

# **Helping the helpers: Approaches to overcome obstacles concerning disaster mitigation and preparedness measures of non-governmental organizations to reduce flood risk in Asia**

Bachelor Thesis

Utrecht University  
Konstantin Gisevius  
Student number: 3917312  
Supervisor: Clare Barnes

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## **Abstract**

Asia is the most disaster-prone region in the world with a rising tendency in the coming decade. Especially flood-related disasters have a big impact on the region, and man-made climate change appears to even worsen the situation. While traditionally disaster-related activities focus on the post-disaster phase, a new approach is slowly emerging, shifting disaster relief efforts to mitigation and preparedness measures, ultimately reducing the impact of a disaster before it strikes.

The focal point of this thesis lies on the relationship between disaster mitigation and preparedness (DMP) measures undertaken by NGOs and factors that produce flood vulnerability in communities in Asia with a particular focus on the obstacles that NGOs face when taking part in DMP measures. An attempt has been made to find and develop approaches for improvement of overall NGO practice in the field of disaster risk reduction. For this purpose, the vulnerability model from David McEntire has been adopted as a theoretical framework.

The methodology involved an exhaustive literature research as well as the analysis of the currently undertaken DMP measures by a sample of 53 NGOs that are active in Asia.

Several findings can be reported: Firstly, NGOs are taking part in a considerable amount of DMP measures, including training and education programs, poverty reduction, mitigation construction or the promotion of the institutionalization of DMP. It was found that most activities are focused on social and economic aspects of vulnerability. Secondly, a plethora of complex and interlinked obstacles could be identified, such as the ineffectiveness of programs, lacking knowledge and expertise or the missing long-term and large-scale implementation of DMP projects. It appears that root causes such as the lack of funding or limited institutional capacity are the main issues in this context. Lastly, numerous approaches for improvement can already be found in existing literature, such as implementing a holistic and multidimensional approach, strengthening the collaboration among NGOs and other organizations, or promoting the long-term and large-scale implementation of DMP measures. When looking at the already implemented solutions, it became clear that several NGOs are active to overcome obstacles, but that there is still a lot of room for improvement.

## **Keywords**

Obstacles, disaster mitigation and preparedness measures, DMP, NGO, flood disaster

## 1. Introduction

### 1.1 Description of the problem

Asia is one of the most disaster-prone regions of the world. Statistics show that 38% of the world's natural disasters between 1975 and 2000 occurred in Asia. During the same period, flood events contributed to 31% of the total number of events, making hydro-meteorological disasters the most prevalent disaster type in this region (Dutta & Herath, 2004). The number of people exposed to coastal flooding in Asia is expected to increase by 50% by 2030 (Cousins, 2014).

*Disaster risk reduction* and *vulnerability reduction* are commonly discussed topics in the contemporary disaster management sphere. They are used interchangeably to mean ways of overcoming and minimizing disaster losses (Palliyaguru et al., 2014). In the scientific community, the concept of vulnerability is widely used to express the proneness of nations, communities, groups or individuals to certain disasters (McEntire, 2005). Such vulnerability, however, is not inevitable. By focusing on the pre-disaster stage, disaster mitigation and preparedness (DMP) measures can play a major role in minimizing the physical and human consequences of disasters (Benson et al., 2001).

It is recognized that governments alone cannot achieve sustainable hazard risk reduction and that greater emphasis must be placed upon community-based approaches and indigenous knowledge and coping strategies supported by non-governmental organizations (NGOs). A NGO can be defined as any non-profit, non-criminal, voluntary citizen's group, which is organized on a local, national or international level (Willems, 2002).

NGOs appear to be well placed to play a significant role in DMP, working, as they do, with poorer and marginalized groups in society (Behera, 2002). With donors and the United Nations now relying heavily on NGOs as implementing partners in humanitarian operations, NGO capacity has also become crucial to the functioning of the international relief system (Benson et al., 2001)

Although ideally the risk reduction activities should incorporate more civil society bodies *before* the disaster strikes, in most countries, there are rather few formal mechanisms (in terms of regulation, legislation, funding and institutional reforms) for NGO involvement in pre-disaster risk reduction activities (Shaw & Izumi, 2014).

NGOs are involved in a diverse range of DMP activities (Benson et al., 2001). Nevertheless, there also seem to be several obstacles such as questions of accountability, or obstacles to organizational learning, among others, which may explain the lack of effort of NGOs in this area (ADPC, 2007; Benson et al., 2001).

### 1.2 Knowledge gap

There seems to be little information on the scale or nature of DMP activities done by NGOs in general (Benson et al., 2001). Even though there is a considerable body of scientific literature concerning the role of NGOs in post-disaster measures (Von Meding et al., 2009; Shaw & Izumi, 2014), there has not been sufficient research about pre-disaster involvement of NGOs as well as a comprehensive overview of the obstacles that they face and approaches to deal with these obstacles respectively.

### 1.3 Aim and research question

The aim of this bachelor thesis is (1) to develop a representation of the factors producing vulnerability for flood risk in communities in Asia as well as the DMP measures which are currently undertaken by

NGOs to reduce said vulnerability; (2) to formulate a comprehensive overview of obstacles that NGOs face during flood risk DMP measures; and (3) to analyze possible approaches and strategies that may be or already are implemented by NGOs in order to overcome these obstacles.

Therefore, the research question of this thesis is:

*“What are approaches to deal with obstacles that NGOs in Asia face during DMP measures for flood risk reduction?”*

To answer this question exhaustively, it will be subdivided into four sub-questions:

- (1) Which factors produce flood risk vulnerability in communities in Asia?*
- (2) Which DMP measures are currently undertaken by NGOs to reduce said vulnerability?*
- (3) What are the specific obstacles that NGOs face during DMP measures?*
- (4) What are possible approaches and strategies that may be implemented by NGOs in order to overcome these obstacles?*

#### **1.4 Scientific and societal relevance**

At this point in Asia, floods are by far the most frequent and devastating natural disasters with an expected rise in the future (Dutta & Herath, 2004). More recent research done by the Intergovernmental Panel on Climate Change (IPCC, 2014) and other scholars (Jongman et al., 2012; Kundzewicz et al., 2014) confirms these trends and predicts a significant increase of extreme rainfalls in the next few decades due to climate changes which is going to worsen the flooding situation in Asia. Thus, the focus on reducing the impacts of flood disasters in the Asian region in the future is of paramount importance (Jonkman, 2005; Mirza, 2011).

On the topic of DMP it can be said that more research on development conducted in various fields in recent years has shown that the approach to DMP is becoming more and more community-based (Nakagawa & Shaw, 2004; King, 2007). Additionally, NGO capacity has also become crucial to the functioning of the international relief system (Benson et al., 2001).

Both an analysis of existing obstacles and the development of approaches for improvement could not only benefit the everyday work of NGOs by improving their flood risk DMP measures, but also lay the foundation for further research on the topic. Furthermore, a comprehensive representation of the reality that NGOs face when taking part in DMP measures could form a valuable link between academic theory and real-life practice by identifying differences and issues that can be adopted in further scientific research.

## 2. Theoretical Framework

### 2.1 Disaster/ flood risk

A community is said to be at *risk* when it is exposed to hazards and is likely to be adversely affected by its impact (Vasilescu et al., 2008). The United Nations International Strategy for Disaster Reduction (UNISDR, 2009) define *disasters* as a serious disruption of the functioning of a community or a society causing widespread human, material, economic and environmental losses which exceed the ability of the affected community/society to cope using its own resources. All disasters share two common characteristics: they include a triggering agent (*hazard*) and vulnerabilities (Palliyaguru et al., 2014). Conventionally, disaster risk is seen as a function of vulnerability and hazard (UNISDR, 2004). Hazards may be defined as dangerous conditions or events (triggering agents), that have the potential for causing injury to life or damage to property or the environment. Hazards may be classified into three categories: Natural, man-made, and socio-natural (Vasilescu et al., 2008). Although people may or may not be able to prevent or stop hazards, they determine to a great extent the level of vulnerability to disaster (McEntire, 2001).

### 2.2 Vulnerability

There are various approaches to conceptualize disaster vulnerability (Heijmans, 2001; UNISDR, 2004; Weichselgartner, 2001). Although the terminology varies to some degree among scholars, all of them stress the importance of focusing on the reduction of vulnerabilities instead of hazards to minimize overall disaster risk for communities. Vulnerability is thus seen as a fruitful concept, especially if it is understood as comprising not only physical factors (e.g. lifeline systems, buildings, infrastructure, etc.) but also the psycho-sociological ones (education, training in emergency response, information, etc.; Rodríguez et al., 2010). Nevertheless, a definition of vulnerability remains vague and thus there is no common conceptualization of the term among scholars (Palliyaguru et al., 2014).

One promising approach to conceptualize vulnerability is done by McEntire (2001). While triggering agents (hazards) stand as the independent component of a disaster, vulnerability is considered to be the dependent component that is determined by the degree of *risk* (proximity or exposure to triggering agents), *susceptibility* (product of social, political, economic, and cultural forces and activities that determines the proneness of individuals, groups and communities to disaster), *resistance* (capacity of buildings and infrastructures to resist the effects of hazards), and *resilience* (amount of coping capacity).

These four components (risk, susceptibility, resistance, and resilience) are divided into two parts: the physical environment (composed of natural systems as well as built environmental and technological structures) and the social environment (composed of individuals and groups as well as cultural, economic, and political systems; McEntire, 2001).

A benefit of viewing vulnerability as a product of these four components is that it includes both the positive and negative aspects of the physical and social arenas. In other words, the model recognizes that vulnerabilities are most likely to be present when there is a combination of high liabilities and low capabilities from diverse but overlapping environments. Furthermore, this perspective acknowledges that location and construction are important determinants of vulnerability,

but can never be isolated from the social, cultural, economic and political realms that influence decisions regarding settlement patterns and methods for building (McEntire, 2001).

Additionally, six types of vulnerability have been identified by McEntire (2001), each of them having an influence on one of the four components of vulnerability mentioned above. These are cultural, economic, physical, political, social, and technological. Physical vulnerability has an influence on the components risk and resilience; social, cultural, political and economic on susceptibility and resilience; and technological vulnerability on risk, resistance and resilience (see *figure 1*). Other scholars (Von Meding et al., 2009; Weichselgartner, 2001) also emphasize the importance of addressing these six types of vulnerability individually. This nuanced conceptualization of vulnerability is helpful in answering the proposed research questions thoroughly. It contemplates an interesting aspect of investigating to what extent certain DMP measures cover the four components of vulnerability.

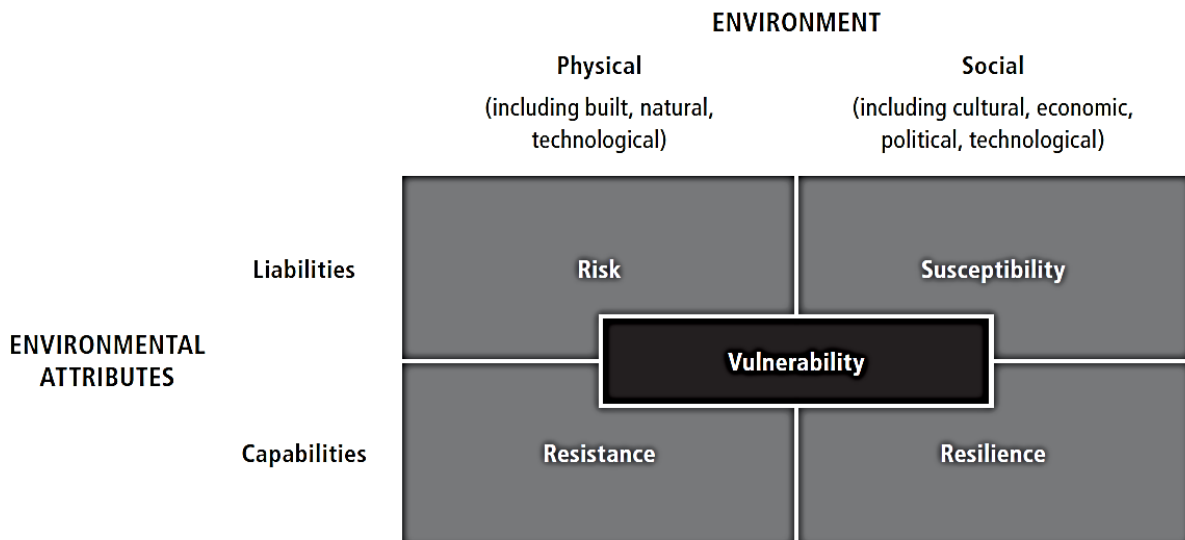


Figure 1. Components of vulnerability (McEntire, 2001).

### 2.3 Disaster risk management

Disaster risk management or reduction includes all measures which reduce disaster related losses of life, property or assets by either reducing the hazard or vulnerability of the elements at risk. Traditionally, the Disaster risk management cycle (DRMC) highlights the range of initiatives which normally occur during both the emergency response and recovery stages of a disaster (see figure 2; Vasilescu et al., 2008).





Figure 2. *The Disaster Risk Management Cycle (DRMC; KCMO, 2015).*

Although the terminology varies to a certain degree in the literature, typically, the cyclic process of the DRMC represents the following four stages: *Mitigation* (minimizing the effects of disaster), *Preparedness* (planning how to respond), *Response* (efforts to minimize the hazards created by a disaster), and *Recovery* (returning the community to normal; Vasilescu et al., 2008). Many commentators, however, have criticized this linear model, arguing that all of these elements may operate simultaneously and reinforcing (King, 2007).

#### **2.4 Disaster mitigation and preparedness (DMP)**

As mentioned above, DMP measures can play a major role in minimizing the physical and human consequences of disasters using a wide range of structural (e.g. buildings dams) and non-structural (e.g. livelihood diversification) measures (Shaw & Izumi, 2014). DMP measures are part of pre-disaster activities that are represented by the stages mitigation and preparedness in the DRMC (See figure 2).

Mitigation addresses the lessening of the adverse impacts of hazards and related disasters. These adverse impacts often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures encompass, among others, engineering techniques and hazard-resistant construction as well as improved environmental policies and public awareness (UNISDR, 2009).

Preparedness refers to measures taken in anticipation of a disaster event to ensure that appropriate and effective actions are employed. Disaster preparedness deals with long-term policies and programs to minimize the impact of disasters. A well-planned disaster preparedness plan will have been practiced and learned by government agencies, NGOs and the local citizenry, so that in the event of a disaster everyone knows how to act, where to go and what to do (James, 2008).

Accompanying a growing body of research in various fields, a new focus on the role of communities in DMP is becoming more and more important. Another focus area is empowerment of the local governments, as well as the involvement of NGOs and civil societies in the decision-making process (Nakagawa & Shaw, 2004). Additionally, a number of scholars have also encouraged or endorsed NGO involvement in DMP activities (Benson et al., 2001; Shaw & Izumi, 2014).

#### **2.5 The role of non-governmental organizations (NGOs)**

In most countries, NGOs have been found to be active mainly after a disaster has occurred, as a part of humanitarian responses. Several local, national, and international NGOs have shown their strength

in the post-disaster rescue and response operation. Although small in number, a few NGOs have demonstrated their skills, motivations and technical ability in involving government and communities in the pre-disaster risk reduction measures (Shaw & Izumi, 2014). According to Twigg and Steiner (2002), one of the main reasons why NGOs should be extensively involved in DMP is that poor and socially disadvantaged people, whom NGOs support through their development programs, are usually the most vulnerable to disasters.

## 2.6 Obstacles

Looking back at the previous paragraphs, with vulnerability reduction being the key aspect for reducing disaster risk, and DMP measures seeming the most effective tool therein, as well as the establishment of the crucial role of NGOs, the question arises why there has been so little NGO involvement in the pre-disaster stage. An explanation for this unbalanced involvement of NGOs in the different phases of the disaster risk management cycle lies within the issue that the organizations face different types of obstacles (Benson et al., 2001; King, 2007).

## 2.7 Conceptual model

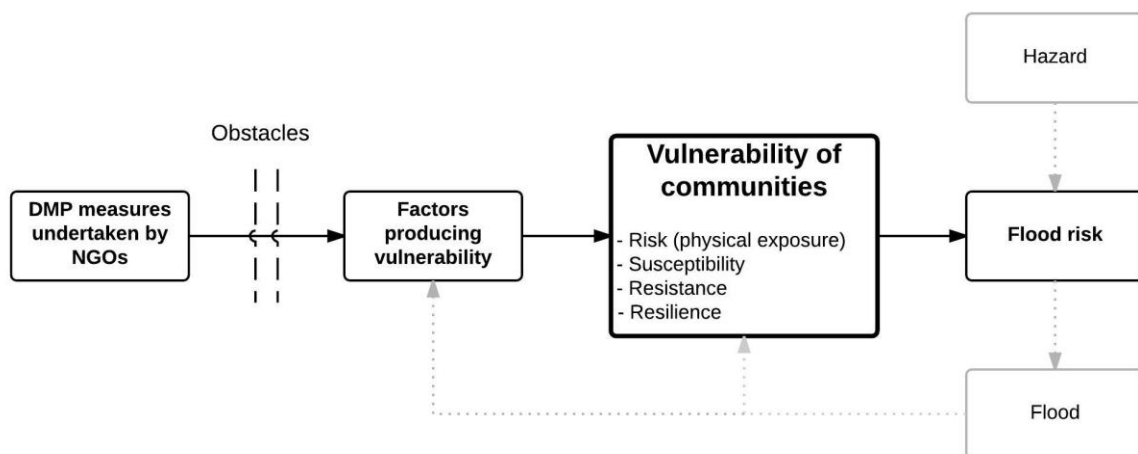


Figure 3. Conceptual model of the role of NGOs in the context of flood risk reduction (by author)

The conceptual model in *figure 3* shows the relationship between flood risk, vulnerability, factors producing vulnerability, and DMP measures undertaken by NGOs. As mentioned above, Flood (disaster) risk is a function of hazard and vulnerability (UNISDR, 2004; Vasilescu et al., 2008). Since NGOs do not have any influence on the magnitude or frequency of hazards (McEntire, 2001), they will not be further discussed in this thesis. Vulnerability is a product of the four components risk, susceptibility, resistance and resilience. There is a positive correlation between vulnerability and flood risk (McEntire, 2001). Thus, the goal is to reduce vulnerability which can be achieved through DMP measures (Palliyaguru et al., 2014). A flood has a direct influence on the vulnerability of a community and the factors that produce vulnerability (McEntire, 2001). These factors found in the literature represent the link between community vulnerability and DMP measures undertaken by NGOs.

Therefore, the leverage point for NGOs in this cycle is to achieve vulnerability reduction by minimizing the impact of said factors (Shaw & Izumi, 2014). However, there are obstacles impeding this intent (King, 2007; Patterson et al., 2010). Thus, as stated earlier, the focal point of this thesis will lie on the relationship between DMP measures undertaken by NGOs and factors that produce vulnerability in communities with a special focus on the obstacles that NGOs face when taking part in DMP measures.

### 3. Method

All literature used in this thesis was gathered through an extensive literature review process. A search for key words, including *flood*, *mitigation*, *NGO*, *Asia*, *vulnerability*, *disaster*, *CSO*, or *obstacles*, was undertaken in electronic library databases (such as Scopus, Web of Science or Google Scholar), journal table of contents, and relevant bibliographic references. The research included case studies and reviews. Furthermore, only studies dating back as far as 2000 were included in this thesis to guarantee relevant results in the quickly changing and evolving field of disaster management.

#### 3.1 Sample of DMP measures currently undertaken by NGOs

The first part of the study involved identifying DMP measures that are currently undertaken by NGOs that have an influence on the factors producing vulnerability in communities in Asia by David McEntire (2001; see Appendix A). In a first step, in order to sample DMP measures, information about several NGOs operating in Asia was collected. A total of 127 NGOs was identified. This list was compiled on basis of information derived from Zukma and Gannon (2013), the NGO index from PreventionWeb (UNISDR, n.d.), and lists of members of several NGO networks involved in DMP.

Of this preliminary selection of NGOs, 74 were excluded from the research, based on the following exclusion criteria: (1) NGO is not based in Asia (n=21); (2) no information or no information in English available (n=36); and (3) if they did not report any DMP measures or did not have an explicit focus on DMP activities (n= 17).

After applying these exclusion criteria, a total of 53 NGOs remained for further analysis. Two overviews of these NGOs, one regarding the country out of which they operate or alternatively the country in which they are headquartered and another showing the distribution regarding the scope of the NGOs can be found in table 1 and table 2 respectively.

In the following step, data on DMP measures was gathered by examining NGOs' websites and annual reports. These findings were substantiated with results from a general review of scientific literature. The overall findings of this part were compiled into a tabular overview (see Appendix B). Subsequently, a comparison of DMP measures and general factors producing vulnerability based on the six types of vulnerability created by McEntire (2001; see Appendix A) was drawn. In this step, factors that could not be influenced by the identified DMP measures were excluded from the study. Furthermore, the DMP measures were categorized into the six types of vulnerability based on their proposed influence on the remaining vulnerability factors. The findings from this part of the thesis were compiled into a comprehensive overview. Subsequently, a quantitative analysis concerning the percentage of examined NGOs taking part in each of the identified DMP measures was conducted.

Country	Number of NGOs analyzed
Bangladesh	13
Hong Kong	1
India	8
Indonesia	6
Japan	4
Laos	1
Malaysia	3
North Korea	1
Pakistan	1
Philippines	2
South Korea	1
Taiwan	1
Thailand	4
Vietnam	1
<b>Total</b>	<b>53</b>

Table 1. *Country of origin of NGO sample*

Scope of NGO	Number of NGOs
International	10
National	38
Local	5

Table 2. *Scope of NGOs in sample*

### 3.2 Obstacles

In the next part of the study, obstacles that NGOs face when participating in DMP measures were examined. This process was based on the overall literature review. By comparing the findings with the results of the former part, the obstacles were compiled into an overview and categorized into either DMP-specific obstacles or systemic obstacles in general NGO practice.

### 3.3 Approaches for improvement

The final step of this thesis involved finding already implemented solutions by NGOs for the identified obstacles or potential additional possibilities of improvement that came forth out of the literature review process. Firstly, suggestions for better DMP practice of NGOs were drawn from the analysis of scientific literature and compiled into overall recommendations for DMP practitioners and other actors involved in the flood risk reduction field. Secondly, the information about DMP measures gathered in the first part of the study was analyzed with an eye towards the above mentioned approaches for improvement to assess the current stage of implementation by NGOs.

## 4. Results

### 4.1 Overview of factors producing vulnerability in communities and DMP measures that are currently undertaken by NGOs

In order to find an answer for the first two sub-question of the thesis at hand, namely (1) *Which factors produce flood risk vulnerability in communities in Asia?*; and (2) *Which DMP measures are currently undertaken by NGOs to reduce said vulnerability?*, an analysis of the currently undertaken DMP measures of a sample of 53 NGOs has been made. The results of this step were two-fold: The first is a general overview of the DMP measures per NGO (see Appendix B) and the second is an analysis of the influence of the DMP measures on the factors that produce vulnerability in communities in Asia (see table 3).

Type of vulnerability (vulnerability components)	Factors that produce vulnerability in communities in Asia (McEntire, 2001)	DMP measures that are currently undertaken by NGOs to reduce community vulnerability
<b>Physical</b> (Risk, Resistance)	<ul style="list-style-type: none"> <li>Improper construction of buildings</li> <li>Degradation of the environment</li> </ul>	<ul style="list-style-type: none"> <li>Building of mitigation structures (homestead rising, flood resilient embankment, culvert construction, etc.) (ADPC, 2007; Allen, 2006; Gupta, 2014; Luna, 2001; Parvin &amp; Shaw, 2013)</li> <li>Climate change adaptation measures</li> <li>Environmental protection (social forestry program, promotion of sustainable development) (Shaw, 2006b)</li> </ul>
<b>Social</b> (Susceptibility, Resilience)	<ul style="list-style-type: none"> <li>Limited education (including insufficient knowledge of disasters)</li> <li>Inadequate routine and emergency healthcare</li> <li>Marginalization of specific groups and individuals</li> </ul>	<ul style="list-style-type: none"> <li>Formal, informal and non-formal disaster education (Gupta, 2014; McEntire, 2011; Shaw &amp; Izumi, 2014)</li> <li>Raising disaster risk awareness (ADPC, 2007; Allen, 2006; Paton &amp; Johnston, 2001; Shaw, 2006b)</li> <li>Advocacy (Luna, 2001; Matin &amp; Taher, 2001)</li> <li>Knowledge dissemination/ information sharing with communities and/or other organizations (Allen, 2006)</li> <li>Training for leaders, local decision-makers, school staff, government officials, volunteers, CBOs, NGOs staff, and/or communities on key disaster management topics (ADPC, 2007; Allen, 2006; Luna, 2001; Parvin &amp; Shaw, 2013; Shaw, 2006b)</li> <li>Community-based disaster risk reduction (CBDRR)/ strengthening community participation (ADPC, 2007; Allen, 2006; Benson et al., 2001; Luna, 2001; Patterson et al., 2010; Shaw, 2006b)</li> <li>Empowerment of marginalized groups (Benson et al., 2001; Luna, 2001; Von Meding et al., 2009)</li> <li>Health programs</li> </ul>
<b>Cultural</b> (Susceptibility, Resilience)	<ul style="list-style-type: none"> <li>Public apathy towards disasters</li> <li>Defiance of safety precautions and regulations</li> <li>Loss of traditional coping measures</li> <li>Dependency and absence of personal</li> </ul>	<ul style="list-style-type: none"> <li>Raising disaster risk awareness (ADPC, 2007; Allen, 2006; Paton &amp; Johnston, 2001; Shaw, 2006b)</li> <li>Promotion of transferable indigenous knowledge and coping strategies (Allen, 2006; Benson et al., 2001; Matin &amp; Taher, 2001)</li> <li>Community-based disaster risk reduction (CBDRR)/strengthening community participation (ADPC, 2007; Allen, 2006; Benson et al., 2001; Luna, 2001; Patterson et al., 2010; Shaw, 2006b)</li> <li>Improve accountability to beneficiaries (Benson et al., 2001)</li> </ul>

	responsibility	
<b>Political</b> (Susceptibility, Resilience)	<ul style="list-style-type: none"> <li>Minimal support for disaster programs among elected officials</li> <li>Inability to enforce or to encourage mitigation steps</li> <li>Over-centralization of decision-making</li> <li>Isolated or weakened disaster-related institutions</li> </ul>	<ul style="list-style-type: none"> <li>Flood risk management (Benson et al., 2001)</li> <li>Linking and improving partnership/collaboration between NGOs and other Organizations (GOs, NGOs, research institutes, etc.) (Aldrich, 2015; Shaw &amp; Izumi, 2014)</li> <li>Evaluation of humanitarian action</li> <li>Research</li> <li>Promoting institutionalization of DMP measures (Luna, 2001)</li> <li>Implementation and/ or negotiation of preparedness policies (Luna, 2001)</li> </ul>
<b>Economic</b> (Susceptibility, Resilience)	<ul style="list-style-type: none"> <li>Failure to purchase insurance</li> <li>Sparse resources for disaster prevention, planning, and management</li> <li>Poverty</li> </ul>	<ul style="list-style-type: none"> <li>Income generation and poverty alleviation through microfinance (Matin &amp; Taher, 2001; McEntire, 2011; Parvin &amp; Shaw, 2013)</li> <li>Stockpiling of resources for emergency situations</li> <li>Food, water, sanitation, and/or housing security development projects (Shaw, 2006b)</li> <li>Livelihood diversification (ADPC, 2007)</li> <li>Funding for projects</li> <li>Promotion of insurance (McEntire, 2011)</li> </ul>
<b>Technological</b> (Risk, Resistance, Resilience)	<ul style="list-style-type: none"> <li>Over-reliance on warning systems or ineffective warning systems</li> </ul>	<ul style="list-style-type: none"> <li>Flood warning/ forecasting systems (ADPC, 2007)</li> <li>Flood monitoring</li> <li>Risk assessments (Benson et al., 2001; Shaw, 2006b)</li> </ul>

Table 3. Overview of factors producing flood vulnerability in communities in Asia and DMP measures undertaken by NGOs to reduce community vulnerability

Most of the identified DMP measures (24 out of 30) focus on the reduction of social, cultural, political, or economic dimensions of vulnerability, which means that the majority of measures aim at reducing overall community vulnerability by reducing susceptibility and raising resilience. Only a small part had a focus on the physical and technological dimension. These results are mostly consistent with the findings of the existing scientific literature (Luna, 2001; Parvin & Shaw, 2013; Shaw & Izumi, 2014).

In order to gain deeper insights into the reality of NGOs' participation in DMP, a subsequent analysis of the distribution of NGOs participating in specific DMP measures and the percentage of total NGOs undertaking said measures respectively was performed (see table 4). Almost half of the 53 NGOs included in the analysis currently take part in training measures (45,3%) and more than a third (37,7%) offer some kind of formal, informal or non-formal disaster education. Thus, these two DMP measures seem to take on an important role in reducing community vulnerability from NGOs' standpoint. Other important aspects were development projects for food, water, sanitation, and/or housing security (24,5%), linking and improving partnership and collaborations, flood warning or forecasting systems (both 22,6%). A little more than a fifth of the NGOs had programs with a focal point on community participation and the empowerment of marginalized groups (both 20,8%). Looking at these results, a clear trend for focusing on DMP measures that reduce social and economic vulnerability can be seen in the group of measures with participation rates higher than 20%. One exemption is the implementation of flood warning and forecasting systems, which can be considered

a technological measure. This trend can also be seen in the group with a participation rate between 10% and 20%, where social and economic measures also dominate the field. On the lower end of the spectrum (only 7,5% NGO participation or less), are mostly political, technological and cultural measures such as the implementation or negotiation of preparedness policies and the evaluation of NGO activities (both 5,6%), flood monitoring and risk assessment (both 5,6%), or improving the accountability to beneficiaries (1,8%). This last group comprises almost half of all identified DMP measures.

DMP measure	Type of vulnerability	Number of NGOs undertaking DMP measure	Percentage of total NGOs
Training	Social	24	45,3%
Disaster education	Social	20	37,7%
Food, water, sanitation, and/or housing security development projects	Economic	13	24,5%
Linking and improving partnership/collaboration	Political	12	22,6%
Flood warning/ forecasting systems	Technological	12	22,6%
CBDRR / strengthening community participation	Social/cultural	11	20,8%
Empowerment of marginalized groups	Social	11	20,8%
Microfinance	Economic	10	18,9%
Raising disaster risk awareness	Social/cultural	9	16,9%
Advocacy	Social	9	16,9%
Building of mitigation structures	Physical	8	15,1%
Knowledge dissemination/ information sharing	Social	8	15,1%
Stockpiling	Economic	7	13,2%
Livelihood diversification	Economic	7	13,2%
Research	Political	6	11,3%
Environmental protection	Physical	4	7,5%
Health programs	Social	4	7,5%
Flood risk management	Political	4	7,5%
Promoting institutionalization of DMP measures	Political	4	7,5%
Funding for projects	Economic	4	7,5%
Climate change adaptation measures	Physical	3	5,6%
Evaluation	Political	3	5,6%
Implementation and/ or negotiation of preparedness policies	Political	3	5,6%
Flood monitoring	Technological	3	5,6%
Risk assessments	Technological	3	5,6%
Improve accountability to beneficiaries	Cultural	2	3,7%
Promotion of transferable indigenous knowledge and coping strategies	Cultural	1	1,8%
Promotion of insurance	Economic	1	1,8%

Table 4. *Distribution of NGOs participating in DMP measures*

Based on the results of this part of the study, it can be stated that NGOs take part in a diverse range of different DMP measures with a clear focus on social and economic issues. Political, physical, cultural and technological measures seem to be of lesser importance with the exemption of CBDRR and raising disaster risk awareness, which are to be both social and cultural measures. These trends

are similar to the results stated above (Allen, 2006; Benson et al., 2001; Parvin & Shaw, 2013, Shaw & Izumi, 2014).

#### 4.2 Existing obstacles in DMP measures and general NGO practice

In order to answer the third sub-question, *namely (3) What are the specific obstacles that NGOs face during DMP measures?*, a literature review was conducted. An overview of the obstacles that NGOs face when participating in DMP measures can be found in table 5, which is divided into systemic obstacles in general NGO practice and DMP-specific obstacles.

DMP-specific obstacles	Systemic obstacles in general NGO practice
<ul style="list-style-type: none"> <li>• DMP has not established itself in the mainstream of NGO work (Twigg &amp; Steiner, 2002)</li> <li>• Limited Formalization /institutionalization of projects within formal projects (ADPC, 2007; Twigg &amp; Steiner, 2002)</li> <li>• Poor implementation of DMP policies (Twigg &amp; Steiner, 2002)</li> <li>• Poor integration between emergency and development (ADPC, 2007; Twigg &amp; Steiner, 2002) <ul style="list-style-type: none"> <li>○ Institutional and cultural tension between emergency and development departments (Twigg &amp; Steiner, 2002)</li> </ul> </li> <li>• Missing long-term and large-scale implementation of DMP measures (ADPC, 2007; Allen, 2006; Manuta &amp; Lebel, 2005; Shaw, 2006b; Twigg &amp; Steiner, 2002)</li> <li>• Poor donor commitment to DMP (ADPC, 2007; Gannon, 2013; DARA, 2011; Twigg &amp; Steiner, 2002) <ul style="list-style-type: none"> <li>○ Limited material and human resources (ADPC, 2007)</li> </ul> </li> <li>• Focus on post-disaster activities (Twigg &amp; Steiner, 2002)</li> <li>• Problematic evaluation of disaster mitigation (Twigg &amp; Steiner, 2002)</li> <li>• Ineffectiveness of health, education, and micro-credit programs (Khan &amp; Ali, 2015; Paton &amp; Johnston, 2001) <ul style="list-style-type: none"> <li>○ Micro-credit might even have negative impacts on DMP (Khan &amp; Ali, 2015; Ray-Bennett, 2010)</li> <li>○ High rates for microfinance (Parvin &amp; Shaw, 2013)</li> </ul> </li> <li>• Poor / no implementation of training programs (Parvin &amp; Shaw, 2013)</li> <li>• Differing perceptions of risk among stakeholders (Bankoff &amp; Hillhorst, 2009)</li> <li>• Lack of effective communication systems (Chan, 2015)</li> <li>• Lack of coordination (Osa, 2013)</li> </ul>	<ul style="list-style-type: none"> <li>• Loose communication among different stakeholders (Gibson, 2012)</li> <li>• Over-centralized network-governance (Gibson, 2012)</li> <li>• Lack of funding (ADPC, 2007; Gannon, 2013; DARA, 2011; Twigg &amp; Steiner, 2002) <ul style="list-style-type: none"> <li>○ Competition between NGOs (Shannon et al., 2014; Von Meding et al., 2009)</li> </ul> </li> <li>• Corruption (Maxwell et al., 2012)</li> <li>• Community heterogeneity (Paton &amp; Johnston, 2001)</li> <li>• Little interest in projects in the absence of any incentive for participation (ADPC, 2007)</li> <li>• Lack of governmental and societal acceptance (ADPC, 2007; Behera, 2002; Gannon, 2013; Osa, 2013) <ul style="list-style-type: none"> <li>○ Tightrope walk between governmental and societal acceptance (Patterson et al., 2010)</li> </ul> </li> <li>• Lack of knowledge and expertise (Rodríguez et al., 2010; Von Meding et al., 2009) <ul style="list-style-type: none"> <li>○ Ineffective knowledge exchange between humanitarian and scientific communities (Shannon et al., 2014)</li> </ul> </li> <li>• Overwork and pressures of work for NGO employees (Twigg &amp; Steiner, 2002)</li> <li>• Limited institutional capacity (Gannon, 2013)</li> </ul>

Table 5. Overview of obstacles in DMP measures and general NGO practice



Based on the findings of this part of the study, several trends can be identified. When looking at systemic obstacles, one major problem that most NGOs have to deal with is a chronic lack of funding for projects (ADPC, 2007; Gannon, 2013). This not only leads to a focus on the most cost-effective measures, but also to competition between NGOs in the pursuit of donor-funding (Shannon et al., 2014; Von Meding et al., 2009). This aspect is especially a concern in the field of DMP, where the necessity of the measures taken remains mostly invisible until a disaster strikes, leading to poor donor commitment and limited material and human resources (ADPC, 2007; Gannon, 2013). Other symptoms of the lack of funding are overwork and pressures of work for NGO employees (Twigg & Steiner, 2002) and limited institutional capacity (Gannon, 2013). The latter can be seen as the cause for several DMP-specific obstacles, such as the ineffectiveness of health, education, and micro-credit programs (Khan & Ali, 2015), the missing long-term and large-scale implementation of DMP measures (Allen, 2006), the poor integration of emergency and development measures undertaken by NGOs (ADPC, 2007), or the fact that DMP has not established itself in the mainstream of NGO work (Twigg & Steiner, 2002).

Another systemic obstacle is the lack of governmental and societal acceptance for NGO activity (Behera, 2002; Osa, 2013). NGOs form a link between communities and governments, which can lead to a tightrope walk between the interests of the two stakeholders (Patterson et al., 2010). Furthermore, NGOs often lack the knowledge and expertise necessary to effectively implement projects (Rodríguez et al., 2010). One of the root causes of this problem is the poor collaboration between humanitarian and scientific communities (Shannon et al., 2014).

Thus, it seems that the obstacles that NGOs face when taking part in DMP measures are complex and interlinked. Major problems, such as a lack of funding and limited institutional capacity lead to an abundance of other problems.

### **4.3 Possible approaches for improvement and already implemented solutions**

In this last part of the results section, the fourth and final sub-question will be answered: *What are possible approaches and strategies that may be implemented by NGOs in order to overcome these obstacles?* The findings of this part are based on an analysis of scientific literature and a subsequent assessment of already implemented solutions.

#### **4.3.1 Possible approaches for improvement**

There are numerous approaches for improvement that can already be found in existing literature. Firstly, several scholars state that there should be more emphasis on Community-Based Disaster Risk Reduction (CBDRR; Matin & Taher, 2001; Shaw, 2006a). Secondly, incorporating DMP concerns as an integral part of development plans and programs should become a more self-evident process and the new status quo in national and/or international politics (Iglesias & Yu, 2008).

Another important aspect that has to be mentioned relates to the networking of NGOs and their collaboration with other actors which needs strengthening (Behera, 2002; Osa, 2013). On that account, several factors are in need of improvement: (1) communication between the different involved parties needs to be facilitated; (2) institutional capacity requires enhancement (Behera, 2002; Osa, 2013); and (3) new competencies should be developed to fight emergent competition between NGOs (Von Meding et al., 2009).

To ensure long-term implementation of policies, linking NGO intervention to government activity is crucial (Behera, 2002; Shaw, 2006b). Other important leverage points for improvements in DMP measures refer to the involvement of other actors than the “usual suspects”, such as businesses and other actors in the market segment (Chan, 2015), and the development of a stronger financial base for future operations (Osa, 2013). Therefore, a shift in the mindsets of donors, beneficiaries and governments is needed and the accountability of NGOs, especially to their beneficiaries, is a decisive factor (Von Meding et al., 2009). Associated with this are activities of promotion to ameliorate societal acceptance with the desired result of an acknowledgement of community heterogeneity (Osa, 2013;).

Last but not least, an advisable method to conquer existing obstacles that NGOs face in DMP measures is to improve their knowledge base. This can be achieved by strengthening their collaboration with experts and subsequently develop the capacity to plan, control and evaluate projects effectively (Von Meding et al., 2009).

#### **4.3.2 Already implemented solutions**

Some of the points mentioned above are already implemented by several NGOs. To give an example, NGO networks such as the Asian Disaster Preparedness Center (ADPC), the Global Network for Disaster Risk Reduction (GNDRR) show great efforts in not only linking and improving the collaboration among NGOs themselves and other organizations, but also serving as information databases (see Appendix B). One of the more established approaches is the focus on community-based disaster risk reduction, with a total of 20,8% of the examined NGOs participating in it (see table 4). Other approaches, such as combating the chronic lack of funding for NGOs or promotion of the institutionalization of DMP measures are anticipated by less NGOs (7,5%). Thus, although several attempts to improve NGO practice in the field of DMP measures are already undertaken, there is still a lot to be done.

## 5. Discussion

### 5.1 Summary of results

The main research question of this bachelor thesis was: “What are approaches to deal with obstacles that NGOs in Asia face during DMP measures for flood risk reduction?” To answer this question thoroughly, four sub-questions have been formulated, each contributing to the main conclusions.

The first part of the study involved establishing a link between the proposed model of vulnerability and currently undertaken DMP measures by NGOs. NGOs take part in several activities, such as mitigation constructions, trainings, or education. Furthermore, it became clear that NGOs focus mostly on social and economic measures.

The second part of the study focused on obstacles that NGOs face when participating in DMP measures. It was found that NGOs suffer from several complex systemic and DMP-specific obstacles that are rooted to a great extent in chronic problems of NGOs, such as lack of funding or limited institutional capacity.

The last part of the study involved finding possible approaches for improvement and already implemented solutions by NGOs. Numerous approaches for improvement can already be found in existing literature, such as strengthening the collaboration among NGOs and other organizations or promoting the long-term and large-scale implementation of DMP measures. When looking at the already implemented solutions, it became clear that several NGOs are active to overcome obstacles, but that there is still a lot of room for improvement.

Taken all the parts into consideration, it is hoped, that an encompassing answer to the research question has been given.

### 5.2 Limitations of the thesis

The thesis at hand features several limitations which should be taken into consideration. Two main aspects protrude, videlicet in regards to the terminology and methodology.

Concerning the terminology in the quickly evolving field of disaster management, it can be said that the academic field is filled with a plethora of different approaches, definitions and concepts. This implies issues not only for the thesis at hand but for the work of different organizations and fields alike. An amount of different approaches and terminologies this big might lead to confusion and redundancies in the DMP activity of different actors involved.

The second important limitation refers to the methodology of the analysis. The selective sample used in the analysis offers merely a limited view and potentially a biased outcome. A sample of 53 NGOs is very small compared to the overall amount of NGOs active in Asia. For example, in Bangladesh alone, it is thought that some 22,000 NGOs are currently operating in the country (Parvin & Shaw, 2013). Quite possibly, the NGOs which had to be excluded from the analysis due to their lack of information (in English), actually conduct different DMP measures or face different kinds of obstacles in their everyday work than NGOs that have the (financial) capabilities to offer translated websites. This particular aspect is mirrored in the circumstance that there are only five local NGOs included in the analysis versus ten international and even 38 national NGOs. A more evenly distributed sample concerning the scope of the organizations would have been preferable. On top of that, not only the scope but also the country representation is rather unequally distributed, with 13 NGOs in Bangladesh versus as little as one single NGO in Hong Kong or Vietnam and none in the

remaining 33 countries in Asia that are not covered in this thesis. Lastly, the diverging properties of the analyzed NGOs raise questions of comparability. This pertains to facets like size, experience, funding, et cetera.

### 5.3 Alternative theoretical and conceptual frameworks

The thesis at hand focused on a specific theoretical and conceptual framework that was developed based on the model of vulnerability by McEntire (2001; see 2. *Theoretical Framework*). The drawback of this particular model, however, is a rather simplistic and static view of vulnerability. McEntire (2001) himself states that the reality that all of the actors involved in DRR face is much more complex and dynamic. Vulnerability is complex in that the categories of risk, susceptibility, resistance and resilience are not independent or mutually exclusive.

Therefore, several alternative frameworks deserve mentioning. One of these is *social capital*, which stresses the importance of social networks, reciprocity, and interpersonal trust in communities in overall disaster risk reduction activities (Aldrich, 2015).

Other alternative frameworks focus specifically on the management of flood disasters, such as *Integrated flood management* (IFM; Dutta & Herath, 2004). Integrated flood management is a process promoting an integrated, rather than fragmented, approach to flood management. It takes a participatory, cross-sectoral and transparent approach to decision-making.

The last concept that deserves special recognition is *Community-Based Disaster Risk Reduction* (CBDRM; Patterson et al., 2010). Although theoretically a fruitful concept, the lack of a common methodological approach among practitioners inhibits effective implementation. Right now this concept, like the idea of 'participatory development', may be used as a convenient buzzword to satisfy donors and experts, while the integrity of the approach is ignored (James, 2008; Patterson et al., 2010).

### 5.4 Recent developments

There are a number of recent developments that need to be mentioned in the context of disaster mitigation and preparedness. The first one refers to the *Hyogo Framework for Action (HFA) 2005-2015*, which is a 10-year plan to make the world safer from natural hazards. It was endorsed by the UN General Assembly following the 2005 World Disaster Reduction Conference. It contains several strategic goals: The integration of disaster risk reduction into sustainable development policies and planning; the development and strengthening of institutions, mechanisms and capacities to build resilience to hazards; and the systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response and recovery programs (UNISDR, 2005).

Building on the HFA, the *Sendai Framework for Disaster Risk Reduction 2015-2030* was adopted at the Third United Nations World Conference on Disaster Risk Reduction in Sendai, Japan in 2015. This Framework aims to achieve the following outcome over the next 15 years: The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries (UNISDR, 2015).

Another interesting development of the recent years is the emerging synergy of climate change adaptation and disaster risk reduction in the scientific realm. Several scholars started to develop frameworks to integrate these two concepts that share quite some similarities (Brooks et al.,

2005; Gallopín, 2006; Smit & Wandel 2006). Although still in its development phase, this new approach seems very promising for future research and practice.

### **5.5 Prospects**

While there has been significant focus on the pre-disaster preparedness and mitigation aspects, post-disaster reconstruction issues should not be discarded (Nakagawa & Shaw, 2004). It is imperative that we address the complex range of vulnerabilities pertinent to today's disasters (Bankoff & Hilhorst, 2009). When each of the aforementioned activities is pursued jointly, the probability of disasters may be reduced and the ability to deal with them effectively will be enhanced. Taking a broad view of liability reduction and capacity building will thus be important for the future (McEntire, 2011).

Disaster preparedness has traditionally been a secondary or tertiary concern. With the current synergy, the challenge is to maintain the interest of all stakeholders. There is a real danger that, in the absence of any catastrophic disasters in the coming years, attention will wane and the energy now generated will be lost. Unfortunately, there is also the sentiment that disaster-preparedness activities are a distraction and divert resources from 'normal development activities'. It is essential to maintain a culture of preparedness so that various activities are mainstreamed as part of regular programming (James, 2008).

## **6. Conclusion**

It is apparent that a holistic approach to the disaster problem is needed. To effectively improve on existing obstacles, an approach is necessary that addresses all agents, all actors (including the public), and all phases pertaining to disaster vulnerability. Furthermore, systemic obstacles that most of NGOs face such as the chronic lack of funding, little governmental and societal acceptance or limited institutional capacity remain a constant problem in overall NGO practice. Also DMP-specific issues such as the missing long-term and large-scale implementation of DMP activities, the ineffectiveness of health, education, and micro-credit programs, or the poor implementation of training programs need to be tackled in order to improve the overall performance of NGOs.

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**Appendix A: Factors producing vulnerability** (McEntire, 2001)

Type of vulnerability	Variables that interact to generate vulnerability
Physical vulnerability	<ul style="list-style-type: none"> <li>• Proximity of people and property to triggering agents.</li> <li>• Improper construction of buildings.</li> <li>• Inadequate foresight relating to the infrastructure.</li> <li>• Degradation of the environment.</li> </ul>
Social vulnerability	<ul style="list-style-type: none"> <li>• Limited education (including insufficient knowledge of disasters).</li> <li>• Inadequate routine and emergency healthcare.</li> <li>• Massive and unplanned migration to urban areas.</li> <li>• Marginalisation of specific groups and individuals.</li> </ul>
Cultural vulnerability	<ul style="list-style-type: none"> <li>• Public apathy towards disasters.</li> <li>• Defiance of safety precautions and regulations.</li> <li>• Loss of traditional coping measures.</li> <li>• Dependency and absence of personal responsibility.</li> </ul>
Political vulnerability	<ul style="list-style-type: none"> <li>• Minimal support for disaster programmes among elected officials.</li> <li>• Inability to enforce or to encourage mitigation steps.</li> <li>• Over-centralisation of decision-making.</li> <li>• Isolated or weak disaster-related institutions.</li> </ul>
Economic vulnerability	<ul style="list-style-type: none"> <li>• Growing divergence in the distribution of wealth.</li> <li>• The pursuit of profit with little regard for consequences.</li> <li>• Failure to purchase insurance.</li> <li>• Sparse resources for disaster prevention, planning, and management.</li> </ul>
Technological vulnerability	<ul style="list-style-type: none"> <li>• Lack of structural mitigation devices.</li> <li>• Over-reliance on warning systems or ineffective warning systems.</li> <li>• Carelessness in industrial production.</li> <li>• Lack of foresight vis-à-vis computer equipment/programmes.</li> </ul>

## Appendix B: Overview of the NGOs included in the analysis with specification concerning their country of origin, scope (local, national, international), website, and DMP measures

NGO	DMP measures
<p><b>Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP)</b> [Multiple Countries] International NGO <a href="http://www.alnap.org/">http://www.alnap.org/</a></p>	<ul style="list-style-type: none"> <li>• Evaluation of humanitarian action</li> <li>• Disaster education</li> <li>• Promoting good humanitarian leadership and coordination</li> <li>• Research</li> <li>• Raising awareness</li> <li>• Linking NGOs and GOs</li> </ul>
<p><b>Al-Imdaad Foundation [Indonesia]</b> National NGO <a href="http://www.alimdaad.com/html/">http://www.alimdaad.com/html/</a></p>	<ul style="list-style-type: none"> <li>• Creation of emergency plans</li> <li>• Stockpiling of resources</li> <li>• Advocacy</li> <li>• Disaster education</li> </ul>
<p><b>All India Disaster Mitigation Institute (AIDMI) [India]</b> National NGO <a href="http://www.aidmi.org">www.aidmi.org</a></p>	<ul style="list-style-type: none"> <li>• Community development including focus on four component securities: food, water, shelter and livelihood.</li> <li>• Capacity building               <ul style="list-style-type: none"> <li>○ AIDMI's learning resources conduct training for panchayat leaders, local decision-makers, school staff, government officials, volunteers, CBOs, NGOs staff, and communities on key disaster management topics.</li> </ul> </li> <li>• Policy advocacy</li> <li>• Knowledge exchange</li> <li>• Research and evaluation</li> </ul>
<p><b>ActionAid - Bangladesh (AAB)</b> National NGO <a href="http://www.actionaid.org/bangladesh">http://www.actionaid.org/bangladesh</a></p>	<ul style="list-style-type: none"> <li>• Flood early warning</li> <li>• Flood Resistant Shelter</li> <li>• Supporting Vulnerable Community flood Resilient shelter and Sanitation in Bangladesh (RAM)</li> <li>• flood resilient embankment</li> <li>• developed community based disaster preparedness model → adaptation by Bangladesh government</li> <li>• Women's Resilience Index</li> <li>• Funding (Annual report 2014)</li> </ul>
<p><b>An Organization for Socio-Economic Development (AOSED) [Bangladesh]</b> National NGO <a href="http://www.give2asia.org/aosed">http://www.give2asia.org/aosed</a></p>	<ul style="list-style-type: none"> <li>• Flood warning and monitoring</li> <li>• Disaster Education</li> </ul>
<p><b>Asian Disaster Preparedness Center [Thailand]</b> International NGO <a href="http://www.adpc.net/igo/">http://www.adpc.net/igo/</a></p>	<ul style="list-style-type: none"> <li>• Disaster risk assessment and monitoring</li> <li>• Strengthening government institutions and supporting the implementation of national and sub-national strategies, action plans and programs on disaster risk reduction and climate change adaptation</li> <li>• Supporting to develop and implement region-specific, multiple-action disaster risk reduction and climate change adaptation programs</li> </ul>

	<ul style="list-style-type: none"> <li>• Developing and implementing programs on community-based disaster risk reduction (CBDRR)</li> <li>• Facilitating partnerships and exchange of experiences to promote innovation in disaster risk management</li> </ul>
<b>Asian Disaster Reduction Center [Multiple countries]</b> International NGO <a href="http://www.adrc.asia/project/index.php">http://www.adrc.asia/project/index.php</a>	<ul style="list-style-type: none"> <li>• Information sharing on disaster risk reduction <ul style="list-style-type: none"> <li>○ Provision of Information on the Latest Disasters, Disaster Preparedness of Member Countries, and Good Practices</li> <li>○ Disaster Management Support System (Sentinel Asia Project)</li> <li>○ Organization of International Conferences</li> </ul> </li> <li>• Trainings in flood risk management</li> <li>• Disaster education</li> <li>• Raising risk awareness</li> <li>• Strengthening community participation</li> </ul>
<b>Asian Disaster Reduction and Response Network [Malaysia]</b> International NGO <a href="http://www.adrrn.net/about.html">http://www.adrrn.net/about.html</a>	<ul style="list-style-type: none"> <li>• Promote coordination, information sharing and collaboration among NGOs and other stakeholders</li> </ul>
<b>Association for Empowerment of Persons with Disabilities (AEPD) [Vietnam]</b> National NGO <a href="http://www.give2asia.org/aepd">http://www.give2asia.org/aepd</a>	<ul style="list-style-type: none"> <li>• community-based disaster risk management (CBDRM)</li> <li>• focus on women and the elderly</li> <li>• training</li> <li>• Disaster education</li> <li>• Risk assessments</li> <li>• Disaster planning</li> <li>• Early warning systems</li> </ul>
<b>Association for Social Advancement (ASA) [Bangladesh]</b> National NGO (Parvin & Shaw, 2013)	<ul style="list-style-type: none"> <li>• Microfinance program for the poor</li> <li>• Education loan program</li> <li>• Credit programme for small business and small enterprises.</li> </ul>
<b>Bangladesh Centre for Advanced Studies (BCAS)</b> National NGO <a href="http://www.bcas.net/about-bcas.php?id=7">http://www.bcas.net/about-bcas.php?id=7</a>	<ul style="list-style-type: none"> <li>• Conducting research by assessing impacts, vulnerabilities, adaptation and mitigation potential</li> <li>• Compiling inventory on Greenhouse gases</li> <li>• Promoting clean development mechanisms</li> <li>• Raising awareness and building capacity</li> <li>• Formulating policy for institutional development</li> <li>• Contributing to global assessment and negotiations</li> <li>• Designing advocacy campaigns at local, regional and global levels</li> </ul>
<b>Bangladesh Disaster Preparedness Center (BDPC)</b> National NGO <a href="http://www.bdpc.org.bd/index.php/what-we-do/all-past-project">http://www.bdpc.org.bd/index.php/what-we-do/all-past-project</a>	<ul style="list-style-type: none"> <li>• Promotion of Transferable Indigenous Knowledge and Coping Strategies for Disaster Risk Reduction</li> <li>• Community-based flood Warning System (Flood warning and forecasting)</li> <li>• Disaster management training</li> <li>• Mainstreaming disability into disaster Management policies and practices</li> <li>• Empowerment of Coastal Fishing Communities in Disaster Preparedness</li> </ul>

	<ul style="list-style-type: none"> <li>• Community mobilization</li> <li>• Awareness raising</li> <li>• Capacity enhancement</li> <li>• Linking community with GO / NGO</li> <li>• Ensuring use of local resources and technologies for disaster mitigation</li> </ul>
<b>Bangladesh Red Crescent Society (BDRCS)</b> National NGO <a href="http://www.bdracs.org/">http://www.bdracs.org/</a>	<ul style="list-style-type: none"> <li>• Climate Change Adaptation (CCA)</li> <li>• Establish a Knowledge Management System (KMS)</li> <li>• Improve knowledge and skills of households vulnerable to floods</li> <li>• Promote awareness</li> <li>• Funding</li> <li>• Training</li> </ul>
<b>Bangladesh Rural Advancement Committee (BRAC) [Bangladesh]</b> National NGO (Parvin & Shaw, 2013)	<ul style="list-style-type: none"> <li>• Health program</li> <li>• Microfinance program</li> </ul>
<b>BHN Association [Japan]</b> National NGO <a href="http://www.bhn.or.jp/official/e-activities.html">http://www.bhn.or.jp/official/e-activities.html</a>	<ul style="list-style-type: none"> <li>• Development of emergency warning systems</li> </ul>
<b>Care International Japan</b> National NGO <a href="http://www.careintjp.org/en/internationaljapan/index.html">http://www.careintjp.org/en/internationaljapan/index.html</a>	<ul style="list-style-type: none"> <li>• Decrease poverty</li> </ul>
<b>Catholic Office for Emergency Relief &amp; Refugees [Thailand]</b> National NGO <a href="http://www.coerr.org/Eng/project.html">http://www.coerr.org/Eng/project.html</a>	<ul style="list-style-type: none"> <li>• Disaster risk reduction training</li> <li>• Disaster education</li> <li>• Provision of warning equipment</li> </ul>
<b>Citizen's Disaster Response Network (CDRN) [Philippines]</b> National NGO (UNISDR, 2004)	<ul style="list-style-type: none"> <li>• Advocacy</li> <li>• Development of early warning systems</li> <li>• Diversification of livelihoods</li> </ul>
<b>Civic Force [Japan]</b> National NGO <a href="https://www.civic-force.org/english/preparedness/">https://www.civic-force.org/english/preparedness/</a>	<ul style="list-style-type: none"> <li>• Stockpiling of resources</li> <li>• Facilitating coordination and strengthening partnerships among organizations</li> </ul>
<b>Crossroads Foundation's Global Hand Program [Hong Kong]</b> Local NGO <a href="https://www.crossroads.org.hk/annual-reports/">https://www.crossroads.org.hk/annual-reports/</a>	<ul style="list-style-type: none"> <li>• Disaster education for businesses</li> <li>• Stockpiling of resources</li> </ul>
<b>Disaster Forum [Indonesia]</b> National NGO	<ul style="list-style-type: none"> <li>• Research</li> <li>• Training</li> </ul>

(Matin & Taher, 2001)	<ul style="list-style-type: none"> <li>• Communication Material</li> <li>• Education</li> </ul>
<p><b>Doaba Foundation [Pakistan]</b> National NGO <a href="http://doaba.org.pk/?page_id=63">http://doaba.org.pk/?page_id=63</a></p>	<ul style="list-style-type: none"> <li>• Collaboration with universities and applied research institute for DRR</li> <li>• Planning with line departments at district level</li> <li>• Early warning trainings</li> <li>• <i>Hazard, Risk, Vulnerability and Capacity Assessment (HRVCA)</i> based village Disaster management planning</li> <li>• Contingency planning</li> <li>• Stock piling</li> <li>• Homestead raising</li> <li>• District recovery plan</li> <li>• Katcha track improvement</li> <li>• Culvert construction</li> <li>• Information resource center</li> <li>• Demo livestock shelter</li> <li>• Women and child shelter</li> </ul>
<p><b>Dwip Unnayan Sangstha or Island Development Organisation (DUS) [Bangladesh]</b> Local NGO (Parvin &amp; Shaw, 2013)</p>	<ul style="list-style-type: none"> <li>• Training and microfinance program</li> <li>• Disaster management and social forestry program</li> <li>• Livestock restoration program</li> <li>• Small livestock development project (4,100 families have received training in poultry rearing)</li> <li>• Government-supported housing program (undertaken in two phases; 150 families have received housing materials and loans).</li> <li>• Urban water and sanitation program (442 deep tube wells have been snaked).</li> </ul>
<p><b>Give2Asia [Multiple Countries]</b> International NGO <a href="http://www.give2asia.org/disaster-prep/">http://www.give2asia.org/disaster-prep/</a></p>	<ul style="list-style-type: none"> <li>• Funding of preparedness NGOs</li> <li>• Linking NGOs and other organizations</li> </ul>
<p><b>Global Network of Civil Society Organisations for Disaster Reduction (GNDR) [Multiple Countries]</b> International NGO <a href="http://www.globalnetwork-dr.org/">http://www.globalnetwork-dr.org/</a> (Gibson, 2012)</p>	<ul style="list-style-type: none"> <li>• Advocacy</li> <li>• Strengthening partnership among NGOs</li> <li>• Linking practical and theoretical knowledge</li> </ul>
<p><b>Gorakhpur Environmental Action Group (GEAG) [India]</b> National NGO <a href="http://www.geagindia.org/content/disaster-risk-reduction.aspx">http://www.geagindia.org/content/disaster-risk-reduction.aspx</a></p>	<ul style="list-style-type: none"> <li>• Sheltering</li> <li>• Training programs</li> <li>• Research</li> <li>• Enhancing the income and food security of the poor and vulnerable population</li> <li>• Enhancing the flood buffering capacity</li> <li>• Advocacy for marginalized groups</li> </ul>
<p><b>Habitat for Humanity International [Multiple Countries]</b> International NGO <a href="http://www.habitat.org/disaster/mitigation_preparedness">http://www.habitat.org/disaster/mitigation_preparedness</a></p>	<ul style="list-style-type: none"> <li>• Introducing disaster mitigation and climate change adaptations by “design” in shelter and settlement projects</li> <li>• Mainstreaming of disaster preparedness training</li> <li>• Developing community-based disaster risk management programs</li> </ul>

<p><b>Homeland Association for Social Improvement (HASI) [Bangladesh]</b> National NGO (Parvin &amp; Shaw, 2013)</p>	<ul style="list-style-type: none"> <li>• Microfinance for poverty reduction.</li> <li>• Strengthening Households Ability to Respond Development Opportunity (SHOUHARDO)</li> <li>• Horticulture and nutrition project for islanders.</li> <li>• Char (mid-channel island) development and settlement project (1,414 clients have received sanitary latrine facilities and 67 tube wells)</li> <li>• Rural housing loan program (more than 100 households have received this loan)</li> <li>• Non-formal primary education</li> <li>• Disabled development program</li> <li>• Fishermen livelihood development project</li> </ul>
<p><b>Health, Education and Economic Development (HEED) [Bangladesh]</b> National NGO (Parvin &amp; Shaw, 2013)</p>	<ul style="list-style-type: none"> <li>• Income generation and poverty alleviation through microcredit.</li> <li>• Started work for the landless communities and those without capital, especially fishermen.</li> <li>• Provided training related to skills development, human rights, health and hygiene.</li> <li>• Distributed sanitary toilet facilities among 200 families.</li> <li>• Constructed three cyclone shelters.</li> <li>• Created a rehabilitation village.</li> <li>• Undertook canal re-excavation and embankment construction</li> <li>• Operated disaster-awareness, early-warning, and disaster management leadership training programs</li> </ul>
<p><b>HOPE Worldwide Indonesia</b> National NGO <a href="http://www.hopeindonesia.org/our-work/disaster-response.html">http://www.hopeindonesia.org/our-work/disaster-response.html</a></p>	<ul style="list-style-type: none"> <li>• Disaster education</li> </ul>
<p><b>Human Development Forum Foundation [Thailand]</b> National NGO <a href="http://hdff.org/hdri/hdri-disaster-risk-management/">http://hdff.org/hdri/hdri-disaster-risk-management/</a></p>	<ul style="list-style-type: none"> <li>• Coordination training</li> </ul>
<p><b>Indonesian Development of Education and Permaculture (IDEP)</b> Local NGO <a href="http://www.idepfoundation.org/whatwedo/disastermanagement">http://www.idepfoundation.org/whatwedo/disastermanagement</a></p>	<ul style="list-style-type: none"> <li>• Training</li> <li>• Disaster education</li> <li>• Promoting sustainable development</li> </ul>
<p><b>Indonesian Red Cross</b> National NGO <a href="https://www.ifrc.org/en/what-we-do/where-we-work/asia-pacific/indonesian-red-cross-society/">https://www.ifrc.org/en/what-we-do/where-we-work/asia-pacific/indonesian-red-cross-society/</a></p>	<ul style="list-style-type: none"> <li>• community-based flood preparedness and resilience program → training</li> <li>• facilitating communication among organizations</li> <li>• Stockpiling of resources</li> </ul>
<p><b>Japan NGO Center for International Cooperation (JANIC)</b> International NGO</p>	<ul style="list-style-type: none"> <li>• Promote Partnership among NGOs</li> <li>• Research and advocacy</li> <li>• Promoting Dialogue and Networking with Other Sectors of</li> </ul>

<a href="http://www.janic.org/en/activities.html">http://www.janic.org/en/activities.html</a>	Society
<b>Kalvi Kendra [India]</b> Local NGO <a href="http://www.kalvikendra.org/our_programme.html">http://www.kalvikendra.org/our_programme.html</a>	<ul style="list-style-type: none"> <li>• Disaster education and training</li> <li>• Advocacy for marginalized groups</li> <li>• Promoting livelihood activities for sustainable income generation</li> <li>• Promotion of Insurance for life &amp; live stocks</li> </ul>
<b>Korea Food for the Hungry International [South Korea]</b> International NGO <a href="http://eng.kfhi.or.kr/OurWork/EmergencyDisasterRelief.asp">http://eng.kfhi.or.kr/OurWork/EmergencyDisasterRelief.asp</a>	<ul style="list-style-type: none"> <li>• Disaster monitoring</li> <li>• Stockpiling of relief supplies</li> </ul>
<b>Lanao Aquatic and Marine Fisheries Center for Community Development (LAFCCOD) [The Philippines]</b> Local NGO <a href="http://www.give2asia.org/lafccod">http://www.give2asia.org/lafccod</a>	<ul style="list-style-type: none"> <li>• Strengthening and diversification of sources of income</li> <li>• hazard mapping, disaster planning and simulation drills</li> <li>• Early warning systems</li> <li>• rejuvenation the region's coastal mangrove forests</li> </ul>
<b>Lanthit Foundation [Malaysia]</b> National NGO <a href="http://www.lanthit.org/activities">http://www.lanthit.org/activities</a>	<ul style="list-style-type: none"> <li>• Strengthening food security</li> <li>• Funding</li> <li>• DRR Training</li> <li>• Evaluation</li> <li>• Inclusive CBDRR</li> <li>• Disaster education</li> <li>• Awareness raising</li> <li>• Strengthening sustainable livelihoods and social cohesion</li> </ul>
<b>Lao Red Cross</b> National NGO <a href="http://www.laoredcross.org.la/our-work/disaster-management/">http://www.laoredcross.org.la/our-work/disaster-management/</a>	<ul style="list-style-type: none"> <li>• Working with at risk communities to prepare appropriate emergency and evacuation plans.</li> <li>• Recruiting and providing training for community volunteers to manage emergencies and disaster preparedness and response at all levels.</li> <li>• Contributing to and managing the stock of disaster preparedness supply warehouses in northern, southern and central Laos.</li> </ul>
<b>Mercy Malaysia</b> National NGO <a href="http://www.mercy.org.my/disaster-risk-reduction/">http://www.mercy.org.my/disaster-risk-reduction/</a>	<ul style="list-style-type: none"> <li>• Community Based Disaster Risk Management</li> <li>• School Preparedness Programme</li> </ul>
<b>Muhammadiyah [Indonesia]</b> National NGO (Bush, 2015)	<ul style="list-style-type: none"> <li>• training for disaster preparedness in schools</li> <li>• strengthening the management and institutional effectiveness of branch offices</li> <li>• training</li> </ul>
<b>Network for Information, Response And Preparedness Activities on Disasters (NIRAPAD) [Bangladesh]</b> National NGO	<ul style="list-style-type: none"> <li>• Knowledge management: disseminating disaster situation analysis, maintaining resource archives and research and publication</li> <li>• Technical support in DRR and CCA: training event and resource- module, handbook &amp; handout and develop SOP, strategy and procedures</li> </ul>



(Matin & Taher, 2001)	<ul style="list-style-type: none"> <li>Partnership &amp; Collaboration: helps others for their reputation (Goodwill) and branding, value addition in disaster and CC knowledge, promoting and demonstrating accountability, support event management and support project implementation</li> </ul>
<b>Non-Governmental Organization Coordination and Resource Centre (NCRC) [India]</b> National NGO <a href="http://www.ncrc.in/focusarea.php">http://www.ncrc.in/focusarea.php</a>	<ul style="list-style-type: none"> <li>Information exchange and communication between all stakeholders involved in relief and rehabilitation initiatives.</li> </ul>
<b>Proshika [Bangladesh]</b> National NGO (Khan & Ali, 2015)	<ul style="list-style-type: none"> <li>Microfinance program for income generation</li> <li>Training and education program</li> <li>Health and sanitation program—distributed 248 tube wells and 1,890 sanitary latrines.</li> <li>Human development training and skills development training program</li> <li>Social forestation program: 55 kilometers of road and four educational institutions come under this program. Number of trees planted: 47,280</li> <li>Disaster management and rehabilitation program: four cyclone shelters constructed and eight resettlement villages established, but only one exists at present—the rest were lost to river erosion.</li> </ul>
<b>Red Cross Society of the Democratic People’s Republic of Korea</b> National NGO <a href="https://www.ifrc.org/en/what-we-do/where-we-work/asia-pacific/red-cross-society-of-the-democratic-peoples-republic-of-korea/">https://www.ifrc.org/en/what-we-do/where-we-work/asia-pacific/red-cross-society-of-the-democratic-peoples-republic-of-korea/</a>	<ul style="list-style-type: none"> <li>Promoting institutionalization of DMP measures</li> <li>Disaster education</li> <li>Building of mitigation structures</li> <li>Food security</li> <li>Community based early warning system</li> </ul>
<b>RedR India</b> National NGO <a href="http://www.redr.org.in/about-us-about-our-work">http://www.redr.org.in/about-us-about-our-work</a>	<ul style="list-style-type: none"> <li>Training/Capacity Building</li> <li>Advisory Services and Technical Support</li> </ul>
<b>Resource Integrated Centre (RIC) [Bangladesh]</b> National NGO (Parvin & Shaw, 2013)	<ul style="list-style-type: none"> <li>Microfinance program for income generation</li> <li>Income-generation and leadership-development training program(some 200 persons have received income-generation training and around 150 have received leadership-development training)</li> <li>Sanitation program: latrines distributed to 500 families</li> <li>No disaster-related program or fund but meetings pertaining to disaster awareness-building are organized four or five times a year at the local level.</li> </ul>
<b>Saritsa Foundation [India]</b> National NGO <a href="http://www.saritsafoundation.org/aboutus.html">http://www.saritsafoundation.org/aboutus.html</a>	<ul style="list-style-type: none"> <li>School safety initiatives</li> <li>Advocacy to marginalized groups</li> <li>Implementation of preparedness policies</li> </ul>
<b>Save the Children [Multiple countries]</b>	<ul style="list-style-type: none"> <li>Food security</li> <li>Focus on marginalized groups</li> </ul>

<p>International NGO  <a href="http://www.savethechildren.org/attachment/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/SC_2014_ANN_UALREPORT.PDF">http://www.savethechildren.org/attachment/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/SC_2014_ANN_UALREPORT.PDF</a></p>	<ul style="list-style-type: none"> <li>• Disaster Education</li> </ul>
<p><b>Sphere India</b>  National NGO  <a href="http://www.sphereindia.org.in/programmes.html">http://www.sphereindia.org.in/programmes.html</a></p>	<ul style="list-style-type: none"> <li>• Improve accountability to beneficiaries</li> <li>• Implementation of inter-agency network</li> <li>• Micro-financing</li> </ul>
<p><b>Sustainable Environmental and Ecological Development Society (SEEDS) [India]</b>  National NGO  <a href="http://www.seedsindia.org/#">http://www.seedsindia.org/#</a></p>	<ul style="list-style-type: none"> <li>• Sustainable housing</li> <li>• Training</li> <li>• Structural resilience of schools and hospitals</li> <li>• Disaster education</li> <li>• Awareness building</li> </ul>
<p><b>Taiwan Red Cross Society</b>  National NGO  <a href="http://www.redcross.org.tw/english/home.jsp?pageno=201403030001">http://www.redcross.org.tw/english/home.jsp?pageno=201403030001</a></p>	<ul style="list-style-type: none"> <li>• disaster prevention and preparedness knowledge enhancement</li> <li>• establishment of multifunctional disaster preparedness centers</li> <li>• Establishing a disaster medical response platform, strengthening humanitarian expertise</li> <li>• Coordinating disaster drills and learning disaster relief skills</li> <li>• Promoting community risk reduction and sharing disaster management experience</li> </ul>
<p><b>Tsunami Volunteer Center [Thailand]</b>  National NGO  <a href="http://www.tsunamivolunteer.net/child_led.html">http://www.tsunamivolunteer.net/child_led.html</a></p>	<ul style="list-style-type: none"> <li>• Disaster education</li> </ul>