is empowered to reconstruct his house with dignity. ODRC helped to create enabling mechanisms from State to District and District to block level till the household level. The roles and responsibilities including State, District and Block level governance was defined, while SEEDS and other ODRC members organized themselves to feed in these enabling mechanisms and build the capacities at all levels.

The significant features of the Owner Driven Approach included:

- (a) Owner's choice: Homeowners were given three options as their choice to rebuild their homes—Brick, Bamboo and RCC. Although communities largely used Bamboo for the construction of their house - however, that type of construction was marked as “Kuccha House”. Under KRRP intervention Bamboo was upgraded and used as permanent building solution. The traditional technology was renewed to make it appropriate to the given context.
- (b) Technical facilitation to the communities: The technical team along with the Govt. of Bihar developed the common guidelines for reconstruction of houses with the local material. These guidelines were developed in local language and were more depicted in graphics such that it enabled communities and local masons to reconstruct hazard safe houses themselves.
- (c) Facilitation Centers—“Hubs”/“Kosi Setu Kendras”: Facilitation Centers were established in various locations to facilitate reconstruction process. These facilitation centers helped the communities to organize themselves. The Hubs acted as critical links for the communities to access the building material, government's assistance, cash installments and technical assistance.
- (d) Support Units at various levels: The project was anchored at District level and therefore the district level governance had to play an important role in coordinating with the project. District Support units were organized in District Magistrate's office and thereby the officials were trained to identify and address the issues related to the implementation of the reconstruction programme.

Additionally a socio technical team at the Gram Panchayat level was organized consisting of technical and social teams. These teams were responsible to give hands on support to the homeowners as well as motivate them for the timely completion of shelter reconstruction.

14.7.1.2 Establishment of Facilitation Centers—“Kosi Setu Kendras (KSKs)”

SEEDS played pivotal role in establishing Facilitation Centers—“Hub” at the cluster level. These facilitation centers were called “Kosi Setu Kendras” alias KSKs (Fig. 14.2). The concept of “Setu” evolved from the Project initiated by Kutch Nav Nirman Abhiyan—also part of Owner Driven Reconstruction Collaborative under KRRP—during 2001 Bhuj Earthquake in Gujarat. The massive reconstruction and rehabilitation process to be carried out post earthquake required the joint and coordinated effort of the government, civil societies and the community. The information centers were set up in various parts of State of Kutch. These centers were named “Setu”—*the bridge*. These Setus advanced knowledge to information management, policy influencing, addressing grievances and mediating between government, several Ngos and the rural populace. The Setu gradually took up with the development issues and needs.

Similarly, Kosi Setu Kendras were set up to bridge the gap between the policy and practice during reconstruction and rehabilitation. These facilitation centers

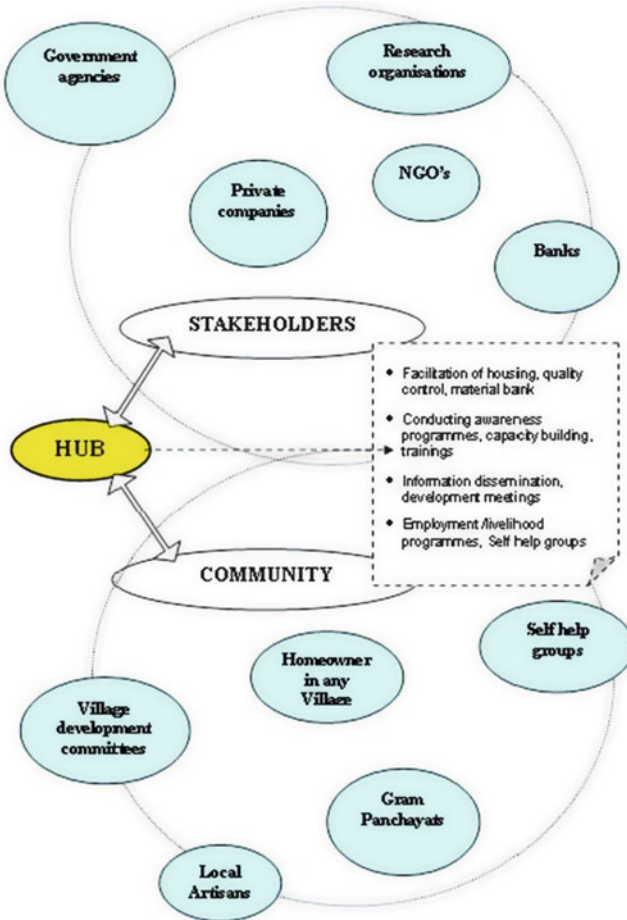


Fig. 14.2 Concept of Facilitation Hub—“Setu”

acted as “nerve centers” for the community and the local government functionaries. These centers facilitated the socio-technical processes, which attributed to the reconstruction of shelters in the affected districts. The role of KSKs was multiple and it also provided other services such as providing information, training to the key stakeholders involved in the reconstruction process and qualitative and quantitative monitoring of the progress of shelter reconstruction. Moreover, the KSK acted as nodal entity at the local level to tie up the community with the Banks, local government officers and the material suppliers. KSK therefore was the central node for setting up of Owner Driven processes during reconstruction.

KSKs was instrumental in translating the policies into practice and therefore much of the successful implementation of Owner Driven Reconstruction process was dependent on these KSKs.

The essence of Owner Driven Reconstruction approach was embedded in the functionality of the KSKs. These centers not only provided services, but also pulled in the important information regarding each house owner relevant to the reconstruction process. The facilitators were constantly in touch with the beneficiaries and provided real time solution in case of the problems arising. The reconstruction scheme involved cash transfers through Banks. It was ensured that these marginalized communities had access to bank services, which otherwise was a mammoth task for these communities due to lack of education and socio economic conditions.

These centers were strategically located in the most affected locations in all the three districts. Total eight KSKs were established in three districts. Since the KSK's role was so important and critical it was ensured that these KSKs are established in the vicinity of the flood affected beneficiaries and the beneficiaries can take help from these KSKs.

Also, the center was instrumental in building required social and technical database, which was detrimental in taking over view of the progress of the project. The inter exchange between different KSKs also helped to resolve certain technical and social problems identical to various locations.

14.7.1.3 Role and Function of the KSK

KSK acted as the critical link between the community and the government functionaries. KSK being at the bottom of the pyramid became instrumental in helping the district and the block level government officials to translate the policies into actions. At the same time for the community, KSK became the helping hand to resolve the problems that were related to the identification of site locations, opening of bank accounts and mobilizing masons to reconstruct shelters (Fig. 14.3).

The key functions of KSKs included the following:

(a) Imparting trainings:

KSK played crucial role in mobilizing social workers, masons, engineers and other government officials at the grass root level. KSK became hub of training for all these cadres. The trainings primarily were to impart awareness and educate the community on the technical and social guidelines of the project.

(b) Information dissemination:

The key to the success of the project laid in the correct and timely flow of information to the communities on the rehabilitation schemes, materials supplies, availability of bamboo and its treatment and all other relevant schemes. KSKs therefore became an Information hub for the communities and it stayed updated on schemes, issues and grievances.

(c) Ensuring Bank support:

The owner driven approach entailed that there would be cash transfer of the installments in the bank of each individual beneficiary. For that, the accounts of each individual had to be opened in the Bank. KSK ensured that the individuals

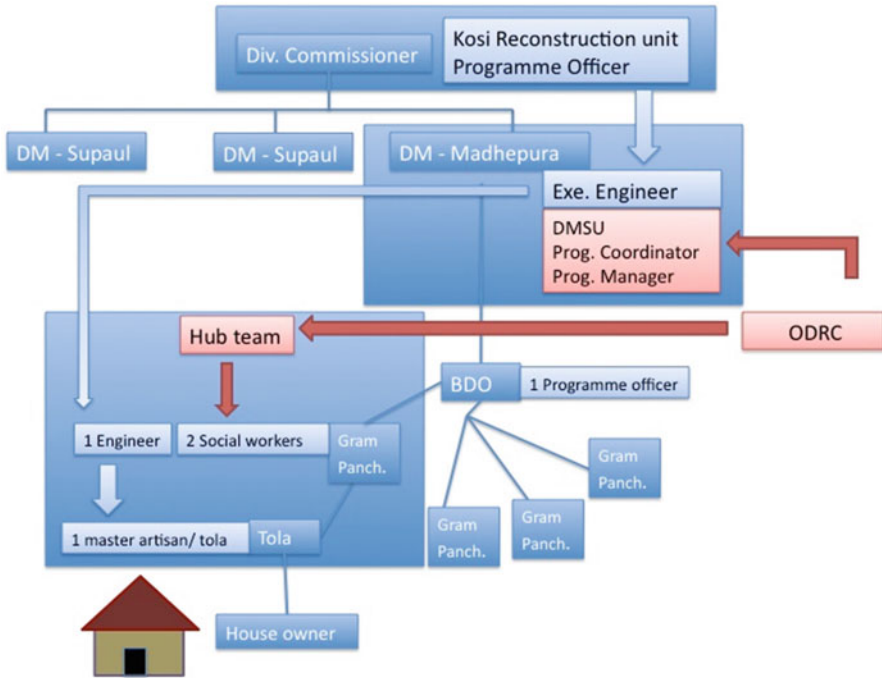


Fig. 14.3 Schematic depiction of Organogram of ODR process

finished the responsibilities of opening the bank account and the bank too supported the project by activating these accounts faster.

(d) Tracking the progress of the construction:

KSK staff members—technical and social kept close coordination with the grass root level staff and tracked the household information. Such information was made available to the block and district government officials. This information was vital for the district governance to take corrective steps to ensure speedy restoration of the project.

(e) Ensuring support to most vulnerable:

KSK also had to ensure that the most marginalized, less influential, women headed households; landless poor families get the timely and appropriate support. Often people falling under the said categories were left behind and therefore had to face larger constraints in terms of accessing schemes and resources.

(f) Providing technical and social support:

Restoration of shelter was a complex issue. Issues such as selection of appropriate designs and material for construction, soil type, access to material and labour for construction and safe site location; required a technical expertise. Such technical problems were solved by KSKs.

Similarly, the social mobilization was required to ensure that the restoration scheme reached to the most deserving families without rupturing the social fabric of the communities. This was ensured by conducting community meetings and building consensus on the decisions relevant for the identification of the beneficiaries. Also, the social mobilization would ensure that the collective energies at the grass root level actually realize the goals of overall recovery and rehabilitation framework.

- (g) Prompting Block government officials or District officials for timely actions: One of the key roles of the KSK was to bring to notice the major grievance issues arising amongst the communities, to the block development officials and District officials. This would ensure preemptive actions necessary to address the grievance.
- (h) Public Grievance Redressal Systems: KSK facilitated Public Grievance Redressal System at the village level. KSK also ensured that the community had access to the grievance redressal system. The communities were facilitated to use these complaint mechanisms for ensuring the timely and appropriate completion of the construction of their shelter.
- (i) KSK—key functionary in allied activities: The presence of KSK at the field level was crucial. Hence it facilitated all the key stakeholders including government for conducting surveys, assessments, studies, monitoring, trainings, resource inputs and documentation.

14.7.1.4 Achievements

The overall shelter recovery framework was based on empowering community for larger advocacy for reducing the disaster risks by reducing the impacts of the underlying vulnerable factors and strengthening their capacities to cope up with the disasters. The strategy was evolved with the basic aim of enhancing knowledge of the local communities to build over all resilience of the communities.

Some of the key achievements are:

- (a) Replicability of the model: It has been observed that during large scale disasters—the far off communities, due to lack of accessibility are deprived of information. Besides that, the information is widely scattered. Community based approaches are far more accepted model in most of the large and medium scale disasters. The communities are at the core of decision making for restoring their lives back to normal again. Whereas the agencies are more like facilitators and provider of services during disasters. Similarly the government actors provide in for various relief services and compensation for the key sectors such as shelter, health and education. These communities to take their own decision and make choices; one require the consolidated information and second the knowledge of what is the right choice for them. This is particularly of paramount important for the communities which have no accessibility to such information.

- (b) It is therefore required that such Information Centers in form of “Hubs” are established to connect the communities with these service providers and help them to make right choices and train them for building future resilience. “Hubs” acts as catalyst to owner driven approaches and helps to reach out to the affected beneficiaries.
- (c) This model can be easily replicated. The model has been successful during Gujarat Earthquake 2001, Bihar Floods 2008 and is being now tried in the recent Uttarakhand Floods 2013.
- (d) Empowering communities:
These facilitation centers became the hub to enhance the knowledge through generating awareness. At the same time, the communities were oriented on various key aspects of construction through design demonstrations and hands on training. These tools deployed by the KSKs helped to empower the communities.
- (e) Cadre of Resource persons:
The masons and social workers were mobilized by KSKs from the same area, where the shelters were to be reconstructed. In process, KSKs imparted training to these community masons and social workers, which in turn became the resource persons for the community.
- (f) Potential to be critical link for other developmental issues:
KSK became critical link and demonstrated the potential link of addressing developmental issues. With the growing trust of the communities on KSK; it became more evident that models such as this would help to bridge the gaps between the government schemes and their implementation.
- (g) Varied role of KSKs:
In a more regular scenario, the KSK helped to track and monitor the progress of the work carried out at the grass root level. KSK also served as Information center for communities, block and district level officials and other stakeholders. The knowledge transfer based on the technical and social guidelines was carried out by the KSKs.

14.7.2 Health

14.7.2.1 Community Based Health Center

The needs assessment of the SEEDS team revealed clearly the huge gaps especially in terms of the outreach of the medical facilities to the communities severely affected by disasters. Kosi floods further magnified the impact of poor health conditions and lack of infrastructure. SEEDS in the early response provided health with mobile clinics. The basic need was to address to the medical needs of the affected communities especially women and children; who were inflicted by the water borne disease. The mobile clinics were set up in Saharsa district and the

medical team could touch upon the maximum and remote villages, which were cut off from the other communities due to floods.

As an early recovery strategy, SEEDS established a health center in one of the well-connected panchayat “Biratpur”. This center catered to more than 65 villages. The “Biratpur Health Center” served as nerve center of the community. The early recovery stressed the need to strengthen the basic health and hygiene factors within these communities, especially women and children. One of the key elements of the project was the community outreach program, which helped to generate awareness amongst the communities on the most vital issues such as family planning, Water and Sanitation, Legal abortions, Immunization, teenager pregnancy and nutrition during pregnancy.

Through these outreach programs, sensitization and awareness was generated amongst the community and the schools regarding the disaster risk reduction. While early recovery stressed on the need to put basic health facilities in place, it also looked into the aspect of changing behavior of the communities regarding health and hygiene practices.

14.7.2.2 Role of Health Centers in Early Recovery and Response

(a) Providing basic health services:

The center assured the availability of health services to the otherwise deprived communities of the basic health facilities. The health center was established in post disaster scenario. The existing health services were not functional or the infrastructure was in a depleted state. The health center reposed confidence amongst the communities especially women and children. The health center not only looked into the water borne diseases, but also gradually started guiding the women on immunization and vaccines for children.

(b) Surveillance on medical needs for women and children:

Kosi floods aggravated the conditions of women and children in the given area. The communities, which were cut off, could not access the health services at the district level. Hence a medical team carried out periodic surveillance on the medical needs of women especially pregnant women. These women were given special medical care during and after delivery of child. Similarly, the children of the community were anaemic, were given due attention and were kept under surveillance. The surveillance thereby generated the data, important to take appropriate medical measures. The communities were often timely referred to district hospitals, thereby decreasing infant mortality rate and child mortality rate.

(c) Inducing Behavioral change amongst the communities on health, hygiene and sanitation practices:

The aim of the project was to build resilience of the communities especially in sector of health, Hygiene and Sanitation. The issues of water and sanitation are acute in this area. During Kosi floods, most of the these villages suffered from water borne diseases, primarily because of open defecation surrounding village,

water logging in many parts and contamination of water bodies. Water and Sanitation was a perennial problem even before the floods. During monsoons or winters, the area of open defecation comes closer to the villages. At the same time the bad drainage systems leads to further contamination of water bodies. The communities therefore are exposed to higher risks. Sanitation, Safe Drinking water and cleanliness were one of the main agendas during the intervention. It was realized that there was need for inducing behavioral change amongst the people on Sanitation, Water issues and cleanliness. The momentum was created through a concept of “Community led Total Sanitation” with the community. Special sessions on monthly basis were carried out with these target villages on maintaining cleanliness and the need for safe drinking water.

- (d) Integrating the Disaster Risk Reduction aspects through outreach programs: The health center had become nerve center for most of the surrounding communities. The information related to health and hygiene was transmitted through community outreach programs. This was later upgraded to connect the health center with the surrounding schools and communities. Community based disaster management and School Disaster Management and Preparedness became the integral part of the community outreach programs. While schools and communities were sensitized on Safe Sanitation and Safe Water, they were also oriented on the basic needs for preparing themselves for hazards such as Earthquake and Floods. The community volunteers in the communities were prepared and trained to be tasks force to help these communities for safe evacuations. Safe Evacuation plans were prepared for each of these villages and were displayed publicly. Overall the center helped to build a holistic approach on Disaster Risk Reduction while touching upon the critical issues of Health and Hygiene.

14.8 Specific Issues: Community Based Response and Recovery

The large scale recovery and rehabilitation although performs as envisaged, however, have some critical issues, owing to which the implementation gets affected. The following are some of the key underlying issues, which challenged the process of early response and recovery.

14.8.1 Shelter

- (a) Institutional capacity and mechanisms: Recovery of such a huge scale such as Kosi floods requires a much-coordinated approach at all multilevel. Multiple agencies were at play in case of housing reconstruction. Several government bodies such as housing department, rural

development department, revenue department, flood management department had to come together for the execution of the recovery and rehabilitation policy framework. This was challenging on account of scale of operations as well as the capacity of the government functionaries at various levels. Mobilization of resources, facilitation of implementation of rehabilitation and reconstruction process called for a single window. For fully integrated recovery and rehabilitation, it is essential to establish effective partnership of technical agencies and administrative agencies to coordinate design, construction management, operations and feedback mechanisms for effective community based response and recovery.

(b) Achieving the balance between faster delivery and community aspirations:

The early response and recovery intends to deliver fast, while keeping the balance between competing domain of speed, cost and quality of construction, along with communities' aspirations to upgrade their existing living standards. This is time taking process, where in the imperative is to provide a flood and earthquake resistant houses, using number of local materials and various technology options and does not allow use of any one material for construction. Setting up all these factors, convincing the communities about these factors and making it an implementable solution definitely poses a challenge.

(c) Resources of varied capacities:

Kosi Reconstruction and Rehabilitation Program included huge coordination of manpower from State to District to block and village level. In addition to this, there were several layers of the technical resources, social resources and administrative units external to government functionaries, which were coordinating with the communities as well as government. The capacities of each of these stakeholders varied and hence to help achieve similar outcomes from each of these villages was a larger challenge.

(d) Establishing accountability:

The shelter program included cash transfers based on the completion of work at various stages. The cash transfers were based on the assessment carried out by the government appointed technical and social officers at the village level. In order that cash transfers take place, it was required that the beneficiaries' bank accounts were opened and made active. The selection of beneficiaries was done at the Block development office. The role of ODRC primarily was to facilitate the process and give corrective technical and social measures for the fair implementation of the project. However, there was huge gap and discrimination within the systems, which were related to societal fabric, corruption in institutional mechanisms and the apathy towards the marginalized and the downtrodden. Also, the communities resented to put in any complaints for the mal functioning of any of the systems, as they were possessed with the threat of their situation post recovery and rehabilitation project. Since the success of program lied in the coordinated efforts of all stakeholders, at times a minor loophole led to stagnancy in the delivery system. This could not be accounted for, as there were no appropriate feedback or complaint mechanisms, which

could be set in, and the accountability could not be established given the complex operational framework.

- (e) **Generating awareness and advocate to the communities and local Government:** The Kosi Reconstruction and Rehabilitation program was embedded in the existing governmental scheme called “Indira Awas Yojana” (IAY).² However modus operandi of KRRP was completely different. The IAY, especially, in the Kosi belt was not so successful scheme. Some of the key factors that were contributed to this failure included unavailability of technical guidance to the house owner and the local construction profession, lack of information to the officials sanctioning funds at the district, block and panchayat level and lack of monitoring and supervision. Also the program was largely seen as the provision of poor rather than mechanism for better living conditions for deserving population.

KRRP, however, had to be redefining the nature and purpose of established IAY system. The communities could neither take undue advantage of the government scheme, nor could the government act with the complacency. This was definitely a huge challenge, when such programs actually integrate with the large governmental development schemes. Creating acceptance amongst the communities and more so amongst the grass root level government officials was a definitely a challenge.

- (f) **Lack of Political will:**

The mass scale recovery programs requires commitment at all levels including government, technical agencies, communities as well as the political representatives. Such schemes are largely benefiting the common people, the marginalized and the population living below poverty line. Often, there is reluctance amongst the political group to elevate the standard of living of the poor and the marginalized because of obvious reasons. Political unwillingness leads to undue interference and creates hindrance in such programs. Bihar is one of the highly politicized states and it plays a very important role during implementation.

14.8.2 Health

- (a) **Health Centers opened have limited time span:**

The health centers especially by the non-government or voluntary organizations are operational till the time they have resources to run it. In critical place like Bihar, where there are few public health centers, which are often in a depleted state, such health centers run by non-government organizations becomes very critical and there is over dependence on them. However, the institutional systems do not recognize it and therefore lack support from the respective health departments.

² IAY: Indira Awas Yojana provides a financial grant of Rs. 45,000 per BPL [below poverty line] family. The IAY beneficiary is also eligible for loan of Rs. 20,000. This is Govt. of India Scheme.

(b) Limitation on providing health services:

Although, the health center had all basic requirements to provide the medical needs of the communities, certain cases could not be attended, since this health center was not a registered center as per the government rules. The community health center was not recognized and therefore, in spite of all the expertise available. Hence the communities could be provided only partial services. Such limitations, especially during the emergencies and during disasters where the accessibility is a problem, could lead to mortalities.

(c) Shortage of trained medical human resources:

The health sector is facing acute shortage of the doctors and other paramedical staff. Even if they are available most of the times, they lack experience and in the extreme conditions, they lack the proper medical degree and often they are found fake. Hence there is dearth of doctors, nurses and others in the state and especially Kosi region. There is therefore an indirect impact on the health of the communities, who often are not attended because of lack of medical staff or untrained staff.

(d) Lack of training and capacity building:

There are several civil societies, which are working on health sector, safe drinking water and sanitation units. However, there are no consolidated efforts put in both by government and civil societies together to train and build capacities of the communities to help them understand the impacts on health and hygiene. Moreover, the villages in these areas are largely marginalized and therefore they really do not have enough resources to cope up with problems like sanitation or water purification, which may be capital intensive. In the given health scenario, the villages do not have enough health infra structures or the medical staff.

(e) Lack of large-scale awareness programs:

Health, Sanitation and Hygiene requires behavioral change amongst the communities. Such change can only be promoted, if there is an organized mass scale campaign especially in these frequently affected flood prone areas. The issue of basic health amongst children and women is a perennial issue. The localized awareness generation therefore is not enough. It requires a community based mass scale awareness and outreach programs. Examples such as Polio eradication in India is available to be followed to generate processes which would take care of sanitation, immunization, child mortality, infant mortality and health care for women.

(f) Lack of good governance and accountability:

The communities are provided with the infra structure such as public health care or community health care centers. Having infrastructure does not resolve the problem. At times, such centers do not have enough apparatus and resources to operate. In most of the cases, there is no doctor or Paramedics available. The situation becomes all the grimmer, when the disasters such as Kosi floods occur. It is therefore important and imperative to govern, monitor and regulate the health services in the area. Accountability requires to be fixed and appropriate measures should be taken to fix the health centers and make them functional.

14.9 Conclusions

The interventions by SEEDS did give an impetus to faster recovery at the localized level, considering the scale of operations as well as the prevailing socio economic and geographical vulnerabilities. At the national level, the collaborative approach is also being looked upon as an enabling mechanism to reach out to the communities faster, being a vehicle to leverage the development schemes, and in process train and build capacities of the communities through raising awareness and increasing their participation in the whole process. However, initiating such a process in otherwise very feudal society, tend to create ripples especially at the grass root level. Hence the recovery process requires being subtle yet without compromising the basic fundamentals of equity and humanity in the process. The voice of community requires to be heard and therefore is of utmost important in the whole process.

Also, the frequent large-scale floods lead to large-scale loss events especially in the states such as Bihar; often bring in the significant destruction. Such destruction results into poor economic index and more importantly depriving the communities of their basic amenities, assets and livelihoods. The state is infested with the same disasters impacting thousands of people, losing their lives and locked into endemic poverty cycles. However, such disasters do give an opportunity to initiate the improvement of the quality of life, induce the change in the community behavior regarding risks and set up an enabling environment to cope up with these disasters. It also helps to revive their access to health, housing and community infrastructure.

Community based response and recovery reinforces equity and strengthens the community networks. Community driven processes ensures addressing the real needs of the community, brings in more ownership of the community, establishes the accountability and provokes institutional mechanism to provide enabling environment to implement the long-term recovery projects in a systematic manner.

Although, there is a need of institutional paradigm shift to mainstream Disaster Risk Reduction, however this is not enough. Such shifts to Disaster Risk Reduction will require huge training and capacity building activities across various levels up to the household levels. The initiatives would require to be supported with regular monitoring, setting up accountability standards and continuously raising awareness amongst the communities. On a wider lens, the development schemes for Housing, Infrastructure, Health, Education and others should be used as vehicles to integrate the disaster reduction elements.

Appendix: Literature Review

Community Based Disaster Management

Communities are at the frontline of disasters. Over the last two decades it has become apparent that top-down approaches to disaster risk management alone fail to address the specific local needs of vulnerable communities, often ignoring the local capacities and resources. At times this approach further increases the vulnerability of the community.

In response to the limitations of this top-down methodology, the community-based disaster management emerged as an alternative approach, during the decades of 1980s and 1990s.

ADPC (<http://www.adpc.net/v2007/Programs/CBDRM/Default.asp>)

In developing countries such as those in South Asia, where disasters are recurrent and heavy on impact, such strategies help communities prepare better to respond to disaster situations. This bottom-up approach has received wide acceptance because considered communities are the best judges of their own vulnerability and can make the best decisions regarding their well being. Through CBDM, the people's capacity to respond to emergencies is increased by providing them with more access and control over resources and basic social services. The CBDM approach provides opportunities for the local community to evaluate their own situation based on their own experiences initially. Under this approach, the local community not only becomes part of creating plans and decisions, but also becomes a major player in its implementation. Although the community is given greater roles in the decision-making and implementation processes, CBDM does not ignore the importance of scientific and objective risk assessment and planning (Pandey and Okazaki 2005).

Role of various stakeholders in CBDM: Community Based Disaster Management is a process, which leads to a locally appropriate and locally "owned" strategy for disaster risk reduction. The most significant aspect of CBDM is participation of all stakeholders in the activities undertaken. This is achieved through awareness generation at multiple levels that lead to stakeholder ownership of the initiatives. Community involvement ensures that the activities address local needs and take into consideration local resources and capacities.

The aim of CBDM approach is to reduce vulnerabilities and strengthen people's capacity to cope with hazards (Yodmani 2001). Because a community is involved in the whole process, their felt needs and real needs as well as inherent resources are considered. Therefore there is a greater likelihood that problems will be addressed with appropriate interventions. The aim of CBDM is to create resilient people living within resilient communities within resilient environments within resilient countries.

"Characteristics of Disaster-resilient Community"—a guiding note by Oenone (2007), addresses capacity across several levels and thematic areas. Governance, risk assessment, knowledge, education, risk management, vulnerability, reduction, disaster preparedness and response all have components of capacity.

"The capacity to cope up with unanticipated dangers after they have become manifest, learning to bounce back" (Aaron 1991:77). Local knowledge, skills, determination, livelihoods, cooperation, access to resources and representation are all vital factors enabling people to bounce back from disaster" (IFRC 2005:1).

The opportunity to change, adjust and adapt following a disaster is to find creative ways to increase the resilience of everyone and everything. "The capacity to adapt existing resources and skills to new systems and operating conditions" (Comfort 1999:21).

Effectiveness of CBDM strategies: An overview of CBDM strategies implemented around the world clearly suggests that while communities at risk are put at the centre, the solutions are often imposed from outside. Moreover, as pointed out during a national meet in India, of community representatives on disaster risk reduction (NADRR 2007), communities become vulnerable due to:

- An overemphasis on technology masks social, political, and economic issues that underline vulnerabilities
- Many development policies and programs create or increase vulnerability
- Reconstruction and development policies sometimes increase vulnerability which leaves disaster struck communities worse off
- Community knowledge and solutions are getting lost due to non-recognition

Post Disaster Response: The Synthesis Report of the Tsunami Evaluation Coalition cites “the international humanitarian response system needs to work much harder to understand local contexts and work with and through local structures. It is not just a question of supplying quantities of aid to far off places, it is also about making sure aid is appropriate and improves the capacities of local structures to do it their way. International support should aim to empower affected people to articulate their needs, demand accountability from international agencies, and to make their own choices. International agencies must respect the role and responsibility of affected states as the primary duty bearers and authorities in responding to natural disasters.” (TEC 2006).

Community Based Disaster Recovery is the most viable and spontaneous reaction of a disaster affected community to help itself get back to normal life. It has been best demonstrated by instances of community action itself that in most cases communities are very capable of taking care of their recovery needs too. With a little bit of facilitation support from outside, disaster affected communities can not only manage their recovery needs, but do so in a manner that is very sensitive to local needs and capacities. In this way, community based disaster recovery turns out to be very appropriate and efficient.

Disaster recovery is a subject that is making a fast transition from a welfare and philanthropy based activity to a community based one. This positive development is based on a clear realization that communities are best placed to understand their needs and to fulfill them in the most efficient way with just a little support from outside. Indigenous knowledge is often more practical than external technological aid. Local systems are more sustainable than imported ones. Cultural values are more important than innovative designs. This has been established by a number of past experiences, and also by the fact that many a times externally aided interventions is so alien to the local context that they are not even used by the beneficiaries.

It can be seen from the studies and documentation of almost all disaster recovery programmes that the three primary areas of recovery after disaster are health, habitat and livelihoods. Survival of the affected population is of supreme importance. Once their life is secured, the issue of getting back to a livable house that protects from the vagaries of nature, and accompanying infrastructure takes

importance. Thereafter, it becomes important to restore livelihoods, so that a sustainable means of supporting families can be established, to make them self-reliant. Much of this can be achieved through people's actions. In fact, this must be attained through people's actions to the extent possible. For, if these actions are carried out through external aid instead of local action, then they only go on to increase dependence and in turn vulnerability. In a post-disaster situation, focus on recovery of health, habitat and livelihoods, at least to the levels that existed before the disaster. Try to do it through people's actions.

Recovery of Health: A community-based approach in health recovery does not mean that the community replaces the health services; it means that the community takes care of the health recovery needs to the extent possible with appropriate knowledge and timely small-scale actions. For specialized inputs the expert teams will be required, but again, a prepared community will be able to provide local support to the external teams and thereby assist in carrying out their functions more efficiently.

Shelter Recovery: Immediate to Permanent: While minimum standards of shelter reconstruction have been laid out in the Sphere Standards, such efforts are still grossly inadequate in delivering housing that people want to live in. Community-based shelter recovery can be a participatory process with community leading it and being supported with limited technical assistance from facilitating agencies.

Village designs are driven by environmental sustenance. City designs, by their basic purpose and definition, are driven by economic considerations. They disregard the environment and the human being for the sake of the economy. Natural disasters should not get compounded due to an imposition of the economic scheme of planning at the cost of the environmental and social ones. An ideal rehabilitation plan has to balance the two considerations—of sustainable development and economic growth.

A suggested process is to adhere to the organic layout of the disaster-affected settlement to the extent possible. This will cause least disruption in the functionality of the settlement, and maintain a higher sense of belonging for the inhabitants. Since they are already dislocated and traumatised, a friendly and old-home-like resettlement will have the mildest impact on them. Within this framework, addition and improvement of facilities wherever required can and must be done.

Building Community Capacity: Overcoming Shocks and Stresses: At the heart of a successful CBDRM practice lies local coping capacity. This, also seen as resilience, may be defined as the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure (ISDR 2004).

It is important to define here the scope of community's own coping capacity. While most communities are able to absorb stresses at a smaller scale or in recurrent forms, they may not be in a position to absorb larger shocks. If they are not allowed to deal with small-scale or recurrent stresses, their vulnerability to large shocks decreases. The role of external agency then becomes critical in enhancing community's own capacities. Based on this initial presumption, the author has

examined selected projects from his field work (as an external agency working with communities at risk) as a means to derive a model approach to CBDM. These are covered in the next chapter.

References

- Aaron W (1991) Searching for safety. Transaction, New Brunswick
- Bihar Kosi flood (2008) Need assessment report. June 2010, by Government of Bihar, World Bank and Global Facility for Disaster Reduction & Recovery
- Comfort L (1999) Shared risk: complex systems in seismic response. Pergamon, New York
- IFRC (2005) World disaster report 2005. International Federation of Red Cross and Red Crescent Societies, Geneva
- ISDR Terminology (2004) ISDR-living with risk. http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm
- Jain V, Sinha R (1998) Flood hazards of North Bihar Rivers, Indo Gangetic plains. *Memoir Geol Soc India* (41):27–52
- NADRR (2007) People, policy and partnership for disaster resilient development. In: Proceedings of national workshop, New Delhi, November 2007
- Oenone C (2007) Application of characteristics of a disaster-resilient – community exercise to introduce the characteristics to DRR practitioners working in Rural Bangladesh Village. Tearfund, Bangladesh
- Pandey B, Okazaki K (2005) Community based disaster management: empowering communities to cope with disaster risks. *Reg Dev Dialogue* 26(2) (UNCRD, Nagoya, Japan)
- TEC (2006) Joint evaluation of the international response to the Indian Ocean tsunami: synthesis report. Tsunami Evaluation Coalition, Geneva, July 2006
- Yodmani S (2001) Disaster preparedness and management. Social Protection in Asia and the Pacific, Asian Development Bank, Manila

Chapter 15

Opportunities and Challenges of Role of Civil Societies in Risk Reduction

Rajib Shaw and Takako Izumi

Abstract Although the roles have changed and evolved, Civil Society Organizations (CSO) played important roles in disaster risk reduction (DRR). An analysis was done to understand the role in a systematic way with the Hyogo Framework For Action (HFA) priority areas. HFA 1 shows strong possible roles of CSO in policy formulation and or facilitation of different stakeholders in the process. HFA 2 focuses on CSO roles in highlighting qualitative aspects of risk assessment, and focus more on the capacities in the local level. HFA 3 emphasizes role of CSOs in formal, non-formal and information education. HFA 4 provides different scopes as well as challenges for CSO participation, which can be facilitated working with the local stakeholders. HFA 5 emphasizes on CSO role in building resilience through community recovery. Finally, five specific recommendations are provided which may enhance the role of CSO in DRR as: (1) government–NGO cooperation mechanism, (2) CSO-community trust, (3) Technical strength and professionalism of CSO, (4) CSO-government-academic nexus, and (5) Transparency and accountability issues.

Keywords Community trust • CSO-DRR role • Government collaboration • Technical strength • Transparency and accountability

R. Shaw (✉)

Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan
e-mail: shaw.rajb.5u@kyoto-u.ac.jp

T. Izumi

International Research Institute of Disaster Science, Tohoku University, Sendai, Japan
e-mail: izumi@irides.tohoku.ac.jp

15.1 Introduction

Civil society has played and can play an important role in disaster risk reduction. Role, definition, concept of civil society involvement is changing over time, and has evolved over years. While more than 40 or 50 years back, the disaster response was mainly the responsibilities of army or civil defense force and/or Red Cross/Red Crescent societies, several local, national, and international NGOs have shown their strength in the post disaster rescue and response operation. Some of them have demonstrated excellent innovative skills in the short, medium, and long-term recovery. Although small in number, a few NGOs and/or civil society organizations have demonstrated their skills, motivations and technical ability in involving government and people/communities in the pre-disaster risk reduction measures.

This chapter shows the results of systematic analysis of role of civil society in disaster risk reduction. The chapter provides key observations based on the Hyogo Framework for Action (HFA) five priority areas: institutionalization (HFA 1), risk and vulnerability analysis (HFA 2), knowledge–education–training (HFA 3), cross cutting issues (underlying risk factors: HFA 4) and response and recovery (HFA 5). Based on the 13 chapters under these five priority areas, this chapter provides some key recommendations for future potential roles of civil society in disaster risk reduction.

15.2 Key Observations

The key observations as appeared from the earlier chapters can be summarized based on the HFA priority areas as follow.

15.2.1 *HFA 1: Policy and Institutionalization*

In total, this section had three chapters, one general (Chap. 2), and two country specific examples (Chaps. 3 and 4). Chapter 2 has demonstrated role of civil society in global, regional and national level. In the global level, the most prominent advocacy work has been done by the GNDR (Global Network for Disaster Reduction), which has been extremely influential in the global meeting like the Global Platform in 2009, 2011 and 2013. Their landmark publication (*Views from the Frontline: VFL*) has made deep impacts on bringing grass roots views of risk reduction to the global advocacy platforms. The differences between the official HFA (where the data provided by the government) and the VFL HFA progress show the sharp contrast of the government decision and the views in the grassroots. This is of utmost importance in the fact that HFA has not been properly brought to the implementation level at local governments and communities. Thus, the civil society can play a vital role in bridging this national and local gap in the implementation of HFA. The Asian example of civil society network

(ADRRN: Asian Disaster Reduction and Response Network) has also been very active in promoting the role of NGOs (especially that of national NGOs) in different forum. They have been extremely productive in the last ministerial meeting in Jogjakarta in Indonesia in 2012, where some of the major decisions at the government level have been facilitated by ADRRN. The network has developed its brand name in the international and donor communities as well through its dedicated and transparent work to facilitate grass roots voices in the national, regional and global forum. There also exist some good examples of national platforms of the civil society networks, which have facilitated important decisions at the national level.

Chapter 3 has shown the example of civil society role in a fragile state like Afghanistan. A country, undergoing more than 20 years of conflicts, and prone of different types of natural disaster has so far under-estimated the role of civil society. There existed year long Sura (traditional community organization), which has been effective even in time of Taliban rules. These local civil society systems were core to the local governance. However, over years, their strength to the national governance was not properly recognized. Over past several years, the grass roots organizations (facilitated by external or international civil society), the first strategic national action plan was formed in Afghanistan for disaster risk reduction. This initiative also enhanced the formation of the first disaster risk reduction national platform in the country with involvement of different stakeholders. Thus, the role of civil society in a fragile state was extremely effective to establish and facilitate multi-stakeholder cooperation in disaster risk reduction.

Chapter 4, on the other hand provided another unique example of civil society facilitation in country's disaster management legislation formulation in Indonesia. The country being prone to different types of disasters, and has experienced different major disasters over past several years (starting from 2004 Indian Ocean tsunami to 2006 Jogjakarta earthquake to 2009 Padang earthquake), an institutional mechanism for disaster risk reduction was long due. The civil society (national NGO in Indonesia) played a major role in influencing policies in legislation, especially to ensure a multi-stakeholder approach is incorporated and institutionalized in the risk reduction paradigm of the country. This is a significant achievement keeping in mind the large impacts of legislative process over national and local governance in due course. Therefore, civil society, if properly accepted by the government can play a mutually beneficial role in longer-term disaster risk reduction approaches.

In summary, the HFA 1 area focuses on government-civil society engagement in the policy formulation at the national level. The civil society brings important grass roots perspectives to the policy, which ensures policy-practice linkages.

15.2.2 HFA 2: Risk Assessment

There are two chapters in this section, one provides some overview of the risk assessment issues, and the other provides the specific country examples. Chapter 5 provides a critical overview of the risk assessment process, and highlights the

importance of civil society roles in strengthening this process. One of the key aspects of the chapter is the importance of quantitative versus qualitative approaches on risk assessment. In most cases, risk assessment is the quantification of the risk, however, there are some issues, especially in terms of the community's vulnerability, or capacity, which cannot always be transferred into quantitative terms. The chapter highlights the importance of civil society roles in emphasizing the importance of qualitative risk assessment in the decision making process. The other key issue is the importance of capacity as against vulnerability. Each community has its own capacity, in different forms. A grass-root lens can filter that into the risk assessment process, which is supposing the key role a civil society can play. Another key aspect is the focus on fast onset disasters (like flood, typhoon, earthquake etc.) as against the slow onset disasters (like drought, heat waves etc.). The risk assessment process needs different approaches, especially in terms of social approaches, to deal with these types of disasters. There also, civil society can play an important role in highlighting different social dilemma and/or phenomena in the decision making of risk assessment.

In Chap. 6, a classic example of risk assessment is provided from Nepal. The uniqueness of this example is the professional approach of the civil society, which has shown specific evidence based example of risk assessment in the country, and specific awareness raising activities at different levels (from top level decision making to people or neighborhood level approach) to bring the risk assessment in to decisions leading to implementation through targeting change agents (like school teachers, masons etc.). The civil society was not only engaged in risk assessment process, but also helped the local governments to enhance their capacities (through human resource development programs) to undertake future risk reduction activities and incorporate them into decision making of the local governance.

In summary, the risk assessment process needs professional skills, both in terms of qualitative and quantitative measurements. The civil society can play a critical role on highlighting the importance of qualitative approach, and enhancing local government's capacities and skills in undertaking decisive actions following the risk assessments.

15.2.3 HFA 3: Knowledge–Education–Training

There are two chapters (Chaps. 7 and 8) under this priority area. Chapter 7 focuses on the general issues of knowledge, education, training, while Chap. 8 focuses on country examples of Myanmar, Vietnam and Japan. In Chap. 7, the key focus is on role of civil society in formal, non-formal and informal education. The civil society in several countries has worked closely with the schools and the education board to influence the formal education sectors in disaster risk reduction. It needs different levels of activities, starting from student's education material development to teacher training to education policy workshop etc. Besides, the civil society can also play an important role in non-formal education, which is with the school or the

education system, but can be done in close cooperation with the local communities. The school–community interactions can be facilitated by the civil society. The other aspect, where civil society can play an important role is informal education, which is through community education, in several cases through the indigenous knowledge, which exists in the communities. Thus, civil society can play crucial roles in all three different levels of formal, informal and non-formal education. Training for disaster risk reduction is another issue, where professional expertise of the civil society bodies is been found to be useful. This can be done through close cooperation with the local governments so that the efforts are institutionalized in the local level.

Chapter 8 provides examples of the above activities in Myanmar, Vietnam and Japan. The Myanmar work started after the 20089 Nargis cyclone, which provided a good opportunity of civil society to work in Myanmar in close cooperation with the government. The motto of the civil society was to “reach the unreachable”, which meant to bring knowledge to the people, who needed it the most. The remoteness of the community was the key aspect, which the civil society could bridge with close cooperation with the national and local governments. In case of Vietnam, it was more on formal education program, where the civil society worked closely with the local government education board, provided teachers training, and involved teachers in developing their own disaster education programs (along with the local communities). The impact was institutionalized with provision of funding from the city government to the board of education to continue disaster education after the completion of external driven projects. The Japan case was linking disaster education with other types of education like ESD (education for sustainable development), which the local government practiced before the 2011 devastating East Japan Earthquake and Tsunami. The civil society worked with the local government education board to link ESD and disaster education.

In summary, civil society can play important role in disaster education (formal, informal and non-formal), when it works closely with the local governments and/or education related stakeholders (like school teachers, principals). Civil society can also make a big impact on linking disaster education with other existing types of education like ESD, environmental education, climate change education and so on.

15.2.4 HFA 4: Underlying Risk Factors

This section consists of four chapters, one overview (Chap. 9), and three theme-based (Chap. 10 on micro-finance and livelihoods, Chap. 11 on ecosystem, and Chap. 12 on disability). Chapter 9 eloquently provided the links between food security, health, human security, environment and livelihoods issues to disaster risk reduction. Over past several years of bi-annual progress, the HFA 4 has always made minimum progress in comparison to the other HFA priority areas. The reason is rather obvious that the HFA 4 is linked to more with the non-disaster related activities, which, when conducted can make a big difference in the risk reduction

paradigm. All the above issues from food security to livelihood restoration are equally important for the communities at risk. When treated in the national government level, each of these issues is linked to a different ministry, however, when the cumulative effects come to a community or a household in the form of a disaster, the impacts are multi-faceted. Thus, the civil society can play an important role in desegregating this risk into the individual sectors to highlight the importance of risk reduction measure at the local level. The integration of these effects is very important, and the civil society can play a crucial role.

There are three other chapters, which address the issues of livelihoods, ecosystem and disabilities in different contexts. The livelihood issue is dealt through the micro-finance scheme in Bangladesh, which has shown a good progress in the risk reduction measures. However, the major MFI (micro-finance institutions) do not follow the risk reduction principles in their investment in the local communities. The civil society, with professional expertise in the field can make a positive influence in the decision making of the local governments and the related corporate sectors. The ecosystem-based approach has pointed out the importance of linking ecosystem conservation with local governance. The governments provide the basic framework (the civil society can play an important role in developing this framework), the civil society can play the role to bridge the gap between the government and the communities, and take decisive actions. The disability chapter has highlighted the importance of disable people to link to the risk communication network. The disable, with its main virtue, needs more time to evacuate when an early warning is issued after a disaster. Thus, the link to the ground realities is of utmost importance, where civil society can play an important role.

In summary, the civil society needs a more coordinated approach to address different underlying risk factors from livelihoods security to ecosystem-based approach to disability-based approaches. The civil society needs to work closely with the local governments, if it needs to make policy changes. On other advocacy related cases, civil society can play an active role in highlighting the importance of the issues in the disaster risk reduction, especially to establish the environment-disaster-development nexus.

15.2.5 HFA 5: Community Based Response and Recovery

This section consists of two chapters (Chap. 13 on general community-based recovery issues, and Chap. 14 on specific recovery issues of India). In Chap. 13, it becomes evident that the recovery process provides an important step of civil society involvement in disaster risk reduction. Resilience building through disaster recovery is the key message of this chapter. Resilience can be classified into physical, social, economic, institutional and natural, and the approaches would be different based on the specific disaster, which needs to be addressed. Civil society can play an important role in bringing the community dimensions recovery process to be linked to the three issues mentioned above.

In Chap. 14, the owner–driver recovery process is described. The civil society played an important role in house owner’s involvement in the recovery process. However, to monitor properly the owner drive recovery, it needs different steps and recovery process. Owner involvement is always a slow process, and needs to have a support from the communities (facilitated by the civil society, and endorsed by the local governments). Thus, the owner driven recovery is a classic example where the civil society can play an important role in decision-making. Government endorsement is of highest importance, which enables sustainability of the approach. Linking to external resources ensure that the experiences can be disseminated outside the community, country and region.

In summary, the response and recovery experiences of the civil society states that it can play a very crucial role in decision making, if it gets connected to the local governments on time. As a civil society, it can play an independent role to monitor the progress of the recovery process, however, when the civil society works closely with the local governments, it enhances transparency and accountability to the system.

15.3 Future Potentials

Based on the above observations, examples from different Asian countries, there can be five specific recommendations, which can be put forward to enhance the roles of civil society in disaster risk reduction.

1. **Government–NGO cooperation mechanism:** The most important part of civil society is to act in cooperation with the government. This does not mean that the civil society should always support the government views. Civil society, in this very nature needs to have independent views and opinion, which is free from any sort of influence. However, to make that opinion into the decision-making in a democratic governance system is to work in close cooperation with the governments to influence its policies and practices. There have been some very good examples of GO–NGO collaboration in the highest level of decision making, especially formulating the national legislations and laws, where the civil society voices have been incorporated into the governance mechanism at the highest level. This needs to be reflected to the local level implementation, where disaster risk reduction decisions have the most impacts.
2. **CSO–Community trust:** One of the major strong points of the civil society is its bonding to the local communities. The civil society needs to maintain this trust to influence as well as represent the local communities in the highest level of decision-making. The trust can be influenced with continued presence in the communities, work for the local communities, involving local communities members in the CSOs etc. The biggest strength a CSO can have is by maintaining its ties with the local communities. Therefore, it is of utmost importance that the local communities and the CSOs work together for the

betterment of the communities around. With the enhanced trusted relationship, the CSO can make to increase the bridging and linking social capital of the communities.

3. **Technical strength and professionalism of CSO:** The key part of CSO in some of the specified areas like risk assessment is the technical strength. In many cases, the CSOs are mainly driven with broader social causes, which is ok up to a certain level. However, to influence the policy and/or decision making, it needs realistic and evidence based approach, which can be provided only by the technical groups in the CSOs. Therefore, it is strongly encouraged that the CSO, which encourages risk reduction related activities, needs to have a strong link to the technical viability, so that it can influence the decision making at different governance levels (from local to the sub-regional governance).
4. **CSO-government-academic nexus:** CSO, alone cannot always finds its way to the risk reduction measures. As evidenced, risk reduction decision-making is a complex process, and needs gradual steps by different stakeholders. In case of Asian countries, the universities or the academic institutions play a high role of respect in the risk related field. The information provided by the academic institutions is considered to be authentic and reliable. Thus, the civil society needs to work closely with the academic institutions to dig out right information to be delivered to the right outreach groups in the right manner. A government-academic-CSO nexus will be required to enhance this process so that CSOs can take a lead to link to other stakeholders.
5. **Transparency and accountability:** Transparency and accountability are possibly the key strength of the CSOs, which can influence a good governance in longer term. The CSOs may be linked to different groups, but when it is regarded as one civil society group, it needs to show its strength as a good transparent mechanism to the governance system. The CSOs also need to be accountable to their own systems (both in terms of resource utilizations and power politics). Different levels of protocols and principles need to follow to accommodate the diverse nature of governance. However, the CSO needs to create its own value addition to the transparency and accountability system of the governance mechanism.

Finally, it needs to be reminded that CSOs can be a stand-alone stakeholder in the complex business of disaster risk reduction. CSOs have specific roles: sometimes to cooperate with the government decisions, sometimes to protest against (or try to change the government decisions) the government decisions. Whatever the case may be, there should be a specific logic, which needs to be unbiased based on the popular political theory existing in the country (otherwise, it is easier to be marked with some political parties). Civil society, especially in case of disaster risk reduction can play a real advocacy role in the disaster risk reduction, as long it sticks to the basic principles of the governance structure.

Acknowledgements The authors acknowledge support of different forum to gather the knowledge on disaster risk reduction, especially the role of civil society, which is highly acknowledged.