

Disaster Risk Reduction  
Methods, Approaches and Practices

Takako Izumi  
Rajib Shaw *Editors*

# Disaster Management and Private Sectors

Challenges and Potentials

 Springer

# **Disaster Risk Reduction**

Methods, Approaches and Practices

## **Series Editor**

Rajib Shaw, Kyoto University, Japan

## 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 the 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.

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Takako Izumi • Rajib Shaw  
Editors

# Disaster Management and Private Sectors

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 Springer



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# Preface

The year 2015 will be an important year for disaster risk reduction (DRR) practitioners and scholars, as the international DRR framework, the Hyogo Framework for Action (HFA) adopted in 2005, is slated for revision. In the last 10 years, there has been significant progress in DRR. The HFA has sought the involvement and active participation of various stakeholders, including governments, international and regional organizations, NGOs, civil society organizations, scientific communities, and the private sector. Recently, there has been particular demand for the private sector's engagement in DRR, as this group is affluent with human and financial resources, knowledge, skills, technology, networks, and various capacities to contribute to building disaster resilience.

In this global economy, the role of the private sector in DRR is crucial. In addition to protecting its own investments and businesses to ensure regular operations and production during and after disasters, the private sector must also help protect global supply chains. Furthermore, the private sector must understand that participation in DRR initiatives might create business opportunities and expand business markets. At the same time, other stakeholders, such as governments, NGOs, and academia, must involve private sector businesses as key participants not just as donors in program development and planning processes.

This book includes a collection of 20 case studies and practices of DRR initiatives by the private sector. The first part focuses on overviews and regional cases from Asia, Europe, Africa, and Central America, as well as perspectives from the international level, such as those of UNISDR and APEC. The second part draws upon cases at the national level, from India, Japan, the United States, Vietnam, Thailand, Bangladesh, Malaysia, and Nepal.

This book is written for students, young researchers, and practitioners in the fields of DRR. We hope they will find it useful and relevant to their work.

Sendai, Japan  
Kyoto, Japan

Takako Izumi  
Rajib Shaw



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# Chapter 1

## Overview and Introduction of the Private Sector's Role in Disaster Management

Takako Izumi and Rajib Shaw

**Abstract** The importance of private sector involvement in disaster risk reduction (DRR) has been recognized for several years at the international level. The data shows that disasters could affect businesses directly and very severely. The primary incentives for the private sector in disaster management participation are ensuring business continuity during and after disasters and preparing for a wide range of disruptions before they happen. In addition, the private sector can contribute further through the development of their core business models and by exploring business opportunities. Five ways of private sector engagement were identified: Direct assistance to communities, Disaster preparedness for own business, Developing innovative products based on business, technology, and expertise, Joint project with NGOs, governments, and international organizations as implementer, and Establishment of private foundations, NGOs, and trusts. Especially, the third and fourth models require strong collaboration with stakeholders, as well as their support, therefore, to strengthen private sector involvement, other stakeholders must make efforts to invite the private sector into their projects and provide information and guidance, if necessary. The multi-stakeholder collaboration is a key for stimulating private sector engagement.

This book collects case studies and articles from all over the world based on practices of private sector involvement. It consists of two parts: Overview and regional cases (international perspectives as well as experiences of APEC, Asia, Europe, Africa and Central America), and Country cases (India, Japan, USA, Vietnam, Thailand, Bangladesh, Malaysia, Indonesia and Nepal).

**Keywords** Private sector • Disaster management • Disaster risk reduction

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## 1.1 Introduction

The importance of private sector involvement in disaster risk reduction (DRR) has been recognized for several years at the international level. National governments were called upon to “encourage their local administrations to take appropriate steps to mobilize the necessary support from the public and private sectors” in the UN General Assembly Resolution 44/236 (UNISDR 2009; United Nations 1989). The Hyogo Framework for Action (HFA) adopted by 168 countries at the UN World Conference on Disaster Reduction in 2005 also highlighted the need for multi-stakeholders’ involvement in disaster management. It called for “the full commitment and involvement of all actors concerned including governments, regional and international organizations, civil society including volunteers, the private sector and the scientific community” (UNISDR 2005). The private sector is a major player in the new context of collaboration and partnership in humanitarian action (King’s College 2012).

However, the Global Assessment Report on Disaster Risk Reduction (GAR) (2013) revealed that business investment practices were neither highlighted in the HFA nor have interactions between business investments and disaster risk and the factors that mediate those interactions been seriously examined. Most of the research and literature on the topic of risk reduction has concentrated on the roles of governments, communities, and households rather than of businesses.

Economic damage by natural disasters has increased. The major disasters in Japan and Thailand in 2011 and in the US in 2012 demonstrated that disasters could affect businesses directly and very seriously. The economic impact rose from USD 10 billion in 1975 to almost USD 400 billion in 2011. Disasters damage factories, offices, and other facilities and resources, interrupting business processes. These direct impacts include physical asset damage, reduced operational performance, and staff and workplace disruption. Indirectly, damage to transport and energy networks, ports and airports, or to neighborhoods where employees live interrupts business and imposes additional costs. In today’s globalized world, even businesses in safe locations are often affected by disasters that hit suppliers and partners on the other side of the globe. Due to the globalization of value chains and markets, companies, sectors, and countries feel these indirect impacts (GAR 2013; PwC 2013a). Therefore, the private sector must have a strategy to reduce these impacts and damages in advance.

The impacts of disasters on businesses and the global economy are not the only reasons the private sector should be involved in DRR. Research has shown that regional economic growth does not result in reduced disaster losses or human exposure to disasters (UNESCAP and UNISDR 2012). Interestingly, business investments have tended to aggravate the disaster risk exposure of businesses, their supply chains, and the communities in which they operate (CSR Asia 2013). For instance, due to lower labor costs and easy access to export markets, factories often locate in developing countries with higher vulnerability to disaster due to population density and lack of proper safety measures. When disasters hit these areas, the damage can

be tremendous, including loss of life, diminished productivity, and asset destruction, as well as increased poverty. Eventually, this transforms into a cycle that limits development efforts and processes. In some cases, the decisions, planning, and activities in the private sector create and sustain these increased risks. Therefore, the private sector is responsible for helping reduce disaster risks to which they may have contributed, and for improving business and community resilience.

The greatest strength of the private sector is its abundant resources, expertise, and technology. This sector should maximize its capacity to protect private businesses as well as social security. These expertise and capacities must be mobilized for collaborative efforts toward DRR. To do so, companies must consider not only their own security but also the security “outside the fence”, and ways they can contribute to coordinating and integrating disaster risk management in surrounding communities (UNISDR 2009). The donation of private resources has been a major contribution of the private sector in disaster management; however, this sector has the potential to play greater roles as a solution provider by developing innovative new products that contribute to DRR and development, and through participation in project management.

Since 2011, the efforts to strengthen private sector engagement in DRR have accelerated at the international level. UNISDR created the DRR Private Sector Partnership (DRR-PSP) Working Group to involve the private sector in DRR by mobilizing resources through core business arrangements for joint actions, sustainability, corporate social responsibility (CSR), philanthropy, and knowledge transfer. The DRR-PSP establishes the foundations for building DRR through private sector partnerships. In addition, the Private Sector Advisory Group (PSAG) was formed in 2010, comprising corporate executives committed to contributing to DRR efforts. At the Global Platform for DRR held in 2013, several private companies participated in organizing a number of sessions related to private sector engagement and initiatives. A plenary session was dedicated to the topic “Private sector for resilient societies” on public-private partnership. At a session of the Global Platform in 2012, UNISDR and PricewaterhouseCoopers (PwC) presented the publication “Working Together to Reduce Disaster Risks”. They worked closely to develop a collaborative framework and methodology for private sector action toward building resilience. PwC is conducting a series of studies for improving private sector engagement in building disaster resilience, serving as an example of a successful collaboration between a private company and an international organization. Their next step is to determine how these trends and movements should be incorporated in a regional and national strategy. Some countries invite private sector companies to become members of DRR national platforms. However, the private sector is not yet seen as a key player in DRR efforts, and the DRR platform is still a new concept for most countries. While there have been good practices of private sector involvement in many countries and on many disaster occasions, the majority of contributions are at the response stage, primarily in the form of one-off contributions, rather than long-term participation. Strong government leadership and multi-stakeholder collaboration are indispensable to increase the long-term participation of private sector companies.

This chapter provides an overview of the role of the private sector in disaster management and identifies models of private sector engagement as a summary of the current state of this role. This chapter ends with short discussion outlining the book's key concepts and components.

## 1.2 Role of the Private Sector in Disaster Management

The primary incentives for the private sector in disaster management participation are ensuring business continuity during and after disasters and preparing for a wide range of disruptions before they happen. A business is likely to respond first to mitigate its own risks, and it is much more difficult to engage businesses on issues that extend beyond their direct operations (PwC 2013a). Business Continuity Plan/Business Continuity Management (BCP/BCM) is not a new concept for the business sector; however, according to a survey conducted by APEC and ADRC, only 15.9 % of SME respondents have a written BCP, while 52 % of large-scale company respondents have a written BCP in the Asian and Pacific regions (APEC and ADRC 2011). Twigg (2001) also emphasized the importance of private sector involvement in (1) business contingency planning and continuity initiatives and (2) insurance and financial mechanisms in disaster preparedness; that is, how to link insurance with mitigation through public-private partnerships. Davies (2011) focused on the nature and character of the private sector in the creation of services and products. According to him, development challenges can be a business opportunity for the private sector, whereas the profit-driven incentives of the private sector often do not converge with development objectives. The private sector can contribute further through the development of their core business models and by exploring business opportunities. Exploring opportunities includes an increased focus on innovations that respond to new demands and societal needs and that ensure sustainability.

The importance of private sector engagement in DRR has also been stressed not only by international organizations and governments but also by business and economic forums and institutions. APEC (2013) addressed six categories of good practices observed in the private sector:

1. Resilience efforts at the economy/national level
2. Partnerships for improved community resilience
3. Business contributions to reduce risks through recovery (building back better)
4. Collaborative efforts to enhance business resilience
5. Collaborative efforts to enhance infrastructure resilience
6. Partnerships for pre-disaster risk financing through agricultural insurance

These areas of involvement include the private sector's contribution to ensure and strengthen the resilience of not only the sector and its business and benefits but also communities, crucial infrastructure, and services. It stems from the concept of "shared responsibility" because the private sector should take responsibility for the risks it has created in the process of developing businesses and products. Economic

globalization has strengthened business productivity and efficiency and has reduced poverty; however, these gains have come at the expense of greater exposure to the adverse impacts of natural disasters (CSR Asia 2013).

CSR Asia (2013) emphasized the importance of private sector engagement in DRR from the perspective of “community resilience”. Building a community’s disaster preparedness can be an important part of a business’ community investment initiatives. Innovative activities around disaster preparedness can help a company:

1. Protect its own business, value chain, customers, and staff
2. Build reputation and demonstrate good citizenship
3. Enhance government relationships
4. Influence stakeholder perceptions
5. Improve staff motivation and retention
6. Provide new business opportunities that create shared value

Point 6 needs further recognition by the private sector. Disaster preparedness initiatives not only help protect business assets and supply chains but they allow the exploration of new business markets and opportunities. Business opportunity can be a key motivation and incentive for the private sector’s involvement in DRR efforts. Engaging in community preparedness provides opportunities to develop new partnerships and networks, thus making it possible for businesses in the private sector to access potential new markets and geographic regions.

PwC (2013b) also underlined prospects for some businesses and sectors to develop new and innovative products and services targeted at building resilience, which could bring economic benefit and reduce vulnerability and risk within their markets. To develop these ideas and products, businesses must understand the market opportunity, investment risk, and return on investment to develop and scale-up these solutions.

The question arises, then, of which types of areas the private sector be involved. PwC (2013b) underlined the need for basic risk mitigation actions by the private sector, which included (1) physical (e.g., infrastructure design improvement or retrofit), (2) social (e.g., behavioral change and education), and (3) financial (e.g., use of risk transfer products, such as insurance). The World Economic Forum (WEF) (2008) also emphasized the private sector’s potential to contribute to building disaster resilience for both businesses and communities and stressed four areas of opportunity:

1. Monitoring hazards and communicating risk through forecasting and warnings
2. Socio-physical strengthening through dams/sea walls and supply chain resilience
3. Sharing financial risk through disaster insurance pools
4. Disaster preparedness through flood management, GIS, staff training, etc.

To cover these areas, four industry communities—Insurers and Reinsurers, Engineering and Construction, ICT and Telecom, and Utilities and Transportation—were identified as the most active in building resilience (WEF 2008). Considering their prior knowledge of the roles and potentials of DRR, enhancing their

involvement in these areas could be effective. Furthermore, a forum, such as a national platform or a chamber of commerce, where these communities could share their experiences and knowledge with the same sector industries or other stakeholders, such as governments and non-governmental organizations (NGOs), could be very valuable in promoting private sector contributions to building resilience.

### 1.3 Ways of Private Sector Involvement

The current initiatives and ways of engagement in disaster management activities by the private sector fall into five categories, as shown in Fig. 1.1.

To date, private sector involvement in disaster management has focused largely on response and relief (UNISDR 2009). Most of these interventions have included direct assistance to communities and households through the distribution of relief items, such as food, water, blankets, tarpaulin sheets, and hygiene kits, and sending search and rescue teams of trained employees. These activities can raise a company's visibility and publicity, positioning the organization as committed to helping people in need. While response efforts can be one-offs that are largely philanthropy-based, emergency relief cannot be entirely overlooked. Companies already involved in response activities are well poised to learn the ways of disaster preparedness and identify the roles they can play over the long term. Business involvement in disaster relief can sometimes stimulate awareness of the need to support pre-disaster preparedness and mitigation.

A number of case studies have identified that BCP/BCM is a major contribution of the private sector. This initiative is extremely important, as it is linked to reducing the vulnerability of communities and building community resilience. A robust BCP/BCM makes it possible for the private sector to minimize disaster damage as well as resume normal operations within a specified timeframe in the event of emergencies.



**Fig. 1.1** Ways of private sector engagement in disaster management

During interviews, some private companies expressed being unfamiliar with DRR and the ways the private sector might contribute to these processes, aside from emergency response. The existence emerged of a presupposition that extra efforts, knowledge, and resources are required to contribute to DRR activities and to commit to long-term involvement. In a sense, this is true; long-term involvement requires time, resources, skills, and ideas. However, many companies do not recognize the potential to utilize existing assets and products for new business opportunities to expand their markets within the framework of DRR. To address this problem, information on good practices and case studies of private sector involvement should be widely disseminated.

As indicated, private sector companies tend to believe they lack knowledge on DRR and the ability to participate, which greatly limits their contributions. Therefore, the existence of platforms for information sharing and discussions among all the relevant DRR stakeholders is crucial. Unfortunately, such forums do not yet exist in most countries. To address this problem, the guidance and support of NGOs, governments, and other organizations are necessary to assist the private sector in understanding and learning its role and strengthening its involvement in DRR. In some cases, NGOs and private companies implement joint DRR projects. By doing so, NGOs provide technical advice, and private companies provide products and expertise in the project planning, implementation, and monitoring processes. For instance, at the initial stage, a company makes an investment in a project by donating products and services; in a few years, the project is planned so that the company sees returns, and their investment is paid off. In the process, the company has also extended its markets and gained visibility and publicity for branding. Ultimately, the project goal is to improve disaster resilience among communities. The private sector as well as communities can gain these benefits, but the communities also gain the capacity to reduce disaster risks and recover as quickly as possible from emergencies.

A social business is “a self-sustaining company that sells goods or services and repays its owner’s investments, but whose primary purpose is to serve society and improve the lives of the poor” (Yunus et al. 2010). As social businesses, some companies establish NGOs, foundations, and trusts. Once the companies have established their organizations, they need not rely on outside funding; instead, they become self-financed and able to prioritize based on their judgments, not on the interests of donor communities. The projects can be sustainable. Local companies are knowledgeable on local risks and needs; therefore, it is possible to identify the best solutions based on their experiences and local knowledge.

The third and fourth models require strong collaboration with stakeholders, as well as their support; therefore, to strengthen private sector involvement, other stakeholders must make efforts to invite the private sector into their projects and provide information and guidance, if necessary. The multi-stakeholder collaboration is a key for stimulating private sector engagement.

## 1.4 Book Structure

This book collects case studies and articles based on practices of private sector involvement from all over the world. It mainly consists of two parts: Overview and regional cases and Country cases.

Part I (Chaps. 1, 2, 3, 4, 5, 6, and 7) includes an overview of global initiatives based on UNISDR's perspectives, and experiences of APEC, Asia, Europe, Africa as well as Central America. Chapter 1 introduces an overview of the role of the private sector and the models of its ways of engagement. Chapter 2 discusses how the private sector perceives risk in general and how they address disaster risk and the related challenges of climate change, globalization, and urbanization. It also provides an overview of business continuity management and supply chain resilience. Chapter 3 describes the contribution and initiatives by APEC and the region in building disaster resilience focusing on the importance of business, operation and community continuity as well as especially of Small and Medium Enterprises' involvement. Chapter 4 provides an overview of regional organization and private sector involvement, its potentials and challenge in DRR in the diverse Asian context. In particular, this chapter focuses on the roles of regional organizations in Asia such as ASEAN, SAARC, and APEC which play important roles in disaster response and risk reduction by bringing cooperation between private sector and national governments. Chapter 5 focuses on analysing the current forms of insurance schemes in various European countries by highlighting a rising gap between insured losses and economic damages, describing the current insurance schemes from selected European countries, arguing the viability of insurance schemes to integrate and exercise DRR of developing countries. Chapter 6 reviews the African experiences in DRR and involvement of the private sector from various perspectives and explores the contributions by the private sector considered as a development partner in Africa to the African risk profile. This chapter at the end provides a set of recommendations for future involvement of the private sector in risk reduction. Chapter 7 highlights the private sector engagement mainly using a case from Costa Rica. It reviews the national DRR legal framework in Central American countries, clarifies the role of the private sector in the national DRR system, and discusses possible elements and potential roles of the private sector to enhance its engagement.

Part II includes country case studies from India, Japan, United States of America, Vietnam, Thailand, Bangladesh, Malaysia, Indonesia and Nepal. Chapter 8 discusses the role of micro enterprises in DRR in India based on the case studies from Gujarat and examines the strategies to involve micro enterprises in the recovery processes. The small and micro enterprises engage a large segment of the low income population and they can serve as a vehicle for disaster recovery. Such initiatives allow the uplift of the lower income segments of societies without any requirement of focused strategy for recovery. Chapter 9 describes the Japanese government policy, embedding situation and challenges on business continuity planning. The private sector has played a major role in supporting the local economy in normal



and disaster time; therefore, the Japanese government has promoted business continuity planning as a part of their policy framework. This chapter analyzes the survey result of the current status of implementation of business continuity planning in Japan. Chapter 10 discusses district continuity intensification in Japan, focusing on the role of the construction industry and the importance of its active involvement to materialize district continuity. This chapter also shares the practice by Kagawa district in formulating guideline of a district continuity plan. Chapter 11 describes the growing role of the private and nonprofit sectors in response to and recovery from disasters in the US. It also examines the current policies involving the two sectors in disaster response and recovery and provides some examples from recent major disasters in the US such as Hurricanes Katrina and Sandy. Chapter 12 analyzes the role of public and private sectors in DRR in India. It tries to capture the strengths and weakness of both the sectors, their engagement in the past disasters and initiatives taken to make their business and society disaster resilient with specific case studies from Mumbai. The findings from the analysis of exiting legislations and subsequent interactions with the stakeholders evolve in set of recommendations to create a road map for future course of action. Chapter 13 reviews the private sector involvement in DRR in Vietnam with the specific focus on the Japanese private sector in Da Nang city. Da Nang city that has fast economically developed due to the domestic and foreign investment of the private sector, mainly of the Japanese private sector with nearly 70 enterprises. Based on the survey conducted among the Japanese companies, this chapter tries to identify the challenges and the recommendations. Chapter 14 describes the importance of supply chain management based on the experience of Thai flood in 2011. The flood not only had a major effect on local automotive production and supply chain disturbances but also caused short-term effect on regional and global supply of automotive parts and vehicle exports. At the end of the chapter, some recommendations are made to reduce the negative impacts from future disasters. Chapter 15 analyzes an innovative model of private sector involvement in DRR in Bangladesh. This chapter highlights a successful case study of DRR business model based on rainwater harvesting and vegetable cultivation jointly conducted by an international NGO and a private company. The model demonstrates an investment in a DRR project can both generate returns and contribute to building community resilience to disasters and climate change. Chapter 16 examines the case studies of collaborative DRR efforts by NGOs and the private sector in Malaysia and discusses the challenges and opportunities for future enhancement of its engagement in DRR. It was identified that both the private sector and NGOs can gain benefits from such collaboration, namely awareness and interest raising of employees and beneficiaries, reaching out wider beneficiaries, branding, as well as fundraising. Chapter 17 describes the contribution of construction and engineering companies in disaster management and addresses the challenges and future scope of their roles based on the experience of Disaster Resource Platform (DRP). DRP is a network of construction and engineering companies with the aim to coordinate their engagement before, during and after natural disasters. Other initiatives of national networks in Indonesia are also examined. Chapter 18 highlights the role of the private sector in accelerating effective

implementation of the Nepal National Building Code (NBC). This chapter also examines how the system—Electronic Building Permit System (e-BPS)—which can systematically handle the complexities of building code compliance and building permit system for both new buildings as well as old building stocks can contribute to improve the implementation of NBC. Chapter 19 reviews the DRR and public-private partnership (PPP) initiatives in Malaysia. While Malaysia does not have experience struck by major disasters, it has been suffered from floods and landslides regularly. This chapter highlights the DRR measures taken by the national government based on PPP and make recommendations to further strengthen PPP in DRR efforts.

Finally, Chap. 20 analyzes the findings from each chapter and address the shift of approaches of public sector involvement and contribution. The chapter draws the lessons from previous chapters, good practices, challenges and potentials and provides a framework of post 2015 involvement of private sector in DRR.

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## Chapter 2

# Global Overview on the Role of the Private Sector in Disaster Risk Reduction: Scopes, Challenges, and Potentials

Debbra A.K. Johnson and Yoshiko Abe

**Abstract** The effects of climate change, globalization and urbanization are contributing to an increase in risk from natural and manmade disasters. Historically, disasters have been a public sector concern mainly focused on preparation and recovery. Over recent years however, a broader and more inclusive perspective has developed which promotes higher levels of risk-sensitivity, alongside the need for strong collaborations between public and private sectors to mitigate and reduce these risks.

These collaborations are not common today. Yet, with 70–85 % of investment dollars coming from the private sector in the next decades, they are essential. For these to succeed, the public and private sectors must strive for greater levels of understanding, trust, and alignment of their agendas. Where the private sector must move more aggressively to integrate disaster risk into its normal decision-making processes right alongside other business risks, the public sector will benefit from incentivizing the actions that will reduce risk at the systemic levels. Ultimately, both must become more risk and resilience sensitive.

This chapter discusses how the private sector perceives risk in general and how they address disaster risk and the related challenges of climate change, globalization, and urbanization. It provides an overview of business continuity management and supply chain resilience – two issues that hold the potential for mainstreaming disaster risk within an enterprise’s awareness and planning processes; and discusses early adopters, good practices, and collaboration.

**Keywords** Disaster risk reduction • Private sector • Public sector • Resilience • Business continuity • Supply chain resilience • Resilient investment • Risk sensitive • Risk sensitivity • Good practices • UNISDR • Climate change • Globalization • Urbanization

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## 2.1 Introduction



The impacts of private sector activity on disaster risk management and the private sector's potential when working with the public sector has been defined more completely over the past three years, due to the efforts of the UN Office for Disaster Risk Reduction (UNISDR) and its Private Sector partners and advisors in the UNISDR Private Sector Partnership (DRR-PSP) and Private Sector Advisory Group (PSAG).

The collective efforts of these entities, along with mounting losses from disasters, are raising awareness and contributing to a growing sense of urgency amongst portions of both the public and private sectors.

According to the latest estimates from the United Nations, economic losses from natural disasters this century have amounted to \$2.5 trillion dollars, at least 50 % higher than previous estimates (Box 2.1). Evidence of rising sea levels, increases in severe storms and other natural and manmade catastrophes are drawing more attention and raising concerns.

### Box 2.1: Disaster Related Loss Trends

**Disaster-related economic loss trends**

1. Disaster-related economic losses amount to hundreds of billions of dollars annually, and are projected to double by 2030. Since 1992, over \$2 trillion in damages have occurred.
2. Between 70 to 85 per cent of all new investment is generated by the private sector. 
3. Institutional investors currently manage assets worth more than \$80 trillion globally; much of this is given limited consideration to disaster risk.
4. In the years ahead, trillions of dollars will be invested in hazard-exposed regions. If those investments fail to take into account natural hazards and vulnerabilities, risk will continue to accelerate.
5. Currently, the globe's top 600 cities account for half of the Global GDP and this is expected to increase to 60% by 2025,\* creating concentrations of highly vulnerable and/or exposed wealth and assets. 

Sources: 1: UNISDR 2013c, 2: Citilab 2012

During the Global Platform for Disaster Risk Reduction in 2013, the disaster risk reduction community recognized the private sector as actor and partner:

Steering private investment towards greater resilience makes good business sense. The private sector recognizes that it has a crucial role to play in preventing and reducing disaster risk since businesses are not only exposed to natural hazards, but also often contribute to increased disaster risk in the process of driving economic growth. Indeed, resilient business and investment go hand in hand with resilient societies, ecosystems and the health and safety of employees. (UNISDR 2013b, p. 3).

Economies cannot exist without communities, and communities cannot exist without economies. There is a clear mutual economic interest for public and private sectors to work together, as the private sector relies on the resilience of public infrastructures and services in order to do business, and governments and national economies depend on resilient business practices for stable economic productivity as measured, for example, by gross domestic product (GDP).

With 70–85 % of investment dollars coming from the private sector in the next decades, collaborations and partnerships on disaster risk reduction are essential. It is becoming clear that efforts by the public sector alone will not be sufficient to achieve the desired outcome, especially the reduction of economic losses. Developing the operating platforms, goals, and measures for the private and public sectors to collaborate and collectively address the challenges of natural, as well as manmade disasters, is essential. But, there is still much to do to nurture greater understanding, trust, and commitment before public and private sectors will succeed in envisioning, scaling and implementing these partnerships.

Chapter 2 strives to raise the public and private sector's understanding and connection to each other's stake in disaster risk reduction; make clear the values each sector brings; and map and reinforce the essential interdependence that is needed for resilience to take hold, become embedded in decision making at all levels, and succeed.

## 2.2 Risk and the Private Sector

The private sector has always focused on business risks. Businesses depend on taking prudent risks while mitigating and/or avoiding those risks that exceed their tolerance; such decisions are referred to as *risk appetite*. Businesses are just beginning to recognize disaster risk management as a key element of their business continuity management and competitiveness in an increasingly unpredictable and interdependent world. Yet, setting all the measures in place to address low-probability-high-consequence risks struggles to compete for attention or capital with other better-known needs or promising projects.

Companies, regardless of their size, are facing growing regulatory, public opinion and market pressures. If disaster risk management is seen as an entirely new set of demands, it will likewise struggle for attention. To make disaster risk reduction less burdensome and more immediately actionable, it should be positioned as improvements and enhancements that can be prioritized and integrated within the context of functions, methods, programs, and plans that currently address corporate risks at all levels.

Corporations principally invest and allocate resources based on levels of confidence. Disasters, whether natural, manmade or some combination of these, suffer from too many variables and often cannot be confidently modeled. Therefore, assigning resources to rethinking, reorganizing, and/or adding resources to address disasters that may or may not actually occur can be difficult to justify. As such, investments to reduce potential risks from disasters can be regarded as ancillary, especially when these dollars are competing with investments that are more certain

and can be shown to directly affect business performance and the bottom line. A significant challenge, then, is setting the goals in place that assist organizations on this journey; helping them reliably identify and profile their critical disaster risks; and then consistently measuring the impact of mitigation in terms of value creation and return on investment.

The global discussion on the post-2015 framework for disaster risk reduction to succeed *Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disaster* has highlighted the need for the private sector to address disaster risk through normal business decision-making processes right alongside other business risks. The objective is to make this a business norm in order to reduce business interruptions and economic losses.

The following sections discuss the challenges as well as the potential benefits of this approach from the private sector point of view, with the aim to bring both public and private sectors together as informative and supportive partners. Most important is the development of the clarity, language, tools and measures that are needed to realize this new business norm (in terms of international policy frameworks as well as national and local policies and practices), leading to a set of likely mutual benefits for all.

## 2.3 Macro Trends and the New Norm

Three macro trends that are useful in understanding the private sectors' relationship with disaster risk management and resilience-building include 'climate change', globalization, and urbanization. (Please note that climate change is used as 'short-hand' for a broad list of naturally occurring hazards.)

Regarding 'climate change', more and more companies admit to an increase in the intensity and frequency of natural hazards, some from direct experiences that have affected their operations and profits. While a portion of companies trust and believe that climate change is real and that human activity is involved (i.e. the greenhouse gas effect), others consider current climate changes part of a natural climate cycle that is not significantly impacted by humans or their use of fossil fuels. The debate over the cause of climate change or its potential to escalate weather-related disasters hampers the private sector's efficiency in navigating the topic at the enterprise or individual business levels.

Some challenges associated with the macro trends have been manageable within the private sector's values, structures, governance, and operations. But others are beginning to require the private sector to apply new thinking, potentially redesign and restructure their operations, and define and hire new capabilities. Making decisions and commitments like these can be difficult, especially when the path to decision-making is littered with uncertainty, i.e. low levels of confidence because, as stated previously, corporations principally allocate resources based on levels of confidence.

In the traditional business risk management model, identifying, prioritizing, and addressing risk tends to be resident within specific organizational or functional silos. For example, a company's safety risks may be managed through a centralized

safety management system, alongside site-specific reporting committees, while process safety resides in operations. In many cases, climate change has fallen to a sustainability officer or office – a relatively new post over the last decade. Preparedness and post-disaster recovery typically rely on a centralized framework that is executed locally until it exceeds local capabilities. Specific teams might be established to deal with location-specific risks such as typhoons, earthquakes or even civil unrest and riots. As business has grown more complex and more global, companies have risen up to address changing needs by adding functions, departments, teams, programs, platforms and methodologies.

But it is becoming more apparent that these individualized teams, departments and functions as well as the issues they address are not as effective or connected as they should be. Some also realize that their corporate boards of directors will need to expand their risk sensitivity – particularly as it relates to future investing. However, faced with the challenges of legacy systems, existing structures, and rapidly shifting market demands, the private sectors' move toward integrated risk management will likely take a slow, stepwise approach over the next years, unless they are otherwise incentivized or offered higher levels of confidence that moving more aggressively toward enterprise-wide disaster risk management will benefit, and not hurt, business.

Meanwhile, some business leaders have introduced non-traditional, matrix approaches to transfer knowledge and skills across their enterprise, increasing their organization's ability to collaborate and develop more holistic and integrated risk management approaches. The potential of this type of an approach is well illustrated by the transfer of knowledge occurring between sustainability and product development, for example. Identifying and addressing sustainability risks have helped pave pathways to competitive advantage, product improvements, and innovation.

Corporate sustainability has been on a two-decade journey, but it was not until 2004 that Linda Fisher, first Chief Sustainability Officer, was appointed to a U.S. publicly traded company (DuPont). Since then, many companies have followed suit. By 2012, 283 companies had a full-time sustainability manager (Moss 2014). Over this time, corporate sustainability has developed its knowledge, methods and capabilities, while slowly and steadily embedding itself across the enterprise.

If we look at the organizational gains in sustainability, there are parallels and lessons to be learned. For instance, sustainability has been finding its value or what we will refer to as its 'proving grounds within organizations.' These proving grounds are providing the critical foothold required to fuel more widespread understanding and adoption.

According to a 2014 McKinsey Global Survey of executives, sustainability is becoming a more strategic and integral part of their businesses:

In past surveys, when asked about their companies' reasons for pursuing sustainability, respondents most often cited cost cutting or reputation management. Now 43 percent (and the largest share) say their companies seek to align sustainability with their overall business goals, mission, or values. (McKinsey 2014, page 2)

The report goes on to say,

of 13 core sustainability activities... executives most often say their companies are reducing energy use in operations (64 percent), reducing waste (63 percent), and managing their corporate reputations for sustainability (59 percent). (McKinsey 2014, page 3)

These findings bode well for disaster risk management. At its core, disaster risk management places emphasis on reducing the stresses on natural resources, keeping people and property safe, as well as efficiently rebounding from any event that disrupts the norm. As such, sustainability relies on risk mitigation and resilience-building. While the matrix approach is resource-intensive and sometimes unfriendly to new ideas, sustainability's growing importance can be used as a bridge to transport, connect, and integrate disaster risk management across a business.

With help from partnerships and information sharing, companies will increasingly come to realize that portions of disaster risk management go beyond traditional risk management demarcations. However, to get the attention required and to avoid overwhelming organizations, UNISDR and its entities are working to position disaster risk management and resilience-building within existing private sector functions, methods, programs, and plans that currently manage these risks. Further, to guide the private sector in allocating resources to disaster risk management, they are helping to identify disaster risk management's early footholds or 'proving grounds.' Two likely candidates appear to be *supply chain resilience* and *business continuity management* – both in sharp focus for businesses as a result of the second macro trend: globalization.

## **2.4 Globalization, Supply Chain Resilience, and Business Continuity**

Advances in technology, communications, and transportation have contributed to globalization and economic expansion around the world, creating unprecedented trade and development opportunities. Whether in pursuit of suppliers, natural resources, or rising middle class consumers, companies have been crisscrossing the globe, investing in new markets, forming mergers and partnerships, and acquiring their way to parts of the world where risks are often high and experience low, creating new levels of risk and economic interdependencies.

A Chubb risk survey that questioned 300 U.S. and Canadian companies found that one in two (52 %) businesses plan to increase its overseas activity in 2014. Survey respondents expect to increase overseas travel (27 %), introduce new products in foreign markets (27 %) and increase employee headcount abroad (26 %). The survey further reports the top overseas business threat is supply chain failure (19 %) (Chubb Group of Insurance Companies 2014).

In a 2014 global megatrends study on risk management published by Accenture, three out of four (76 %) of the companies interviewed described supply chain risk management as 'important' or 'very important.' And of the more than 1,000 companies represented across ten industries in this study, 25 % plan to increase their investments in supply chain risk management by at least 20 % over the next 2 years (Accenture 2014).

Related to supply chain resilience is business continuity planning and management. Effective continuity management prevents disasters from disrupting the organization at the site, enterprise, supplier, or customer level.



A 2013–2014 survey from Continuity Insights & KPMG revealed that organizations have increased oversight of BCM activities, with 71 % of respondents indicating they have a senior management advisory or steering committee in place, up from 65 % in the 2011–2012 survey. While that is an improvement from the past study, approximately 30 % of the respondents indicated that no such governance capability is currently in place in their organization (Continuity Central 2014).

Interestingly, in a snapshot report from National Association of Environmental Management (NAEM), respondents indicated that environmental considerations (which include consideration of natural disaster risk) are now a core element of their risk management programs. While compliance risks and resource availability may long have been part of these evaluations, environmental risks are seen as much more pressing, due to the effects of climate change. Environmental risk analysis is increasingly incorporated into long-term business continuity planning as well (NAEM 2014).

It should be noted that publicly traded companies are far more likely to have a formalized department for business continuity management (76 %) than a private company (47 %). Private companies tend to be smaller and less risk averse because of their compact corporate structure and less stringent financial reporting requirements. In contrast, public companies are subject to more rigorous standards, driven by significant financial regulatory oversight and investor scrutiny (NAEM 2014).

Managing risk on an enterprise-wide basis continues to escalate in importance and a proactive, more holistic approach to the process becomes even more critical. Therefore, risk is no longer the responsibility of the few within an enterprise. From the board through operations, there must be a network of people working in concert to identify and address issues that could have enterprise-wide impact (Aon Risk Solutions 2013).

Awareness of the need to address issues that are technically lying *outside* an enterprise is increasing as well. Micro, small, and medium enterprises (MSMEs) are dependent on public infrastructure and experience business disruptions related to localized extensive disasters, such as those associated with flooding or landslides, as well as major intensive disasters (UNISDR 2013d). Many MSMEs are serving large corporations that are just now considering the risks represented by their supply chain partners and are beginning to query their suppliers on how they handle risk. It is in a larger corporation's best interest to bring their MSMEs along, exposing them to good disaster risk management practices and resilience-building.

Thus the two 'proving grounds' – business continuity management and supply chain resilience – are helping disaster risk management mainstream itself within an enterprise's awareness. Still, in the Accenture study, senior operations executives identified the top three sources of risks as information technology (39 %), cost and pricing factors (39 %), and global economy (37 %). The least frequently mentioned risk was natural disasters or unforeseen events like the Thai floods or the Japanese tsunami – only 17 % of respondents cited it (Accenture 2014). Participants of the Chubb risk survey responded that data breach/cyber events (15 %) ranked second, and government/regulatory investigation and political instability tied for third (13 %), and natural catastrophe (12 %) ranked fourth out of the 10 events listed as overseas business threats (Chubb Group of Insurance Companies 2014).

Both studies point to a low concern for risks from natural disasters. As previously mentioned, the private sector clearly struggles to make the case for an increased focus on disaster risk management. But this should not lead us to think that disasters are not being addressed by the private sector. In fact a host of corporate functions including safety, health and environmental, capital project planning and management, sustainability, finance, and operations have aspects of disaster risk management contained within them. The language may differ and the depth, breadth, and rigor of their disaster risk management and resilience-building may be less than we would prescribe.

The private sector needs a more globally accepted enterprise-wide focus on natural and manmade disasters that is: (1) defined with accepted common language across the organization and its value chain; (2) supported by a common framework and methodology; (3) measurable and valued; and (4) integrated into business decision-making at all levels.

If the private sector can be guided toward these measures and toward a broader integration, including business methods for identifying and mitigating risks from disasters, preparing for events, and building the resilience to recover completely and swiftly from disasters, they will benefit and assist in the management of organizations' broader risks including those related to supply chain resilience and business continuity. Although this seems obvious to the initiated, these connections have not yet been made on a large enough scale to gain traction within corporations.

What is evident from best practices amongst UNISDR Private Sector Partners (described further below), is that early adopters see that from the very inception of a service, a product, a process, construction, hiring, training and development, sourcing, stakeholder engagement, safety, and communications – disaster risks need to be identified and addressed holistically and systemically. Early adopters understand that integrating new and increasing forms of risk management into businesses, whether the disasters are natural or manmade sources, will require new forms of inclusion and collaboration across every aspect of their organizations.

## 2.5 Urbanization and the Early Adopters

Discussion of supply chain resilience and business continuity leads one to the critical interdependence between business and the public sector, as defined in UNISDR's Global Assessment Report:

Governments depend on business investment to generate employment and wealth required to provide public services. Likewise, businesses depend on reliable public infrastructure and utilities... (UNISDR 2013d, Preface)

This relationship between private and public sectors is vital in urban areas. As of 2010, more than half of the world's population lives in urban areas (WHO 2014). Businesses are naturally attracted to mega-cities, but these hubs of investment, high productivity, and comparative advantages are also often hazard-prone. For example, 13 of the 20 most populated cities in the world in 2005 were port cities; between 1970 and 2010, population in flood plains grew by 114 % and in cyclone-prone coastlines 192 %, while overall population growth was 87 % (UNISDR 2013d, Chapter 2).

The advocacy for urban resilience by UNISDR over the years, most notably through its ‘Making My City Resilient’ campaign, with 2,180 member cities since 2010 (as of October 2014), has created a strong base of early public sector adopters in the form of mayors and local governments. These early adopters understand the critical interdependence between the public and private sectors, and are open to new ways of collaboration. During 2013, one such public-private collaboration culminated in the *pro bono* private sector development of an open-source tool for cities to gain a single integrated perspective on their disaster resilience posture, and thus identify gaps: a Resilience Scorecard for cities that is designed to work with the ‘Making My City Resilient’ campaign (Fig. 2.1). The Scorecard rose out of a close partnership between city governments, IBM, and AECOM, facilitated by the UNISDR. Further testing and development using the Scorecard is expected to continue through the UNISDR Private Sector Partnership (UNISDR 2014a) and another UNISDR-related private sector initiative, R!SE (UNISDR 2014b).

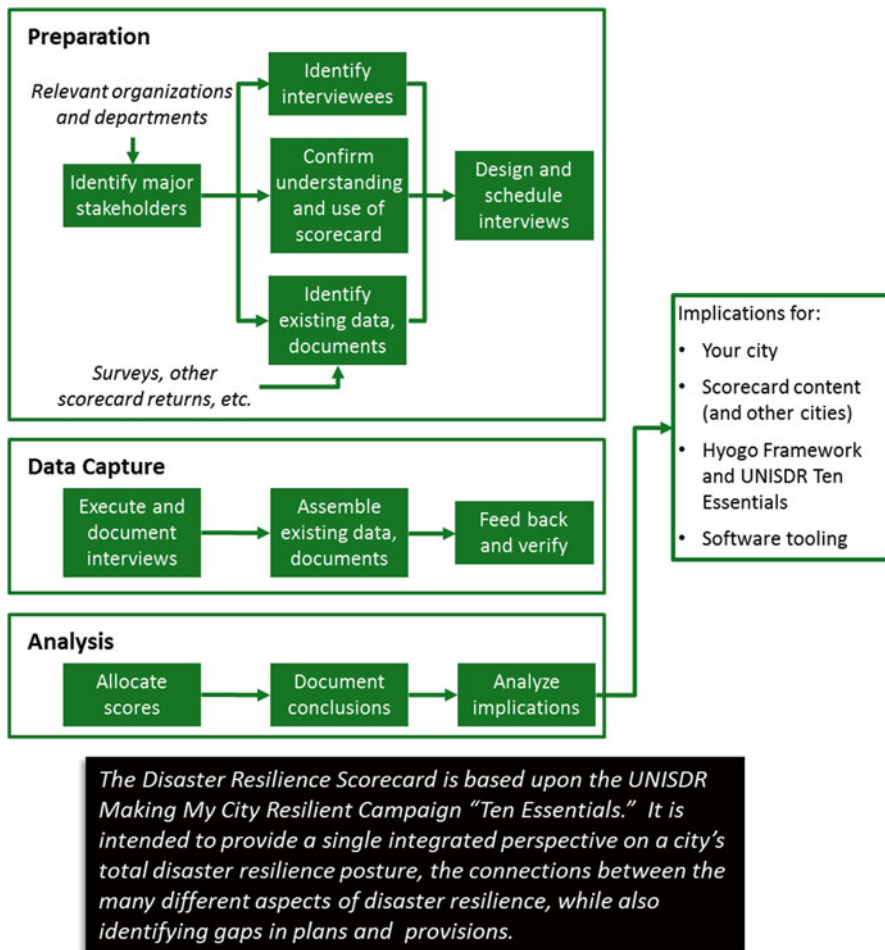


Fig. 2.1 Disaster Resilience Scorecard (Reproduced from UNISDR 2014d)

Some early adopters, both public and private, have noted that public-private collaboration opens doors to additional funding and management opportunities and arrangements that make resilient innovations affordable and realizable. Kokusai Kogyo, an engineering consulting company, formed a partnership with Sendai City, academia, and companies with complementary expertise to develop a neighborhood with smart homes and alternative energy supply arrangements that are not only environmentally friendly, but also resilient toward disasters. The public-private-academic partnership made it possible for the project to tap into targeted national subsidies for development and construction. The resulting housing development, part of which went on sale, and part of which were reserved as post-disaster relocation housing, remains under management of the private sector partners who will maintain the technology required for high-tech resilience that will not compromise on the comfort of their residents (UNISDR 2013e).

Other emerging examples of public-private partnerships have included: (a) DHL working with Beirut Airport; (b) Miami-Dade County, local universities and corporations working together on hurricane hardening; (c) the Japanese government, working across its private sector networks, to help junior high and elementary students with disaster preparedness; and (d) the positive impact of Citi's mobile banking during Hurricane Sandy (Box 2.2).

### Box 2.2: Public Private Partnerships Increase Preparedness

#### Public Private Partnerships that have increased preparedness

*Recent examples of PPPs (Public Private Partnerships) provide realistic hope for the success of the global framework.*

**DHL against disasters** – DHL instructed UN officials on how to prepare Beirut's International Airport for natural disasters. Beirut has the only operational commercial airport in the country, and the US had exports worth over a billion dollars to Lebanon in 2011 alone.

**Joining forces in Florida** – A US example with global implications was shared by Castillo from his experience as Miami-Dade County's, Florida, emergency management director. The County formed alliances with local universities and corporations to harden their facilities against hurricanes, thereby reducing the need for additional evacuation shelters for students and staff.

**Skilled up students** – The Japanese government, working across its private sector networks, taught junior high and elementary school students survival skills that helped during the 2011 Tsunami.

**Keeping money mobile** – Citi's mobile banking was so user-friendly that it generated \$10 million in transactions during Hurricane Sandy.

*Source: Castillo et al. 2014*

The many kinds of partnership found by examining Japan's established public-private partnership practice for emergency response (called Emergency Agreements) illustrates how both the strengths of local businesses, with their strong sense of community belonging and responsibility, and the strengths of national and multi-national businesses that can draw on wider resources, are of use to the public sector looking towards resilience. Emergency Agreements resulted not only in palpable efficiency in the aftermath of the earthquakes and tsunami in 2011, but also led to the innovation and proliferation of resilience products in the general public, as well as an increased interest in business continuity by companies that took part in such partnerships, grown out of a sense of heightened responsibility to the community (Box 2.3).

### Box 2.3: Benefits of Private Sector Engagement

#### Japan's engagement of the private sector

*The Japanese private sector, together with the whole of society, has been actively working on risk reduction and resilience-building since a major disaster in 1995 to the extent that results were palpable in 2011.*

**Companies lead the way in upgrading everyday equipment to disaster resilient models** – Instead of maintaining separate emergency systems, investments to develop products such as smart homes, multipurpose vending machines, shatter-proof windows, etc., as well as preferential financing services to fund such investments, have seen brisk business.

**Companies voluntarily foster redundancy in key utilities and functions for continuity** – With future disasters in mind, many operations chose to secure multiple sources of water and electricity and have secured the ability to duplicate key production or functions in different geographical regions.

**Public-private partnerships for emergency response (Emergency Agreements\*) are now common practice at the local and national levels** – The advantage of securing professional support and contributions in advance, whether in construction, technical services, or food and water supplies have been embraced by governments at all levels, shortening response and recovery times, bringing goods to those who need it most, and getting things done right the first time.

**Companies feel a strong sense of responsibility to their community** – Companies credit public-private partnerships and trust from the community as spurring them on to ensure further business continuity and resilience, so that they may successfully discharge their responsibility when called upon.

*Best practices from Kokusai Kogyo, Asahi Glass, Wellthy, Kajima Corporation, Tohoku Nipro Pharmaceutical, Development Bank of Japan, The Shiga Bank, Japan Airlines, Maiya, Japan Pharmaceutical Association, Yamato Holdings, and Sendai Coca-Cola Bottling.*

*\*Emergency Agreements: A strategy for enabling community and local-level resilience through public-private partnerships (PPP) that has proven effective in Japan. A March 2012 survey of 66 prefectures and cities in Japan found a total of 7,378 EAs in use. Of these, 6,415 were signed between local governments and the private sector.*

*Source for \*: UNESCAP 2014. Other: UNISDR 2013e*

In the above examples, it is notable that the public sector welcomes businesses as partners in planning, development, preparedness, and resilience based on their individual merits and offered services. What is often missing for many local and national governments is the private sector's collective representation in the decision making process for urban resilience, as evidenced by, for example, the lack of private sector representation in national platforms for disaster risk reduction (UNISDR 2013c). The result is unevenness in actual collaboration, awareness of the potential value of collaboration, as well as the motivation and trust necessary to explore such options in the public sector.

Some early adopters have managed to independently turn disaster risk management into a profit driver without the added push from partnerships. One example is SM Prime Holdings Inc., the largest mall operator in the Philippines. From building their own shopping malls above code (UNISDR 2013a), to providing resilient housing to communities affected by Typhoon Haiyan in 2013 (UNISDR 2014e), to hosting CEO-level annual workshops (UNISDR 2014c) on disaster risk reduction, they have increased their corporate reputation and brand value through voluntary investments in resilience.

Essential collaborations are needed to develop better forms of information sharing. In the last year, China's Institute of Water Resources and Hydropower Research (IWRH) provided FM Global (a Commercial Insurer) with flood modeling and mapping consulting services for industrial zones in Shanghai and the adjacent Taihu Basin areas. Together, IWRH and FM Global assisted an industrial client to locate a new manufacturing facility on higher ground, still within the desired city limits. Mitigating the risk of this development mutually benefits all parties as well as their stakeholders.

In terms of information sharing, corporate foundations and funds have been invaluable in bridging private sector parties to upstream information sources (academia as well as the public sector) as well as connecting them to downstream consumers of information (including individuals, small businesses, and practitioners such as NGOs). AXA Group, with its AXA Research Fund, and Munich Re, with its Munich Re Foundation, are strong examples of such bridge-building entities (UNISDR 2013a).

Collaboration and integration are two ways of operating that can pave the way to new levels of disaster risk management and resilience in the twenty-first century and beyond. In general, the private sector is increasingly aware of the interdependencies that are multiplying across the world as well as within their own organizations. A percentage of companies are taking these tightening connections into full account, working to 'adapt' their organizations to both meet the clear needs of their constituents – shareholders, clients, customers, and employees – and to anticipate the not-so-clear risks of a vastly changing world. In this respect, the re/insurance sector is ahead of the game.<sup>1</sup>

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<sup>1</sup>The following section draws extensively on Douglas 2014, with permission from the author.



## 2.6 Crisis Is a Tough Teacher

Following a period of unprecedented losses in the 1980s, largely driven by natural catastrophes, the global re/insurance market entered a crisis, culminating in the losses from Hurricane Andrew in 1992. From 1993 to 2003, the entire sector underwent a transformation, which assumed a deeper understanding of the roles of, and fluid relationship between, three key forces that transformed the treatment of natural disaster risk within global re/insurance. These three key forces were (1) smart capital; (2) a scientific, data and analytical revolution; and (3) public policy and financial regulation.

During the 1990s, smart capital began entering the re/insurance sector from new private sector investors, mutuals, and even progressive state sector insurance systems, that demanded improvements be made in the way that underwriters evaluated and priced natural disaster risk in their portfolios.

A scientific, data and analytical revolution thrived with the influence of mid-1990s software and technology trends on underwriting data management and analysis. The level of analytics of natural disaster risks went from relatively simple aggregate assessments undertaken by a single underwriter, to large cross-disciplinary analytical teams assessing floods, earthquakes, windstorms, and other perils to portfolios of homes and assets throughout the world.

The influence of public policy and financial regulation came to the forefront when governments, through their insurance regulators, developed an emerging convention that insurance contracts should deliver their commitments at a 1:200 year level of confidence. This required insurance companies to have access to sufficient capital (either directly or through reinsurance) in order to remain solvent and pay all insurance claims when it experiences the worst combination of extreme events across the world over a 12 month period once every 200 years at current (not historic) levels of risk. Such multi-century scale risk management was new and unknown to insurance, as well as the wider financial world. Over time, knowledge was acquired, techniques became more refined, and the general market practice transformed. This policy approach, driven by insurance regulators seeking policyholder protection, was reinforced by re/insurer credit rating agencies.

Together, the three converging forces of smart capital; a scientific, data and analytical revolution; along with public policy and financial regulation created a sea change in the reinsurance market by the mid-2000s. The year 2005 witnessed Hurricanes Katrina, Rita and Wilma hit Florida and the Gulf Coast, causing major insured losses in excess of US\$50 billion. However, despite the modeling challenges for Hurricane Katrina, the global reinsurance market experienced few insolvencies. In 2011, the worst global natural catastrophe loss year on record with over US\$120 billion in claims, saw the sector succeed in managing well within normal market operations, a trend that continued with the response to New York's Super Storm Sandy in 2012.

While the insurance sector still has a long way to go and represents a relatively small proportion of the financial system, its remarkable journey through the nexus

of capital, science, and public policy provides the essential ingredients and methods to embed natural disaster risks and resilience across financial regulation, accounting, and the conditions for the access to capital it governs.

Willis, a global re/insurance broker, along with other key institutions, brought forward a proposal (Douglas 2014) at the UN Climate Summit in September 2014 to assess the feasibility of integrating natural disaster risks and climate resilience into the frameworks of the financial system beyond insurance. The proposal advocates the adoption and reporting of three key metrics or ‘stress tests’ that would elucidate the disaster risks that companies are facing here and now. This framework for reform is informed by the experience of the global re/insurance sector and its regulation, over the last quarter century, as it succeeded in achieving much greater macro-prudential resilience to growing natural hazard risks (Box 2.4). An action statement, the 1-in-100 Initiative (UN 2014), supported by a consortium of partners from finance, science, and public sectors including Willis, was submitted at the same event, and represents the first step towards realization of the above.

## Box 2.4: Encouraging Resilience

### Encouraging resilience by borrowing from the insurance experience

Lessons from the reinsurance sector suggest that the 1-in-200-year resilience benchmark for contracts was a transformative mechanism, first applied in several key jurisdictions before it became a de facto global standard by convention and via the operation of risk sharing.

Building on this lesson, the adoption and reporting of a threefold stress test would exhibit the materiality of disaster risks to institutions, securities and commitments:

- 1-in-100-year annual probable maximum loss (PML) from natural hazard risk as a solvency stress test;
- 1-in-20-year annual PML as a stress test for annual earnings;
- Annual Average Loss (AAL) and a standardized metric for corporate exposure to natural disaster risk.

These stress tests offer three major attractions:

- They are derived from the three key metrics with the most significant impact in the reinsurance market, including the insurance of companies and other public, private and domestic assets within their portfolios.
- The focus is not on the distant future but on current assets on the balance sheet and the resilience of those assets to current levels of risk.
- -By focusing on extremes, albeit relatively modest ones, the metrics will highlight risk dependencies and interactions across and beyond organizations and identify conditions that may become more frequent or closer to the norm in future decades.

*Source: Douglas 2014*



## 2.7 Conclusions

The interdependencies between public and private sectors are growing stronger in the face of urbanization, climate change, and globalization. The opportunity to work together and form new operating models is one of the more exciting and game-changing prospects for disaster risk reduction in our century. As the UNISDR Private Sector Partnership prepares its case and recommendations for the post-2015 framework for disaster risk reduction, changes in how the world thinks about disaster risk reduction and resilience are evident.

The UNISDR Private Sector Partnership – a major force within the Business and Industry Major Group that represents the private sector at UN meetings, are calling out, defining, and detailing a number of these changes in terms of needed actions (Box 2.5). Heading the list is the immediate and urgent shift in the relationship between public and private sectors as both engage in addressing disaster risk reduction. The many good public-private partnership examples captured in this chapter serve as proof that working collaboratively is essential, quite possible, and collectively beneficial.

Responsibility for the built environment is shared. It is not difficult to conclude that as populations grow and shift, the realities of these new landscapes will drive the public sector to consider raising the minimum requirements on construction while the private sector – recognizing that it can no longer afford massive losses – will begin voluntarily working toward higher standards. This means willfully moving beyond codes whenever justified and feasible and realizing that tremendous value can accrue from these decisions for both community and business.

For both sectors, all financial investments need to become ‘risk-sensitive.’ As an example, local and national governments, along with business, can and should make land use decisions with resilience in mind by developing and following protocols where risk and resilient decisions go hand in hand. Governments can provide information and incentives that can help business focus on the most critical elements of disaster risk management and resilience-building, based on local knowledge, conditions, and behaviors. Such government action will be valuable guidance that improves, and helps prioritize, private sector investment and development decisions.

Early adopters are stepping forward to build beyond codes, strengthen their supply chains, collaborate to create open source information, tools and methods, and to innovate to develop products and services that reduce impacts from disasters. The right incentives will hasten the pace of these initiatives.

What is clear is that a convergence of social, environmental, and economic conditions are coming together and will begin shining a light on the issues surrounding disaster risk reduction and resilience. At the point of writing, awareness levels are still low, globally speaking. However, with public sector interest in private sector collaboration improving and a growing number of private sector entities signing onto voluntary commitments and joining UNISDR’s drive for disaster risk reduction and resilience (Box 2.6), change is accelerating and is expected to be profound.

## Box 2.5: Private Sector Recommendations

### Private sector recommendations to the Preparatory Process of the World Conference for Disaster Risk Reduction

*The drafting of the post-2015 framework for disaster risk reduction is currently underway as part of the Preparatory Process. As of November 2014, many of the private sector recommendations made on the pre-zero draft of the post-2015 framework, as summarized below, have been reflected and incorporated into the zero draft. A UN framework guides the actions of UN member states, and is drafted by member states; the recommendations are thus worded as messages to governments.*

The post-2015 framework presents an opportunity to encourage resilience and risk-sensitivity in all actors, and to acknowledge the addressing of disaster risk as urgent and critical for our mutual survival. It is particularly important to engage the private sector who makes 70-85 percent of overall investment in most economies.

Engaged, the private sector will take action to realize a future where:

1. **Strong public-private partnerships drive DRR and resilience at the local and national level.**  
Private sector and other stakeholders can contribute greatly to DRR-relevant decision-making processes at the global/regional/national and local level, and public-private partnerships and other collaborative forms of engagement can take advantage of private sector expertise, products, and services, especially at the local level.
2. **Resilience in the built environment is driven by public sector setting adequate minimum standards, and creating an enabling environment to exceeding them, and the private sector voluntarily working towards optimal resilience.**  
The private sector owns, invests in, builds, operates and maintains most infrastructure and the built environment. There is great potential for the private sector's voluntary initiative to be combined effectively with public sector efforts. This may be brought about by an enabling environment built through a combination of standards, certifications, regulations, incentives, compliance, reporting, and other measures.
3. **All financial investment decisions, public and private, are risk-sensitive.**  
It should be economically attractive, as well as necessary, for investors and asset owners (from governments to companies to individuals) to optimize the resilience of their assets. The private sector will take part in the development of a standardized method of assessing, reporting, and communicating the exposure to risk, including financial disclosure rules.
4. **Everyone, including the public and private sector, behave in a resilience-sensitive way and create a positive cycle of reinforcement.**  
The private sector can affect public perceptions towards resilience via their corporate policies and education of their workforce. Higher public expectations for supply chain and business continuity management will encourage investment and create market demand for products and services that add to resilience, which in turn will encourage further innovation.
5. **The identification, disclosure and proactive management of risks carried by companies and public sector entities, is standard practice.**  
Disaster risks carried and managed by the private sector must be included in the full picture of risk carried by communities and countries. Corporate social reporting mechanisms can be harnessed for this purpose. An enabling environment, again through a combination of standards, certifications, incentives, and other measures, can accelerate this process.

Sources:

Major Group: Business and Industry (2014a, b), Business and Industry – Major Group (2014a, b, c, d, e)

## Box 2.6: Voluntary Actions and Commitments

### Voluntary commitment by the private sector

*UNISDR's active engagement of the private sector has resulted in companies voicing their commitment to disaster risk reduction and resilience in numerous ways:*

**69 (as of July 2014) UNISDR Private Sector Partnership (PSP) companies have signed and committed to the 'Statement of Commitment by the Private Sector for Disaster Prevention, Resilience and Risk Reduction' – see and the 'Call for Action: Five Essentials for Business in Disaster Risk Reduction'.**

See <http://www.preventionweb.net/english/professional/networks/public/psp/join/>

**They are supported by UNISDR Private Sector Advisory Group (PSAG) members** – individuals who have demonstrated commitment and who wish to take an active role in promoting and developing the ISDR's mission. Current members include those from Africa, the Americas, Asia, and Europe; and represents global multinationals with footholds in hundreds of locations worldwide and tens of thousands of employees.

See <http://www.unisdr.org/partners/private-sector>

**Five activity-oriented UNISDR Private Sector Working Groups** – comprised of PSP and PSAG, drive and support private sector engagement in resilience and disaster risk reduction.

See UNISDR 2014a

*They have, to date:*

- **Assisted UNISDR in its regional consultation process in 2014 and, together with regional private sector consultation participants, produced specific voluntary commitments with targets, indicators, and timeframes.**

See Americas outcomes: <http://eird.org/pr14-eng/index.html>

"Voluntary Commitment of the Private Sector in Latin America and the Caribbean to Disaster Risk Reduction and Resilience Building"

See Asia-Pacific outcomes: <http://6thamcdr-thailand.net/6thamcdr/Outcome-Documents>  
"Voluntary Commitment Statements- Private Sector"

- **Reached out to other global business groups, including UN-Global Compact, World Economic Forum, and Principles of Responsible Insurance (PSI) under UNEP-Financial Initiative. PSI produced a voluntary commitment for disaster risk reduction on behalf the insurance industry.**

See [http://www.unepfi.org/fileadmin/documents/insurance\\_industry\\_disaster\\_risk\\_management.pdf](http://www.unepfi.org/fileadmin/documents/insurance_industry_disaster_risk_management.pdf)

- **Organized outreach and awareness-raising events in their countries and cities, including workshops and forums.**

From Philippines forum: [http://www.preventionweb.net/files/35665\\_topleadersforumtoolkit.pdf](http://www.preventionweb.net/files/35665_topleadersforumtoolkit.pdf)  
From India workshop: [http://www.unisdr.org/files/36571\\_drrindiaforumworkshopoutcomereportfinal.pdf](http://www.unisdr.org/files/36571_drrindiaforumworkshopoutcomereportfinal.pdf)

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# Chapter 3

## Experience of APEC in Disaster Management: Importance of BCP

Wei-Sen Li

**Abstract** Disaster risk reduction (DRR) could be implemented through different approaches. At national level, DRR is closely related to national safety, environmental sustainability and people's livelihoods. Under APEC, an economy-oriented international organization, DRR could directly make contributions to securing safety of trade environment and business operation. Therefore, since 2011, APEC starts promoting business resilience by introducing business continuity plan (BCP), which receives warm welcomes and helps small and medium enterprises (SMEs) to better enhance capacity and capability when a disaster occurs. And APEC also encourages introducing innovative science and technology for better utilizing big data and sharing value-added information that will increase capacity building of disaster resilience at SMEs and Global Value Chains by raising digital preparedness. This chapter describes how APEC influences business sector to foster safer and smarter regional investment in consideration of frequent natural disasters.

**Keywords** Business continuity plan (BCP) • Emergency preparedness • Small and medium enterprises (SMEs) • Asia-Pacific Economic Cooperation (APEC)

### 3.1 Introduction of APEC and Regional Adverse Impacts by Natural Disasters

Asia-Pacific Economic Cooperation (APEC) is the premier Asia-Pacific economic forum. Its goal is to support sustainable economic growth and prosperity in the Asia-Pacific region. The Asia-Pacific region has consistently been the most economically dynamic region in the world. Twenty-one APEC member economies together account for: 40% of world population (2.7 billion people); 44% of global trade (\$16.8 trillion) and 53% of world real GDP in purchasing power parity (PPP)

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**Fig. 3.1** Twenty-one APEC member economies

terms (\$35.8 trillion) (Asia-Pacific Economic Cooperation’s StatsAPEC, Key Indicators Database and Bilateral Linkages Database November 2011), Fig. 3.1.

Natural disasters have cost the Asia-Pacific region some US\$68 billion annually during 2003–2013 (EM-DAT International Disaster Database: <http://www.emdat.be/database>). These numbers highlight the gravity and urgency for achieving greater disaster resilience in this region. In today’s global economy, more and more transnational companies, or multinational corporations, typically develop and are engaged in global value chains, i.e. cross-border business networks which consist of a number of facilities, operations, suppliers, subcontractors and consumers in various parts of the world. Within the APEC regional, it is well known for its rapid economy growth and inter-related production model which is highly vulnerable to natural hazards. Building resilience to disasters is therefore not only critical for APEC economies, but is essential to the lives and livelihoods of the billions living across the vast region.

### 3.2 APEC Emergency Preparedness Working Designed for Disaster Risk Reduction

In order to protect economic fruits so vulnerable to natural disasters, APEC had expended scope to human security from trade issues. Emergency preparedness is one of the key elements of APEC’s human security agenda, along with countering

terrorism and pandemics. Having experiences of past events, disasters that affect one member economy can have significant spill-over and trans-boundary effects in other economies.

APEC's Emergency Preparedness Working Group (EPWG) was first established as APEC's Task Force for Emergency Preparedness (TFEP) by APEC Senior Officials in 2005. It was an active response to the 2004 Indian Ocean tsunami that deeply affected much of Thailand, Indonesia and other parts of the world. Originally called the Virtual Task Force for Emergency Preparedness, the TFEP carried out much of its work via electronic communications. Pursuant to its Terms of Reference, the Task Force is mandated to coordinate and facilitate emergency and disaster preparedness within APEC.

In 2009 APEC Leaders reaffirmed the importance of enhancing human security and reducing the threat of disruptions to business and trade in the Asia-Pacific region. Recognizing the importance of its work, in 2010 the TFEP was upgraded in status to a working group. EPWG brings together government officials from the region's various emergency services departments to build its members' capacity to better mitigate, prepare for, respond to, and recover from emergencies and natural disasters. Looking at EPWG's mandates, "business and community resilience" and "public-private partnerships" are top two properties that links emergency preparedness with economic sustainability (<http://www.apec.org/Groups/SOM-Steering-Committee-on-Economic-and-Technical-Cooperation/Working-Groups/Emergency-Preparedness.aspx>).

### **3.3 Regional Initiation of Promoting Business Continuity in 2011**

Business Continuity Plan (BCP) is not a new idea to business operation. However, it conventionally focuses on disturbance of financial disturbance or ICT interruptions which hinders business operation. Because of earthquake and tsunami in Japan, more industries seriously consider adverse impacts caused by natural disaster that could be another source of risk to bring dangers to their employees, suppliers and customers. Therefore, BCPs help business owners to make plans through knowing potential risks of natural hazards, identifying internal and external vulnerabilities and organizing teams to cope with.

Early spring of 2011, before cherry full blossoms in Japan, a gigantic earthquake with magnitude 9.0 devastatingly damaged the north-eastern prefectures by destructive seismic waves and unprecedented tsunami that were ever recorded in Japan's history. The power of the earthquake is the fourth largest one within the last 110 years and 40-meter-high tidal waves had devoured villages and cities distributed along 530-km coastal line. Among APEC member economies, Chinese Taipei, Russia, the US, Mexico and Peru had observed records showing obvious tidal



changes caused by Tohoku Earthquake. Counting casualties and losses afterwards, about 20,000 people were proved dead or reported missing; and direct loss, considering destructions of households, manufacturing utilities, highways and bridges, exceeded 1.7 B Yen equal to 3.4 % GDP.

Beside the physical numbers telling tremendous damages in Japan, the whole world also felt the ripple effect though global connectivity, especially viewing interrupted connectivity from global supply chain. In Tohoku area of Japan, semi-conductor manufacturing and automobile industry were severely affected and interrupted after the quake. In February of 2011, 800,000 cars were made in Japan. Then the numbers sharply declined to 400,000 and 290,000 in March and April after the quake respectively. Since the production was highly integrated into the world economy, the widespread disruptions in supplies occurred at the global level but particularly in Asia. For example, automobile production falls in Thailand by 19.7 %; in the Philippines by 24.0 %; and in Indonesia by 6.1 %. Likewise, global manufacturers of computer, smartphone and ICT device faced shortage of essential chips produced in Japan.

In order to better enhance private sector in disaster risk reduction and disaster resilience, soon after the Great East Japan Earthquake, APEC Emergency Preparedness Working Group (EPWG) gathered 19 APEC member economies and major regional enterprises in Sendai City, Japan, to brainstorm APEC's contributions on the related issues. Within workshop sessions, Renesas, a major IC manufacturing company, reported how to resume its semi-conductor production in a short period of time; Suzuki, a car manufactures, presented the way they efficiently cleaned debris in the affected factory; Microsoft and Prudential told how to first secure safety of all employees in Japan, then provide assistance to their clients; Taiwan Semiconductor Manufacturing Company (TSMC) and Target provided international experiences on risk management and plans of quick post-disaster recovery (In the category of 2011 outcomes of activities at <http://www.apec-epwg.org/>).

The chief conclusion reached and endorsed by participants was to initiate 3-year, 2012 ~ 2014, project focusing on introducing business continuity plan (BCP) to strengthen resilience at small and medium enterprises. During the period, APEC Small and Medium Enterprises Working Group (SMEWG) and EPWG jointly organized a series of capacity building trainings and composed guidelines of BCP. The active movement did catch regional and international attention on APEC's efforts for practically implementing public-private partnership on disaster reduction.

The multiple-year project (MYP) sought joint effort of SMEWG and EPWG to work out a feasible solution, BCP, for APEC SMEs, which are highly vulnerable to natural disasters. SMEWG and EPWG also jointly cooperated with relevant regional key stakeholders like APEC Business Advisory Council (ABAC) and Asian Development Bank (ADB) to promote and implement a multiple-year project for assisting the SMEs in building capacity on disaster resilience and enhancing emergency preparedness for natural disasters. The centerpiece of the project is providing a platform to enhance business continuity management at SMEs by empowering SMEs to strengthen disaster resilience. Furthermore, livelihoods in communities

will secure better protection and it is also the best approach to realize Corporate Social Responsibility (CSR). The primary contents of the project include:

1. To establish the cross-fora focal point network for providing linkage between SMEWG and EPWG, and to build up platform of knowledge exchange and experience sharing.
2. To study and explore the APEC SMEs' needs in preparing for and responding to natural disasters during each stage of disaster management;
3. To monitor the impacts of natural disasters on the economy and SMEs for dynamically reporting the updated situations and status;
4. To collect the best practices of disaster resilience building by SMEs to tell the importance of public-private partnership and provide sample models to learn from;
5. To develop guidelines for improving disaster resilience in SMEs in order to enhance business continuity at basic level;
6. To provide training courses that will help SME to identify potential disaster risks and offer tools for lowering the risk;
7. To hold the high-level meeting of APEC SMEs to form comprehensive action plans to strengthen SMEs' capacity and capability for mitigating threats by natural disasters.

### **3.4 Target of MYP: Small and Medium Enterprises' Disaster Resilience**

Report from "APEC Workshop on Public Private Partnerships and Disaster Resilience" jointly hosted by Australia and Thailand in 2010 under EPWG says that the need for a whole society approach to enhance an economy's disaster resilience and outline the general objective and scope of collaborative partnerships in the context of disaster resilience.

According to a survey conducted by the Asia Disaster Reduction Centre (ADRC) in 2011, the outcomes collected replies from 267 large and small-medium enterprises in 17 APEC member economies. The averaged statistic shows 67 % – "Don't know about BCP" or "Don't have BCP". The percentage jumps to 83 % among SMEs who answered the survey. Economic activities and business operation in high-disaster-risk areas are vulnerable and fragile to natural hazards, because of lacking of plans to cope with risk identification, preparedness, emergency response and business resumption. The reason why business owners don't get prepared in advance, according to surveys to business sector, the results show some insufficient education of basic understandings of disaster risk reduction. In viewpoints of helping business continuity after disasters, the article will define sources of information and tools of communications that will provide assistance in knowing disaster risk and developing plans to reduce losses and enhance disaster resilience.

ADRC's report also identified the impacts of 311 earthquake in Japan, where 90 % out of 337 companies become bankrupt by "Indirect loss or damage" due to production and supply chain disruption, and less than 40 % out of the 229 surveyed has BCPs. Natural disasters become new types of economic crisis undermining the supply chain and SMEs are vulnerable due to limited knowledge and awareness of the need to develop BCPs.

Trade operations by SMEs contribute a great proportion of economic activities in the APEC region and SMEs are highly vulnerable to natural disasters. The regional supply chains and business operation are easily hampered due to naturally-born fragility of SMEs in face of natural disasters. Picking the fresh examples from recent disasters in Australia and Japan, it clearly pinpoints that natural disasters have become a significant factor influencing the operations of APEC SMEs.

Conventionally, SME is well known for its flexibility to catch the rapid changes of commercial trend, but SME easily tends to expose its vulnerabilities in face of natural disasters. In economic model, SME is the fundamental basis for both incomes of local communities and operations of regional business operation. In recent projects under EPWG, public private partnership, disaster resilience and private sector emergency preparedness are the focal issues, which are closely related to SME's demands. As consequence, it is an ideal combination to have SMEWG and EPWG jointly work with regional key stakeholders on improving disaster resilience of SMEs.

Compared with large or international enterprises, SMEs are rather vulnerable to natural hazard due to lacking of resources, plans and experiences. The statistic numbers of 2011 Thailand floods show that a total of 240,000 small businesses in 32 provinces in Thailand were affected and the floods cost losses of THB 1.43 trillion (USD 46.5 billion). When looking at diverse characteristics of business operations in SMEs, it further increases difficulties to formulae a one-size-fit-all solution to meet demands in times of disasters. Therefore, empowering SMEs to cope with preparedness for and responses to natural disasters will improve disaster resilience at business sector. One business survey now lists disaster risk as the 16th most important out of the top 50 risks, and as the 6th most important driver strengthening risk management.

SMEs are the roots to the global economy and closely linked to daily livelihoods, but easily to be replaced if their operations were temporarily interrupted after disasters. In some cases, SMEs might lose their competitiveness or face closure of business. In 2011, global supply chain of auto parts and ICT had been severely affected by Thai floods, due shortage of critical components.

The following aspects exactly present the reason why disaster resilience is essential to SMEs. First, direct impacts by disasters including damages to production facilities, losses of raw materials and casualties of working staff will usually totally or partially stop production operation. Second, outage of water and power supply, disruptions of transportation and interruption of public service always increase the difficulties for SMEs to recover. Third, indirect impacts like livelihood recovery of community sometime slow down business operations. For example, numbers of SMEs in Japan were seriously challenged by disruption of supply chains, shortage of key components, and problems of financial liquidity, owing to the earthquakes

and tsunami in Japan. In most of SMEs, they are not ready to get prepared for disasters or they are even not aware of visible and invisible disaster risk that could interrupt their operations or ruin their business. In accordance with the urgent demands, both SMEWG and EPWG have been urging to build better public-private partnership to foster disaster resilience in SMEs.

### **3.5 Implementation Steps of APEC BCP Project to Conduct Capacity Building and Enhance Network**

In order to fulfill designed goals, the following tasks help to carry out regional capacity building on BCP (APEC SME Crisis Management Center, Multiple-year Project on Disaster Resilience Building for SMEs in APEC, 2011):

1. Establish the cross-fora focal points network for providing linkage between SMEWG and EPWG, and to build up platform of knowledge exchange and experience sharing
  - (a) Establish the Focal Point Network: Each APEC member-economy should appoint a focal point so as to establish a focal point network (FPN). The focal points will be nominated by individual member economies in SMEWG. The FPN will be responsible for facilitation of knowledge and information on capacity building and needs identification of disaster resilience. In case of disaster happening, the FPN will be the contact windows to report the situations and demands of the affected SMEs. Through this network, each member can instantly acquire the policy suggestions and past experiences from knowledge-based databank. A joint mechanism for information sharing and knowledge exchange will be based on the websites of the APEC SME Crisis Management Center (SCMC) and APEC EPWG.
  - (b) Hold the Cross-Fora Focal Point Network Meeting and follow-up activities: After the formation of FPN, it is planned to hold the first focal point meeting alongside the second SMEWG meeting in 2012 in Russia and members of EPWG will also be invited to materialize mutual collaboration. In this meeting, the functions of FPN, as well as its mandates, will be identified in details. In the following, frequent interactions between SMEWG and EPWG like joint training programs and working level meetings will be listed as priority to succeed the project.
2. Study and explore the APEC SMEs' needs in preparing for and responding to natural disasters during each stage of disaster management:

Since enhancing SMEs' capacity and capability in coping with natural disasters is a relatively new area, surveys of the current status among the APEC SMEs related to disaster resilience and emergency preparedness is necessary to identify what they need for planning and improvement. Based on the exploration of common disasters within the APEC region, survey-based inputs of the project will be carried out in two ways: (1) by conducting a questionnaire survey over the APEC

members, and (2) by conducting a study of such questions as how SMEs have been affected during the recent large-scale natural disasters, what major challenges they have to solve, how they started the post-disaster recovery, and what tools they would need to reduce future disaster risks, and so on. This study will be conducted jointly with the members experiencing major natural disasters such as Australia, China, New Zealand, Peru, Chinese Taipei, Japan, the US and etc.

3. Monitor the impacts of natural disasters on the economy and SMEs for dynamically reporting the updated situations and status

After the natural disasters, the subsequent impacts normally have ripple effects. The domestic SMEs are the first victims, then the regional trade operation and production chain will gradually get affected. The APEC SCMC issues “APEC SME Economic Crisis Monitor” monthly and keeps monitoring potential crises and risks around the world that might possibly influence on the APEC SMEs. Economic crises caused by natural disasters, such as disruption of supply chains, shortage of raw materials, and inflations, are all key points to monitor. The center will continue monitoring the dynamic situation of economic crisis over the SMEs caused by natural disasters globally, and the conclusive results will be published in the monthly newsletter to share with SMEWG and EPWG.

4. Collect the best practices of disaster resilience building by SMEs to tell the importance of public-private partnership and provide sample models to learn from

Considering the cultural diversity and business models in individual member economies, the best practices will play the role at providing the feasible solutions and constructive suggestions to the currently-affected member. The best practices will be mainly collected from three sources: (1) to commission this task to those members who have suffered huge impacts from natural disasters; (2) to gather outcomes yield by EPWG’s activities like workshops organized by Australia and the US respectively; and (3) to collect the best practices through the expert meeting, which is scheduled to be held in 2013. We hope to provide the SMEs with past experiences of disaster management, to minimize the business loss when SMEs encounter impacts by disasters.

5. Develop guidelines for improving disaster resilience in SMEs in order to enhance business continuity at basic level

This document is aimed to provide SMEs with guidelines of improving disaster resilience to practically strengthen business continuity and concretely support livelihoods in communities. The document will also provide a list of measures for the SMEs to adopt. Ways to draft the guidance include: (1) consult the results of the above-mentioned studies; (2) consult the measures of other international organizations; (3) consult existing documents such like EPWG’s outcome reports; (4) hold an expert meeting. The expert meeting will not only offer the best practices but also finalize the draft of the guidelines.

6. Provide training courses that will help SME to identify potential disaster risks and offer tools for lowering the risk

Primarily, it is planned to hold the training sessions in two stages. At the first stage, “Train the Trainers”, in order to initiate long-term capacity building,

Chinese Taipei will invite all member economies to recommend “Seeds” to receive basic training in Chinese Taipei. For satisfying crosscutting linkage with EPWG, the project proponent will seek appropriate instructors from member economies and regional organizations to help seed trainers about build disaster resilience at SMEs level. At the second stage, “Practical Implementation of Knowledge Transfer”, Chinese Taipei and co-sponsors to the proposed project will work altogether with one developing economy member to deliver training workshop in the developing economy through efforts of domestic seed trainers to customize training materials for fitting local characteristics. The feedbacks from the second stage will help the project revise the training methods and material. All the previously mentioned study results, best practices, and guidelines for getting prepared for disasters will be the cores of training courses.

7. Hold the high-level meeting of APEC SMEs to form comprehensive action plans to strengthen SMEs’ capacity and capability for mitigating natural disasters

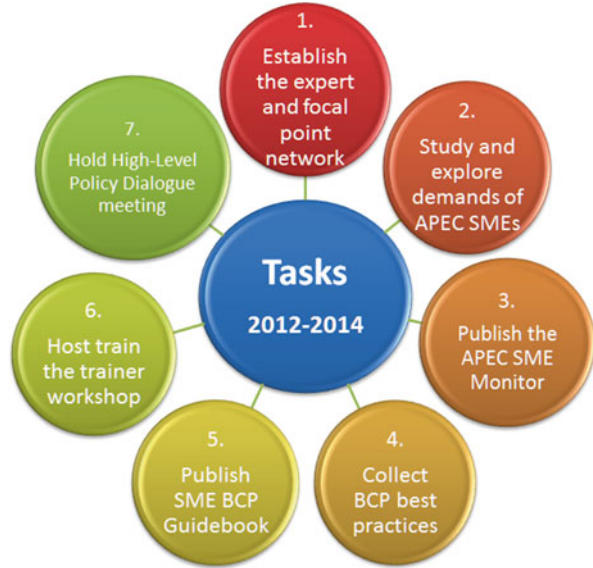
By the end of the multiple-year project, it is designed to convene high level officials and distinguished experts in the APEC region to discuss the way to assist SMEs in getting better prepared for natural disasters. Broad-spectrum participants like business owners, disaster management officials, policy maker for SME and NGOs from all APEC economies will be encouraged to attend the meeting to brainstorm the action plans for sustainable assistance to SMEs. The APEC SCMC will also collect the outcomes of the meeting and compile a book, which will serve as important reference materials for the center. The outcome report will seek comments and endorsement of EPWG to provide solutions to economic development under “Secure Growth”.

### **3.6 Major Activities and Achievements by APEC Synergies**

Starting from 2012, this 3-year project has well established an expert group and fully coordinated a focal point network to work together toward the goal for enhancing SMEs’ capacity on business continuity preparation to sustain global supply chains from grassroots. Up to now, in cooperation with EPWG, the Asian Disaster Reduction Center (ADRC), the Asian Disaster Preparedness Center (ADPC), to name but a few, Chinese Taipei has completed and published a Guidebook on SMEs Business Continuity Plan (BCP); hosted two Focal Point Network and Expert Meetings on discussing SMEs disaster resilient mechanism; and organized two symposiums and one Train-the-Trainer Workshop which trained 44 seed trainers. Furthermore, the Policy Framework Models (PFMs) for the best policy practice sharing will be published later in 2014. The designed tasks to introduce BCP to SMEs in APEC is illustrated in Fig. 3.2.

Now, based on the achievements that has been delivered, the APEC High Level Policy Dialogue is to conclude outcomes of this multi-year project and serve as a platform for sharing insights provided by high level officials from APEC economies, representatives from leading global enterprises and specialists from prominent international organizations.

**Fig. 3.2** The designed tasks to introduce BCP to SMEs in APEC



Thus, today, APEC member economies highly recognize importance and value of BCP to SMEs and welcome the future commitments of incessant actions on enhancing safer trade and investment environment. Through APEC’s contribution, APEC is taking a lead position in ensuring safer environment for trade facilitation and sustainable growth. With this goal in mind and echoing the commitments made under the HFA2 and APEC Trade Recovery Guidelines.

The MYP project under SMEWG benchmarks business continuity plans (BCPs) in ICT, logistics and auto parts industries since the three industries are affected greatly by natural disasters, as noted in the flood of Thailand in 2011. In order to promote BCP, the best approach is following business operational models of supply chain and implements it with assistance of chamber of commerce.

At the 2013 UNISDR Asia Partner (IAP) meeting, APEC EPWG had been invited to share APEC’s experience as a best practice. Now, APEC has conveyed training workshops in Chinese Taipei, Thailand, Viet Nam, Singapore and the Philippines to empower both governmental officials and local business through activities of train the trainers, experts meeting and high level policy dialogue. Other than EPWG and SMEWG’s efforts, APEC Transportation Working Group (TPTWG) also advocates global supply chain resilience addressing to cope with interruptions caused by natural disasters.

In 2014, more activities and outcome will be delivered and disseminated by EPWG, SMEG and TPTWG by close cross-fora collaboration. Under EPWG, Thailand is going to host “Seminar on Enhancing Regional Supply Chain Resilience to Disasters in APEC”; Chinese Taipei is ready to conduct “APEC High Level Policy Dialogue on Resilient SMEs for Better Global Supply Chains”, a SMEWG project; the United States is preparing to carry out “Workshop on Improving Global

Supply Chain Resilience: Advancing The Seven APEC Principles in Your Organization”, a TPTWG project, in Christchurch. All the activities clearly reflect APEC’s leading position in ensuring safer environment for trade facilitation and sustainable growth and what member economies have learned from back-to-back natural disasters that ever interrupted regional and global business connectivity. Though future disasters are for sure to come, APEC will summon regional capacity and capacity to make our business ready to rapidly recover from next one.

### **3.7 BCP’s Linkage to the Whole Society Resilience**

In recent few decades, large-scale natural disasters such like floods, earthquakes, cyclones and draughts not only claimed sever casualties and huge losses, but all triggered kinds of interruptions in daily livelihoods, government administration, transportation, communications, industry production, business operation, economic activities, education and etc. The process and efforts of functional resumption requires both capital investment and well-defined plans to shorten the time period of social function suspensions. Among “Interruptions”, continuity plans for government, business and community are the three main pillars supporting social-economic stability and key elements to boost comprehensive recovery. If major disaster happened, these three plans at different levels would provide guidance to governmental officials, business owners and community residents about procedures and priorities in order to keep continuing the basic operations. In modern and civil society, the cascading failures due to livelihood interruptions will even trigger confidence collapse in government administration. Last March, the Tohoku Earthquake reiterated the necessity and importance to design continuity plans prior to disasters for assuring shortest-interrupted periods and strengthening disaster resilience at all levels.

Operation Continuity Plan (OCP) at government administration level at least needs two scenarios covering the worst case and performance-based analysis, including low-frequency-but-high-impact disaster and defense-level disaster, to define the worst case and the defensible case. The worst one will give a gross picture of ultimate demands in desperate situations which will remind the administrators of where and how to identify the seriously affected areas and find the outside help. The defensible case is an indicator of capacity and capability as all possible situations will be brought under control of the effective, transparent and efficient administration. In OCP, through scenario-based screening of weakness points, the risk exposure and vulnerability among inter-and-intra connectivity could be reviewed by the routine procedures. In order to develop OCP, tools for risk identification and loss estimation are necessary to build up nation-level plan. The hazard maps of major natural disaster with consideration of social-economic impacts are able to provide comprehensive situations which clearly illustrate national profiles of disaster risk exposure. Both qualitative evaluations and quantitative outcomes will help to produce measures in meeting urgent demands and offer the best reference to carry out drills in response to post-disaster emergency. For keeping the OCP updated with rapid



development, the mechanism of routine review is required to guarantee the transparency of disaster risk at national level.

To ensure business operation suffering the least interruptions brought natural, beside traditional countermeasures like backup system of information and data, it definitely requires business owners to think the external threats originated from natural disasters. Though globalization of business operation models bring the quality and low-price products to consumers through finding cheaper production costs, but the process also increases the risk and impact whenever supply chains are cut disasters like earthquakes, cyclones or floods. In view of the whole economic activities from gathering raw materials to selling products to customers, there must be some weaker or the weakest links connecting individual business operations. Nerveless, because of not knowing or not having the Business Continuity Plan for disasters, the business owners sometimes decide business closures as they have no ideas to cope with hardships after major disasters. It is especially obvious for the small and medium enterprises which are more vulnerable. As for the big or international enterprise, unless destructive damages, alternative options such like finding new suppliers, switching to another production base or choosing unaffected logistics. These options are formulating barriers for SMEs to effectively and efficiently resume business operation. Furthermore, the business closure at SME level casts the direct impacts on economic activities in communities that will face job loss and decrease household incomes. In order to broadly facilitate the BCP development at SMEs, the incentives, tax deduction or subsidy, offered by government will increase the willingness to start setting BCPs. At the same time, the training courses plus teaching materials will lower the entry level and give the real examples of how BPC benefits business operation.

At community level, the continuity after disaster means “maintaining living standard”, “keeping social network”, “operating shelters” or “speeding up recovery”. Each definition of continuity truly reflects the fundamental functions of community. Different from OCP and BCP, the Community Continuity Plan (CCP) has to clinch to people’s lives and require “local knowledge” to resolve the local demands. It is a kind of bottom-up policy formulation which accommodates the common interests and synergy of local residents. CCP principally is composed of action for emergency preparedness, routes for evacuation, management of shelter, storage of emergency relief materials and organization to execute plan. In regard of connecting to OCP and BCP, CCP could be laid as the bottom basis of national continuity, which assists community to live through the initial phase after major disasters hit and acquires supports to residents from government and business sectors.

OCP, BCP and CCP actually formulate the best linkages to explain why Public-Private Partnership (PPP) is essential to fulfill disaster risk reduction and upgrade emergency preparedness through the whole-society participation. Based on the concept of continuity, these three plans will mitigate the adverse impacts brought by natural disasters and pull the social and economic activities back to normal track according to the pre-disaster planning. When examining the disaster resilience at each level, the continuity plans will provide the indicators telling the current status of capacity and capability. By developing and implementing OCP, BCP and CCP,

the whole society will receive benefits of better and comprehensive protection. From practices of APEC, a great momentum has encouraged more connections and interactions among the three plans, which engage public, private and people together on building disaster resilient environment.

### **3.8 Conclusion: Steps for Moving Forward – To Enhance Digital Preparedness on Natural Hazards for Safer and Smarter Investment Environment**

As trans-boundary movements of goods and people grow rapidly and dynamically in the APEC region, thus information and alerts of natural disasters or hazards based on big data and open data would provide the best approach to effectively integrate partnership between public and private sector to mitigate adverse impacts. Especially, modern technology speeds up development of telecommunications and shortens time to transfer data, and widen channels of message deliveries. At the information age, big data and open data not just facilitate trade activities and business operation, but also bring benefits to smarter investments with transparent risk. After the 2011 Tohoku Earthquake and Tsunami in Japan, the analysis of big data provide an in-depth view about how the whole society reacted to shakings and warnings. Before, during and after disasters, data and information are two key elements to keep citizens and government prepared for it and raises situation awareness.

Studies conducted within APEC fora clearly identify the emerging needs of applying big data and open data for emergency preparedness. From public sector to private industry or individuals, information generated from big data and open data is vital for strategy of disaster risk reduction, operation of emergency relief, planning for business continuity management and sustainable development of economy and livelihood. Since the Asia-Pacific is a highly disaster-prone area, regional capacity building on big data and promotion of open data will directly benefit to both developing trade facilitation and strengthening human security which are the main pillars supporting APEC major agendas.

Digital preparedness for disaster risk reduction and emergency response is a cornerstone of evidence-based disaster management which offers value-added knowledge for decision making through digesting data and information. However, the entry level of collecting, producing, storing and utilizing open data and big data, has formed a barrier preventing developing APEC developing economies from innovating policy of disaster resilience by integrating knowledge of disaster management with cloud techniques, big-data analysis and telecommunications tools. Especially considering plans for a trans-boundary or large-scale disaster in developing economies, lots of diverse data social capital sets; such like demography, economic activities, education, gender issues, education, public awareness and etc.; should be taken into account and analyzed to identify insufficiency which could be enhanced by

capacity building. These factors of social capacity are “big data and open data” which help to reshape actionable information and knowledge for community residents and business people.

The primary objectives of enhancing digital preparedness on natural hazards are designed to introduce information-sharing mechanism and develop capacity building for satisfying cross-fora demands and encouraging synergy since 2015. The objectives include:

1. To investigate current status of application and demands of big data and open data through a region-wide survey which will illustrate shortfalls, challenges and opportunities that governments and industries concern most.
2. To develop a roadmap of capacity building on assisting member economies in establishing big data and preparing required open data to pave a foundation of information sharing mechanism;
3. To promote open data for creating safer trade environment that will favor global supply chain resilience by better enhancing quality of business continuity plan (related SMEWG<sup>1</sup> and TPTWG<sup>2</sup>); upgrade safety of tourism business by revealing transparent risk (related to TWG<sup>3</sup>); and boost cooperation on critical infrastructure protection (related to CTWG<sup>4</sup>);
4. To formulate a mechanism sharing open data to strengthen emergency preparedness that will help to set a regional benchmark of integrated action on disaster risk reduction through covering interests of public and private sector.
5. To utilize nodes and network of APEC Digital Opportunity Center (ADOC) to collect local knowledge and reach out local SMEs by supporting digital information of emergency preparedness.

Introducing science-and-technology knowledge through information-and-communication technology (ICT) to enhance planning and implementation of disaster management is a global trend and highlighted by Hyogo Framework for Action 2 (draft), which is to be announce Marc, 2015 as the world’s guidelines for disaster risk reduction by the United Nations International Strategy for Disaster Reduction. No doubts, the synergy among APEC Working Groups provides a backbone supporting the use of ICT at all phases of disaster management: mitigation, preparedness, response and recovery in the APEC region. The relevant outcomes by APEC fora should be the best practices and reference to carry out HFA2 through integrated actions by public and private sector. The diagram of multiple stakeholders is depicted as Fig. 3.3.

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<sup>1</sup>APEC Small and Medium Enterprises Working Group.

<sup>2</sup>APEC Transportation Working Group.

<sup>3</sup>APEC Tourism Working Group.

<sup>4</sup>APEC Counter-Terrorism Working Group.

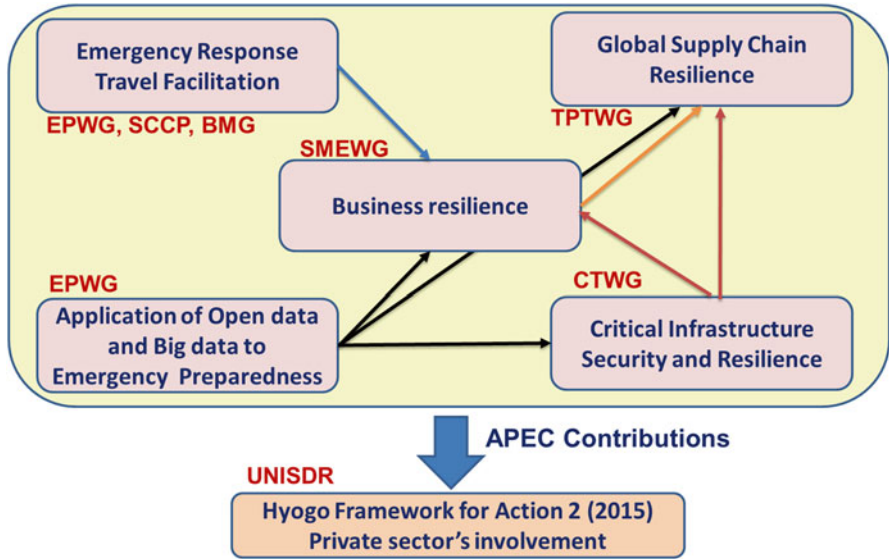


Fig. 3.3 Linkages with APEC fora and HFA2 to promote business resilience

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## Chapter 4

# Role of Regional Organizations for Enhancing Private Sector Involvement in Disaster Risk Reduction in Developing Asia

Ranit Chatterjee and Rajib Shaw

**Abstract** Asia has a large diversity on disaster risks, and role of different stakeholders are different based on the country context. The regional organization (ASEAN, SAARC, APEC) in Asia plays an important role in disaster response and risk reduction by bringing cooperation between private sector and national governments. This chapter provides an overview of regional organizations and private sector involvement, its potentials and challenge in disaster management in the context of developing Asian nations. The case studies of Indian Ocean Tsunami 2004 and Cyclone Nargis 2008 are considered to understand and analyze the role of regional organizations and private sector in various phases of disaster management. The findings from the case studies and various regional legislations lead to specific recommendations, which are; (1) Increase collaboration and cooperation among international, regional, and national level organizations for humanitarian business response. (2) Specific guidelines for private sector involvement. (3) Support information and knowledge sharing. (4) Increase accountability and transparency. (5) Awareness generation.

**Keywords** Disaster risk reduction • Private sector • Asia • Association of Southeast Asian Nations • South Asian Association for Regional Cooperation • Asia-Pacific Economic Cooperation

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## 4.1 Introduction

The Asia and the Pacific region is the most vulnerable in the world to disasters with a very high economic exposure to hydro-meteorological hazards (UNISDR report 2012). The urban population has increased from 17 % in 1950 to 44 % in 2010 and a significant number of the urban centers are located along the coast. It has been experienced from the past events that natural disaster impacts output, employment and global supply chain and has a considerable impact on the macro-economics of the region. Further, ADB report (2013) highlights that the dependence on the regional supply chain connecting the Asia and Pacific region, a disaster in one economy can have significant impact in the region. The UNESCAP report (2013) suggest that the impact of disasters on trade balances, fiscal balances and public debt will depend mainly on the government policies and private sector outlook and responses.

The UNISDR report (2013) emphasized that globalised supply chains creates new form of susceptibilities to disasters. Post Japan earthquake and Tsunami in 2011, Toyota lost \$1.2 billion in due to reductions in production of 70 % in India and 50 % in China. Similarly, Thai floods in 2011 highlighted the higher risk faced by the private sector causing a fall of 9 % in GDP due to direct, indirect and fiscal losses. Further, a recent study by IMF (2014) suggests that the Asian corporate sector may be more exposed to interest rate and profitability shocks. This will be more pronounced in the emerging Asian economies due to trade and technology sharing and linkages (IMF working paper 2014). Clubbing the impact of natural disaster and market factors affecting the private sector in the Asian region, it is high time that concrete steps are taken to mitigate the risks.

The regional organizations like Association of Southeast Asian Nations (ASEAN), South Asian Association for Regional Cooperation (SAARC) and Asia-Pacific Economic Cooperation (APEC) act as conduit connecting the international and national players through legislations and cooperation. Ferris (2014) observes that studies regarding the role of such organizations in disaster is limited but has a lot of potential due to their close links with national governments in the region. As a result their actions may be culturally and politically more fitting than that of international organizations. Moreover, standalone initiatives by private sectors are not new in the region but are case specific. IBM Worldwide Crisis Response Team shows the corporate sector change in perspective while engaging disaster management philanthropy to unilateral business engagement. Similarly, partnership between Motorola and Care International in connecting communities through use of technology is another example highlighting private sectors increased role in disaster management.

This chapter considers the growth of private sector in Asia as positive sign for fostering regional growth. It further looks into the regional risks and possible impact on the private sector. The regional organizations like ASEAN, SAARC APEC legislations in the disaster management and role these organizations and private sector in recent disasters (Indian Ocean Tsunami 2004 and cyclone Nargis 2008) are considered for understanding the ground level involvement during disasters. The

chapter tries to identify the priorities to increase regional cooperation in disasters through a set of recommendations based on the outcome of the study. The various data sources to validate the authors' arguments can be categorically put under two heads. The first source of data is publicly available documents on the regional policies. The Second sources of data relating to the disasters are mainly form the reports from various organizations on disaster response during Indian Ocean Tsunami cyclone Nargis.

## 4.2 Growth of Private Sector in Asia

Asia Pacific economies are important players in the world economy. China and India alone has 8.1 % and 1.7 % in the world's total export share. In addition to this, the combined share of Indonesia, Malaysia, Philippines, Thailand and Vietnam is 4.7 % (Cross reference from PWC Report 2014; World Bank Integrated Trade Solutions database 2014a). Needless to say Asia<sup>1</sup> is industrializing at a high rate with exceptions like Japan, which is already highly industrialized. Characteristically of all industrialized countries, Public Private Partnership (PPP) is used for strengthening public services like education, health services, waste management and public buildings. On the other hand, industrializing nations, PPPs investments are made in power, water or road sectors in order to sustain the countries' rapid economic growth and need for basic infrastructure (Alfen et al. 2009). Asia on an average is expected to grow by 6.9 % over the next few years and the main growth will be seen in countries like China, India and ASEAN countries. The robust growth in domestic demand, strong infrastructure spending and implementation of structural economic reforms along with risk reduction measures will be helpful in sustaining this growth rate. The private sector is a powerful socio-economic factor at the local, national and international level and considering the capital flows. The role of local, national and multinational companies to provide economic value to national and local GDPs is of importance.

The Asia with its high rate of industrialization is emerging as global supply chain hub and as a result most of the multi-national companies both within and out of Asia have invested in various Asian nations. Considering the high risk of the Asian region to various hazards it is important that these investments are secured and also the local companies and the communities who are part and parcel for the successful business are benefitted. However according to Rai et al. (2014) countries like Bangladesh and others are downplaying the role of the private sector by assuming it is unprepared for leadership and as a result public sector leadership is boosted. The private sector realizing its direct link to its customers can create in demand in the market. As a result the private sector is making strategic changes to boost their profit by shifting focus on the base of the pyramid (BoP) through affordable products and services (Simanis and Hart 2008). Wilson et al. (2014) identifies de-risking markets,

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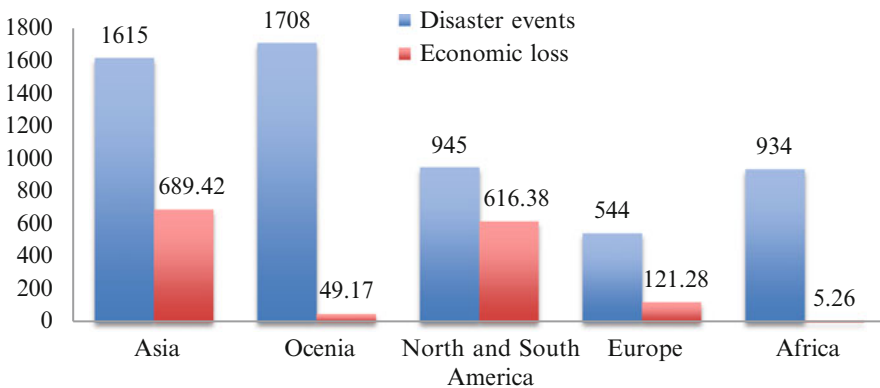
<sup>1</sup> Japan is not included as a part of Developing Asia in the chapter.

accelerating innovation and demonstrating and validating business models may boost private sector to invest for the low-income energy markets that can also be extended for disaster management. Ryan (2001) notes that the competition and contestability is slowly being replaced with cooperation, relationships and public private partnership with emphasis on service delivery within the new governance framework. Partnership has emerged as an important policy tool to counter the loss of trust in both State and market (Hess and Adams 2001).

### 4.3 Hazard Profile of Asia and Economic Impact

Asia on an average is affected by 156 disaster events annually from 2003 to 2013 and suffered 49% of the global damages. In the year 2013, seven of the ten major disasters affected both low and high-income Asian countries (Guha-sapir et al. 2014). This can be attributed to factors like high population density, poor infrastructure, poor governance clubbed with increasing frequency of disaster events and complex vulnerabilities. The Fig. 4.1 clearly shows that the economic impact of disasters mainly natural is higher in Asia than any other region including that of North and South America together. The Asian economy is a mixed economy of developed, developing and emerging markets.

Taking a look at the past disasters in the South Asia, the indirect losses have pronounced impact on the private sector like disruption of business operations, decrease in revenues, rise in unemployment and unstable markets. This is mainly due to the population growth and increasing investment in hazard prone areas (SAARC report 2014). Table 4.1 shows the risk of the SAARC countries to various hazards. It can be seen that on an average lack of coping and adaption capacities is high to very high in the region, which also has a direct bearing on the economic well being of the area.



**Fig. 4.1** Disaster events recorded from 2004 to 2014 in all the continents and related economic loss (in billion dollars) (Source: EM DAT database)



**Table 4.1** Risk of SAARC and ASEAN countries to various hazards

	World rank	Exposure	Vulnerability	Susceptibility	Lack of coping capacities	Lack of adaptation capacities
<b>SAARC countries</b>						
Afghanistan	39	Medium	Very high	Very high	Very high	Very high
Bhutan	57	High	High	High	Medium	High
Bangladesh	5	Very high	High	High	Very high	Very high
India	74	Medium	High	High	High	Very high
Nepal	106	Medium	High	High	High	High
Pakistan	73	Very low	High	High	Very high	Very high
Sri Lanka	61	High	Medium	Medium	High	Medium
Maldives	←			No data		→
<b>ASEAN countries</b>						
Thailand	94	Medium	Medium	Very low	Medium	Very low
Brunei	12	Very high	Low	Very low	Low	Very low
Myanmar	42	High	High	High	Very high	Very high
Vietnam	18	Very high	Medium	Medium	Medium	Medium
Laos	102	Very low	High	High	Very high	High
Philippines	3	Very high	Medium	High	High	Very low
Cambodia	8	Very high	High	High	Very high	High
Singapore	159	Low	Low	Low	Low	Low
Indonesia	33	Very high	High	High	High	Medium
Malaysia	90	High	Very low	Very low	Very low	Very low

Source: World Risk Report 2013

### ***4.3.1 Asia as a Global Supply Chain Hub and Its Vulnerabilities***

Global Value Chains (GVCs) have become a key characteristic of the global economy. ADB report (2013) estimated that 80 % of world trade occur within production networks and crucial for boosting regional growth (ADB report 2013). The emphasis on natural disasters and extreme weather in post Japan earthquake 2011 and Thailand floods 2011 is gaining prominence to reduce risk on global supply chain. Reducing the risk of the global supply to the natural disasters is crucial for maintaining a stable regional growth. In the recent history Asian market has faced the impact of the impact of Thailand's floods affecting the automotive and high-tech industries. More than 1,000 factories were hit, with subsequent insurance claims reaching US\$ 20 billion. As a result of the flooding, Thai GDP growth projections decreased from 2.6 to 1 % (Chongvilaivan 2012).

As identified by the World Economic Forum report (2013) there is mismatch in understanding of the risk in the private sector and government. The private sector is more concerned about the high probability failures where as government focus on weather related low probability failures that lead to overall system failures.

## **4.4 Regional Institutional Frameworks in Disaster Management in Asia**

In order to reduce the impending socio- economic impacts of disasters, national governments need to have higher level of commitments and cooperation. The regional organizations in Asia play an important role as driver in bringing in commitments and vision for accelerating regional growth. Here three organizations (ASEAN, SAARC, APEC) and their specific legislations relating to disaster management are considered to understand the level of engagement and identifying future potentials.

### ***4.4.1 Association of Southeast Asian Nations (ASEAN)***

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967 in Bangkok, Thailand. At present ten nations namely Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Vietnam, Lao PDR, Myanmar and Cambodia are part of it as shown in Fig. 4.2. The ASEAN region is slowly increasing its position as a global economic center. Sawada and Oum (2012) states that ASEAN member countries are the most disaster prone in Asia. As a result ASEAN has adopted disaster management as one its eight principles with the declaration stating "*natural disasters and other major calamities can retard the pace of member*



**Fig. 4.2** The location map of countries in ASEAN (Source: ASEAN Promotion Centre on Trade, Investment and Tourism)

*states therefore they shall extend, within their capacities, assistance for relief of member states in distress.”*

This also forms the basis for engaging the private sectors and other stakeholders in active disaster management work though relief can mislead the member states to refrain from actively engaging in disaster preparedness or mitigation work. In August 2000, ASEAN elevated the AEGDM to committee status reporting to the ASEAN standing committee. The AEGDM was responsible for monitoring programs and projects adopted by the member countries related to disaster management. In 2003, ASEAN Committee on Disaster Management (ACDM) was established to coordinate and implement regional activities, which broaden the horizon to involve in preparedness, mitigation through mutual collaboration (ASEAN Philippine paper 2006). ASEAN Ministerial Meeting on Disaster Management (AMMDC) and subsequently setting up ASEAN Regional Program on Disaster Management to enhancing regional cooperation, sharing of information and capacity building. Further in 2005 ASEAN Coordinating Center for Humanitarian Assistance on Disaster Management (AHA) was established to support disaster logistics, preparedness, response, risk assessment and early warning in the member countries (cross reference Sawada and Zen 2014, AADMER article no-20.2). These steps have helped ASEAN in making a regionally mandatory agreement for disaster management in addition to a center for coordinating humanitarian assistance between member states (Save the children 2011).

The ASEAN Agreement on Disaster Management and Emergency Response emphasizes as one of its principle to engage private sector for Community Based Disaster Preparedness (CBDP) and early response. In addition to this, earlier agreement on establishment of AHA lays down the importance of strengthening local capacities, coordination, documentation of assets, technical cooperation and resource inventory. The private sectors role is central to all these activities and can bring in a considerable change in reducing the impact of future disasters in the region. Sawada and Zen (2014) finds that natural disaster related insurance is not common among the ASEAN countries and financing of various phases of disaster management cycle needs a focused approach.

#### 4.4.2 *South Asian Association for Regional Cooperation (SAARC)*

The South Asian Association for Regional Cooperation (SAARC) is an organization of South Asian nations, founded in 1985 and dedicated to economic, technological, social and cultural development emphasizing collective self-reliance. The member countries are Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka and Afghanistan as shown in Fig. 4.3.

The SAARC is important for the member countries as it provides deeper economic cooperation among the South Asian countries and crates a platform, which can benefit from mutual trade and boost regional economic growth. Dhungel (2004) observes that SAARC has brought in cooperation among the private sectors in the member nations through the SAARC Chamber of Commerce and Industry (SCCI), SAARC LAW and the South Asian Federation of Accountants (SAFA). These apex



**Fig. 4.3** The location map of SAARC member countries (Source: SAARC Halal Council)

bodies are well connected to various large conglomerates and Small and medium scale industries locally and outside the SAARC region. During disaster, they can act as focal point for bringing in support from the industrial sector and also provide guidelines to reduce internal risk.

South Asia has been one of the fastest growing regions in the world in terms of economy in the post global financial crisis. However, as suggested by the World Bank Report (2014b) Foreign Direct Investment (FDI) in the region is becoming less stable, inflation rate is almost double in comparison to other regions and fiscal deficits and debt-to-GDP ratios are high. Further the report suggests that the risks and vulnerabilities are gradually shifting from external to domestic market. This when coupled with increasing frequency of disasters and inability of the national and local governments to respond and mitigate disaster risk, calls for a need to re-examine the situation and deliberate concrete steps for future.

Disaster Risk reduction is one of the prime focus of SAARC and Japan has actively supported the drive to reduce south Asia's risk to various Hazards and promote regional growth. As step in this direction, the SAARC Symposium on Disaster Reduction at Kobe, Japan in 2010-grant aid for Disaster Prevention and Reconstruction has been provided to Bangladesh, Bhutan, India, Nepal and Pakistan. In addition to this, 9.58 million dollars assistance for construction of multipurpose cyclone shelters in the area affected by the cyclone Sidr was provided. The SAARC has been supporting the Disaster Management Capacity Enhancement Project applicable to Climate Change in Sri Lanka.

In the post 2015 development in the SAARC region, strengthening partnership with Private Sector and Civil Society Organizations for risk prevention, reduction and resilience building is emerging area of work. Recognizing that Small and Medium scale Enterprises (SMEs) and informal sectors are far less resilient to disaster risks than global corporate houses. Table 4.2 lists various national and regional level activities proposed by SAARC for DRR.

### ***4.4.3 Asia-Pacific Economic Cooperation (APEC)***

APEC was set up in 1989 for 21 member countries in the Asia Pacific rim to promote free trade and economic cooperation throughout the region as shown in Fig. 4.4. In 2005, APEC established the APEC Task Force of Emergency Preparedness (TFEP) to coordinate and promote responses to emergencies and disasters. In 2010, TFEP became the Emergency Preparedness Working Group (EPWG). The APEC recognizing the importance of involving the private and public sector through Public Private Partnership have drafted principles to guide the member nations. The draft states clearly that establishment of partnerships should be encouraged with the private sector in all phases of disaster management and develop frameworks for engagement. Further, the report recommends integration of SMEs, local NGO and local academic groups will be crucial for capacity building. Corporate Social Responsibility (CSR) to be used for channelizing private sector into PPP. (APEC Report 2010).

**Table 4.2** Proposed activity to strengthen private sector role in DRR by SAARC

<b>National level</b>	
Develop enabling national policies and guidelines on engaging private sectors	Create mandatory provision on preparation of BCM plans for the global businesses as well as the SMEs working in the region to ensure continuity of their production during an emergency
Strengthen partnership with private sector for technology transfer, information sharing and capacity building in various countries within the SAARC region	Introduce policy guidelines to ensure disaster safety audits and mandate private industries to practice occupational safety measures
Promote public-private partnership for DRR and develop suitable policy guidelines for the same	Build societal resilience through engagement with private sector-Private sector through its corporate social responsibility arm can bolster societal resilience
Leverage private sector expertise and strengths to make communities safer and more resilient especially in housing sector by setting standards and norms	Generate data on the economic loss incurred due to extensive risks like frequent low intensity disaster events, particularly on the SMEs and informal sector
<b>Regional level</b>	
At a regional level policy guideline will be developed on how to engage private sectors in disaster response and recovery particularly when the disaster is trans-boundary in nature	Develop a Regional Business Continuity Management Framework in association with SAARC Chamber of Commerce particularly focusing on small businesses

Source: SAARC Report 2014



**Fig. 4.4** Member countries of APEC (Source: APEC website)

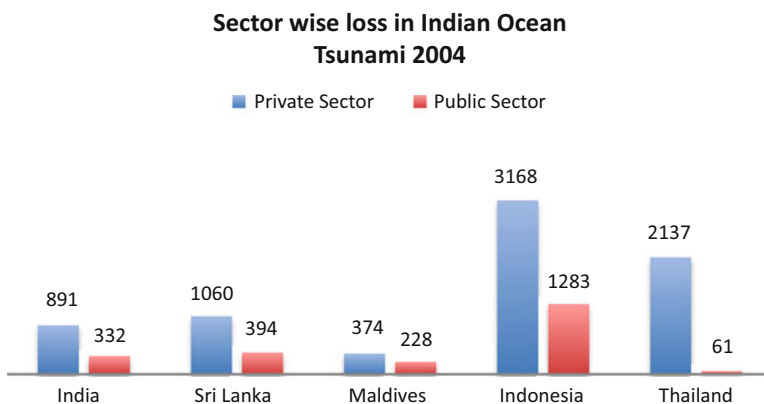
## 4.5 Case Studies

In the recent times of the various disasters in the Asian region Indian Ocean Tsunami 2004 and cyclone Nargis 2008 stand out. The former due to its wider impact involving various countries in the Indian ocean where the role of regional organization and private sector needs a relook for having multi stakeholder coordination across various regions. The Cyclone Nargis stands out due to the active role-played by ASEAN in bringing in regional cooperation and bringing the private sector to support the disaster relief and response.

### 4.5.1 Role of Private Sector and Regional Organization in Indian Ocean Tsunami 2004

The Indian Ocean Tsunami on 26th December 2004 impacted various countries in the Indian Ocean of which Indonesia, Sri Lanka, the Maldives, India and Thailand were the most affected. The economic damage was estimated to be 9.9 billion US dollars with Indonesia accounting for almost half of it. Seventy seven percent of the total damage and losses were borne by the private sector and remaining by public sector in five Asian countries as shown in Fig. 4.5.

The Sri Lankan government set up Centre for National Operations with human resources from both public and private sectors to act as a de facto National Disaster Management Authority and assist in relief and response (Flint and Goyder 2006). Similarly, Government of Korea started disaster assistance through a joint initiative of public and private sector, formed with the relevant ministries, a temporary task force was set up which played an active role in cooperation building. ASEAN was



**Fig. 4.5** Sector wise loss faced in Indian Ocean Tsunami 2004 (All units in Million USD) (Source: ADPC 2005)

instrumental in bringing in cooperation with the international groups and the regional countries in providing emergency relief, rehabilitation and reconstruction in the January 2005 leader's meeting. But its role in relief and response in the wake of 2004 Tsunami had been highly critiqued (East Asian Strategic Review 2006).

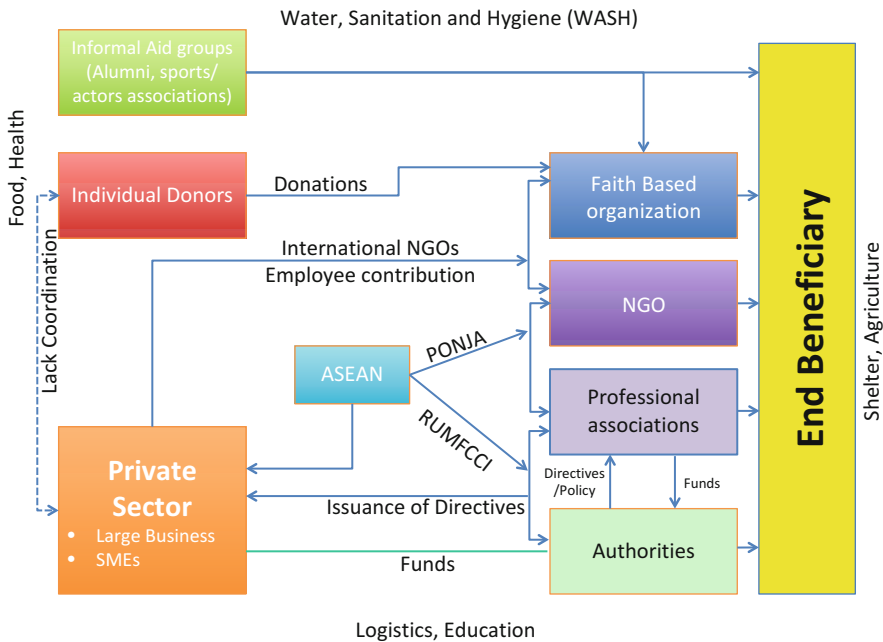
The private sector both multinational and local was part of this response. Private sector mobilized 565 million US Dollars, and forged long-term partnerships between UN agencies and corporate houses (White 2012). Multinational giants like IBM, Toyota, Tata groups provided not only funds but actively engaged in post disaster relief and response either through the national government or United Nation agencies. Binder and Witte (2007) observes that during the Indian Ocean Tsunami, 30 new partnerships were developed between private firms and NGOs. The business were innovating new ways to cater to the needs of the humanitarian sector and try to capture the local market through local enterprises (Zyck and Kent 2014). One of such initiative in Thailand was the Ban Bang Niang pilot project, which was a government and private sector joint project. The project had three priority areas, evacuation system, warning system, training and awareness generation (Srivichai et al. 2007). Similarly in Sri Lanka, the private sector especially the shipping companies played an important role in supporting heavy logistical operations (Phelan 2011).

#### ***4.5.2 Role of Private Sector and ASEAN in Cyclone Nargis 2008***

Cyclone Nargis struck Myanmar on 2nd of May 2008. In all, over 140,000 people were killed and 20,000 injured and with the economic damage of approximately \$4 billion (Belanger and Horsey 2008). The private sector actively engaged with the government and NGOs in the initial response (Fig. 4.6). Turner et al. (2008) finds contrast between the Tsunami response and Myanmar response with the private funds playing a more important role in the second due to restriction leading to absence of international aid agencies and funds. The government and NGOs had a few ties up with the corporate houses, which otherwise operated in isolation. This may also be attributed to the fact that a number of countries have diplomatic and economic sanctions in place against Myanmar, especially Western countries including the United States (US) and member States of the European Union (EU). The Government in order to bring in donations conferred titles to outstanding donors (Than Tun). The local private sector as result had an important role to play and was involved in relief, logistics and sharing of human resource but the Myanmar business community's role is less documented. A few of the corporate houses with dedicated funds adopted the CSR policy of the company to engage in the disaster management work both in upper and delta region of Myanmar.

ASEAN intervention happened through Agreement on Disaster Management and Emergency Response (AADMER). The setting up of Post-Nargis Joint Assessment (PONJA) was formed due to the need of an objective and credible needs assessment. The Village Tract Assessment (VTA) was part of the PONJA, and it





**Fig. 4.6** Role of private sector among other stakeholders in the response of Cyclone Nargis (Source: Adapted and Modified by Authors from Trocaire report 2011)

carried out survey of all stakeholders. Following the PONJA, ASEAN created a monitoring unit to measure the progress of the humanitarian response. The cluster and individual monitoring system were setup to monitor the progress of the all stakeholders including the private sector. An study by MMRD (2011) suggests that private sector intervention were limited by to cash and in kind donations, rather than participating on the basis of their core competences with few exceptions in the field of food, health and Water, Sanitation and Hygiene (WASH), logistics, education, shelter and agriculture.

The role played by regulatory bodies was central to bring in coordination and also allow cross-sectoral partnerships. Republic of the Union of Myanmar Federation of Chambers of Commerce and Industry (RUMFCCI) which has a network of Chambers in all the States and Regions of the country as well as 32 sector specific trade associations helped in bringing coordination. Post Nargis, RUMFCCI established a task committee to coordinate the contribution of its sub-associations and members and also formed an entry point for Japan trade promotion agency JETRO to facilitate partnerships between Japanese NGOs and sector-specific associations. As a part of post disaster reconstruction a model village “Kyain Chaung” has been constructed by a private company and housing were allocated on a needs basis. UNEP report (2009) states that a considerable part of the reconstruction staff were from the private sector or retired government employee who brought along with them skill and knowledge base.

## 4.6 Discussion

The Asian economic growth is mostly driven by the private sector and future stability of such this growth lies in reducing the internal and external risks from natural disasters. The global disaster risk assessment report (2013) highlights Asia, in particular the East and South Asia as high-risk zones from hydrological meteorological hazards. Tropical cyclones/ Typhoons occur more frequently in the Asian and Pacific region than anywhere else in the globe and cause severe flooding in most cases. At present a large portion of the disaster risk financing is taken care by the government in the Asian region mainly for the SAARC and ASEAN countries. Further the developing nations in Asian region have a multi-hazard profile and in general have a weak fiscal framework resulting in lesser economic resilience. Sawada and Zen (2014) suggests that the private sector should be actively engaged in disaster management. Further the Hyogo Framework of Action envisions the private sector to participate in drafting new legislations and use of knowledge, innovation, and education to build a culture of safety and resilience at all levels (World Bank 2012).

At the regional level ASEAN and SAARC are two important players in Private sector's involvement in Disaster Management. The SAARC as a regional body has its own limitations in managing nations involved in lack of data sharing, funds for local implementation, political commitment, academic and technology involvement and development (SAARC report 2014). Further, regional disorder plays an important role in development and hence will be crucial for private sector engagement in trans border disaster management. Gonsalves and Jetly (1999) and Banerjee (2002) observes that SAARC has not been able to change the relations between its member nations. But on the other hand ASEAN has been able to stabilize the sub-regional conflict (Alagappa 1998). ASEAN way has helped build confidence, increased trust and has even created a nascent sense of identity or ASEAN solidarity among its members' (Acharya 2000; Anthony 2003). There are mainly two mandatory regulatory agreements as given below in the Asia and the Pacific region, covering 18 member nations as seen earlier in the chapter. These sets of principals guide and regulate disaster preparedness and response action in the region.

1. ASEAN Agreement on Disaster Management and Emergency Response
2. SAARC Agreement on Rapid Response to Natural Disasters.

The Standard Operating Procedure of ASEAN for Regional Standby Arrangements and Coordination of Joint Disaster Relief and Emergency Response Operations (SASOP), and the AADMER are give a platform for the private sector and government to collaborate to mobilize and deploy resources and for emergency response. Similarly, SAARC's Agreement on Rapid Response for Natural Disasters (ARRND) bolsters existing system for rapid response to disasters. The International Federation of Red Cross and Red Crescent Society's (IFRC) guideline for the Domestic Facilitation and Regulation of International Disaster Relief and Initial Recovery Assistance (IDRL). This address issues including requesting and receiving

international assistance; issuing visas and work permits to international humanitarian personnel; customs clearance of relief items; taxation; and obtaining domestic legal personality or legal status. In case of disasters, these agreements can be extended for bringing in human resource from the private sector across the globe to help in disaster response. The commonalities between these agreements are that they are response centric and hence become a constraint for actively engaging the private sector and other stakeholder in disaster risk reduction and resilience building. Further, Ear and Cambell (2011) highlight the limited resources and organization capacity of ASEAN and APEC to integrate though the need has been discussed in various regional platforms.

UNOCHA report observes that the majority of private companies' involvement in disaster relief occurs independently and private sector donation is an important funding source for various emergency relief funds (like ASEAN Disaster Management and Emergency Relief Fund). Dyer and Singh (1998) suggest that inter firm relationship forms a base for competitive advantage and also reduce threat of opportunism. Further Hahn and Gold (2014) suggest that prior alliance experience is an advantage for helps in selecting partners and information rich partners are preferred. The role of the regional agencies and the national government in creating these alliances for disaster risk reduction work. Realizing that difference in objectives, values, strategies, trust and culture are main cause of poor partnership (Marrewijk et al. 2008; Dahan et al. 2010). Twiggs (2001) suggest that different cultures of private, public and NGOs can lead to collaboration where private sector has actively engaged in partnerships lead by other business and useful for their own interest. Further commitment and leadership in involving in disaster management will be from companies who are working in related field.

The Indian Ocean Tsunami experience highlights that there are varying insurance of assets and not all losses are insured. The ADPC report (2005) suggests that most affected fields were the agriculture, fishery production and small-scale commercial units. Further the report states that in developing countries risk is usually shared and sustained by the governments and the private sector. The private sector partly takes care of its own direct and indirect losses while the governments support the public assets loss and losses of the economically weaker and vulnerable population. A report by James Lee Witt Associates (2005) suggest that in the reconstruction phase there was shortage of technical expertise to carry on the construction work as it is mostly managed by the private sector. Further it stresses that governments must explore the role of private sector beyond monetary support in providing goods, services, and technology necessary for efficient response. The UNOCHA report (2006) words caution in utilizing the private donations, as they are not publicly accounted which creates concern for transparency and accountability. Further the Tsunami response asked for greater responsibilities to be shouldered by the regional organizations for managing disasters and other security concerns.

Taking a close look at the Cyclone Nargis response, ASEAN proactively engaged itself in a leadership role and cooperation among the government and international community. The ASEAN took up the central role but role of NGOs in the response was recognized neither by the government nor ASEAN. Further, the Trocaire report

(2011) the humanitarian failed in cooperating with the business due to lack of understanding of the local culture, protocol and procedures. Moreover, private actors with limited knowledge of monitoring & evaluation practices in humanitarian sector concerns were raised on accountability and transparency of donations. As there was no guideline to engage the private sector in disaster management, doubt about attitude of the government towards humanitarian actors kept the private sector away from collaborating.

The political scenario and business agreements play an important part in engaging the private sector in Disaster management and also bring in trans boundary coordination. The Myanmar had been various trade sanctions and embargos, which limit the partnerships between humanitarian sector and private companies. The Thai flood relief saw a different challenge for ASEAN in coordinating with the national government. This highlights the lack of awareness and need for active dialogue amongst the various government agencies engaged in disaster response at national and local level (Save the children report 2011). Further, Zyck and Kent (2014) observes that disaster like typhoons, tsunamis and earthquakes have significant private sector participation on a philanthropic ground but slow onset disaster like droughts and floods have generally seen less of a private sector engagement. The Fig. 4.7 shows the present linkages between various regional organizations in Asia.

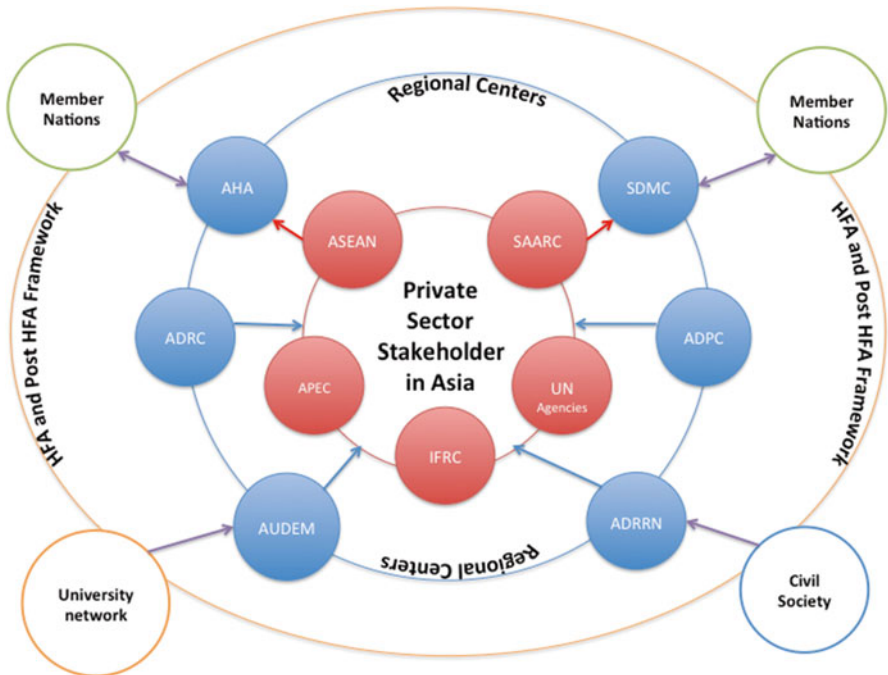


Fig. 4.7 Present linkages of regional organizations in Asia

## **4.7 Regional Deliberations to Increase Private Sectors Role in Disaster Management**

The challenges of disaster risk reduction and capacity building will become greater in the near future, with the regional organizations taking up central role in promoting disaster management activities among its member nations. The various regional level steps that can promote disaster management activities among their member nations are discussed below.

### ***4.7.1 Increase Trans Border Collaboration and Enhance the Cooperation Among International, Regional, and National Organizations for Humanitarian Business Response***

One of the common gaps highlighted by various studies is lack of trans border collaboration, which may be related to the government structure, sanctions, conflicts or market conditions (Emirullah and Azam 2014; Trocaire report 2011). Also from the Fig. 4.7 we can say that regional level regulatory bodies like ASEAN and SAARC who have a considerable say in the regional, national and local economies needs to collaborate for develop trans regional response mechanism. In these cases the role of UN agencies become more important in playing a coordinators role to bring in external support. In addition to this, the ASEAN way of stabilizing the national economies can be taken up as a model to implement in other regions for effective disaster management. The UNISDR (2013) report suggests that public policy at the national and local level play an important role in private sectors involvement in disaster resilience. A lot will depend on how national and local government translate the global and regional frameworks into implementable local polices. Developing projects similar to Otagai project after Thailand floods will help in reducing risk of global supply chain and stabilize the market economy in Asia.

### ***4.7.2 Guidelines for Private Sector to Engage in Disaster Management Focusing on National Level***

As seen in the case of Cyclone Nargis, a clear set of guidelines is very important for the private sector to engage in disaster management. The guideline for BCP as developed by APEC is a step in that direction. The regional agencies should support the national government in formulating acts and policies for engaging the private sector and the national level regulatory bodies like chamber of commerce to be actively engaged in disaster management work. These agencies n turn needs to support the local government in implementing the policies and also act as coordinating agencies to bring in private sector on a common platform.

### ***4.7.3 Good Governance Mechanism to Boost Private Sector Involvement***

The good governance mechanism is an important factor to draw the private sector participation in disaster management. As seen in the Indian Tsunami 2004 and cyclone Nargis incident highlights the need for transparency and accountability as an emerging concern. Further the UNISDR (2014) draft report observes that governance for DRR could focus on institutional framework, legislations, transparency, accountability, inclusion, and empowerment.

### ***4.7.4 Support Information and Knowledge Sharing Between Private Sector, Regional Organizations and Governments***

The regional organization role in creating a knowledge-sharing platform is crucial for reducing disaster risk. The private sectors are hubs of technical expertise and domain knowledge, which benefit the disaster management in various ways. The development of SDKN by SARRC is a welcome step in this direction. Nations connected by regional organizations can share information regarding early warnings, resources and monitor ground level response through this. In addition to this involving Alliance of Universities for Democracy (AUDEM) and other such networks to bring in the academia will support future researches in the area.

### ***4.7.5 Awareness Generation***

The Thai flood case is an example of why awareness generation of the role and responsibilities of various needs to be understood for an effective response. The national and local government should be engaged actively in dialogues and awareness generation campaigns for an enabling environment for various regional and trans regional agencies to engage successfully with the government.

The regional organizations play a heightened role in bring in cooperation from the private sector and act as a bridge between various national governments to reduce disaster risk in Asia. Revisiting the various legislations and working in tandem fostering ties among regional organizations could lead to information, technology and knowledge sharing for ensuring resilient communities and sustainable economic development for the Asia-Pacific region.

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# Chapter 5

## Experiences of Private Sector Involvement in DRR in Europe: Focus on Insurance

Jonas Joerin and Yuner Luo

**Abstract** This chapter reviews the viability of private-sector led involvement for DRR in Europe. In particular, the insurance sector is advocated as a crucial player to provide insurance premiums tailored to the local risk patterns related to natural hazards. Thus, protecting the built environment and the agricultural sector through insurance premiums is how insurance companies can provide solutions. As presented in this chapter, the type of insurance system from pure private (e.g. Great Britain, Germany, Netherlands) to entirely state-controlled (Switzerland) shows varying results in terms of insurance coverage. Overall, the idea to transfer risk through an insurance system where the government provides a mandatory requirement for buying insurance premiums, is regarded as beneficial and efficient for private-sector led DRR against natural hazards.

**Keywords** Private sector involvement • Insurance • Europe • Disaster risk reduction

### 5.1 Background

Over the last decades, the insurance market has grown substantially worldwide and accounted more than USD 8 trillion in 2007 which represented 15 % of the global GDP at that time (Phelan et al. 2011). Out of this sum, social forms of insurances accounted for 3/8 and the remaining USD 5 trillion represented commercial forms of insurance revenues (Phelan et al. 2011), such as insurance premiums for natural hazards. As historically rooted, most of these insurance premiums are still collected

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in developed countries where the insurance market originated; however, insurance markets in developing countries are growing. The founding of modern insurance solutions dates back to the seventeenth century following the Great Fire in London when more than 13,000 homes were destroyed (James et al. 2013). As in ancient times, today the basic principle of an insurance scheme is to transfer risk of a potential loss to a pool (Botzen and van den Bergh 2009). Thus, Carter (1983, p. 5) defines insurance as “a mechanism for spreading losses over larger numbers of persons exposed to loss”. In other words, premium holders can benefit from a pool of insurance clients who help each other to share potential losses from damages (Schwarze et al. 2011; Suarez and Linnerooth-Bayer 2010). However, such an insurance scheme is only viable if it is rooted in “solidarity” among the premium holders who are willing to cover financial losses from others.

As insurance schemes for natural hazards have emerged following the experience of catastrophes (e.g. Great Fire in London or in Germany after a fire destroyed large parts of Hamburg in the nineteenth century), different models of natural hazard insurance have been introduced, ranging from pure private insurance (Austria, Germany, Great Britain, Italy, Netherlands, US, etc.), public-private partnership (France, Norway and Spain) to state-controlled monopoly insurance systems in Switzerland (Schwarze et al. 2011). To assess the pro and cons of these schemes, with focus on Europe, is the key object of this chapter. A critical point to evaluate the different forms of insurance systems in the respective countries, is to assess their ability to reflect and integrate aspects of Disaster Risk Reduction (DRR). Traditionally, an insurance policy guarantees compensation for a particular loss ex post of the disaster occurrence. However, considering the growing pressures from an ongoing climate change (IPCC 2012, 2014a), insurance schemes/products are challenged to integrate a component for insurance holders to behave risk averse (Kunreuther 2006). Put differently, current existing insurance products simply replace the financial value of an insured object/property/life that got lost; however, with no incentive to ex ante reduce the risk exposure. In this context, Phelan et al. (2011) highlight the non-linearity of climate change which contains uncertainty on how climate change evolves and question the viability of natural hazard insurance schemes to support a risk averse behaviour. Thus, future predictions of risk patterns pose a great challenge to insurance companies to provide adequate insurance products which benefit both, the client/consumer and insurance company and also include elements of DRR. As current trends show (more detailed in the next section of this chapter), there is a rising gap (Smith and Katz 2013) between insured losses and the extent of economic damages. In 2013, only USD 45 billion was covered out of USD 140 billion of economic damages (Swiss Re 2014). Despite limited insurance coverage, there is still a wide support to regard insurance schemes as viable market-based solutions to adapt to climate change (IPCC 2014b) and also as a tool for effective DRR (Suarez and Linnerooth-Bayer 2010).

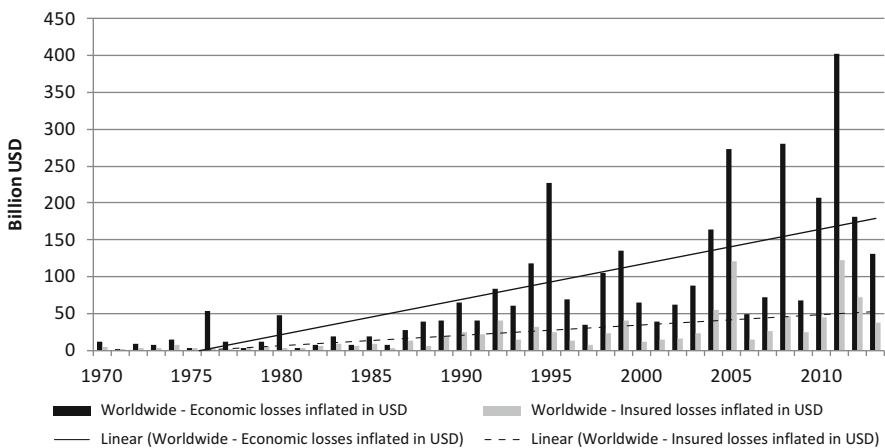
In this chapter, the focus is on analysing the current forms of insurance schemes in various European countries. The structure of this chapter is, as follows: firstly, evidence is shown from the past decades highlighting a rising gap between insured losses and economic damages; secondly, the current insurance schemes from

selected European countries are summarised; thirdly, the viability of insurance schemes to integrate and exercise DRR is debated, also in the context of developing countries; finally, a conclusion gathers the key arguments.

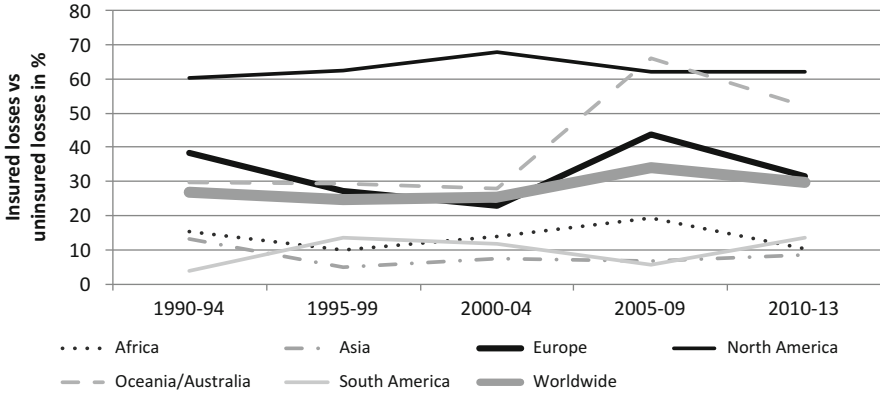
## 5.2 The Rising Gap: Insured Losses Versus Economic Damages from Natural Hazards

Available data from Swiss Re shows how economic damages have risen in recent years. Figure 5.1 shows an increasing gap between economic losses from natural hazards (geo-physical and climate-related disasters). Whereas in the 1970s insurance products hardly existed and economic losses were relatively low, recent yearly losses trespassed the USD 400 billion threshold in 2011. Although, the yearly sums of insured payments are rising, they do not increase at the same speed as economic losses grow. Therefore, two major challenges arise: first, more damages are not covered and need to be replaced by the public through tax payers' money or are absorbed by individuals' own savings; secondly, a potentially huge market is missed-out by private insurers.

The latter point may perhaps confirm Phelan et al.'s (2011) scepticism that current insurance systems are not capable to provide adequate insurance products that would increase the coverage ratio. On the other hand, the reinsurance market is clearly aware of this market potential and acknowledges that institutions, economies and individuals need to be resilient to disasters (GRF 2014). However, an evident strategy that would show how to close this gap of uninsured losses is not yet available.



**Fig. 5.1** Economic losses of past natural disasters versus insured losses – worldwide – from 1970 to 2013 (Source: Swiss Re, *sigma* database. All rights reserved)



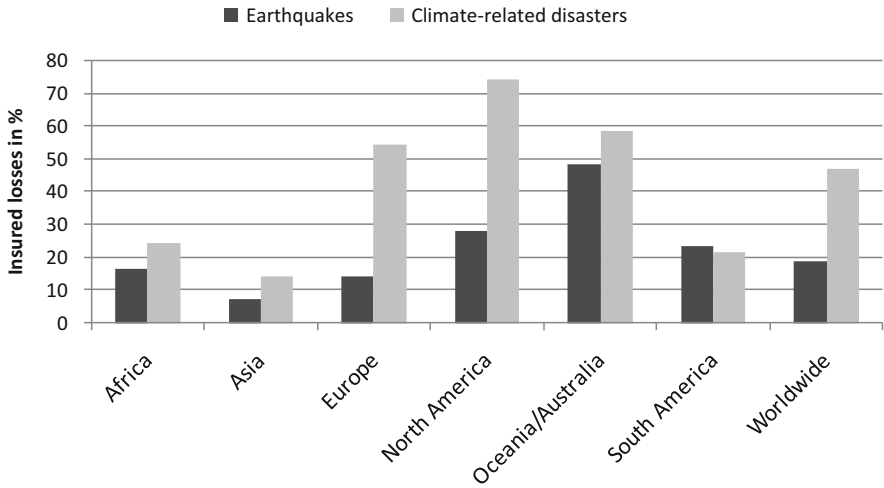
**Fig. 5.2** Ratio of insured losses versus uninsured losses in % – continent-wise – from 1990 to 2013 (Source: Swiss Re, *sigma* database. All rights reserved)

Although, it may sound logic that from a certain degree of risk exposure no insurance product is provided anymore by insurance companies, as they would most likely pay more than they would benefit, there is, however, a large discrepancy between the ratio of insured versus uninsured losses between North America (and also Australia) and Europe (see Fig. 5.2). In North America there is little change in the insurance ratio since the 1990s, as it remains steadily at around 60 %. However, in Europe the ratio dwindles around the 30 % mark. The reasons for this are manifold, but largely have to do with still developing insurance markets and different insurance systems in all European countries. This issue will be discussed more widely in the next section of this chapter.

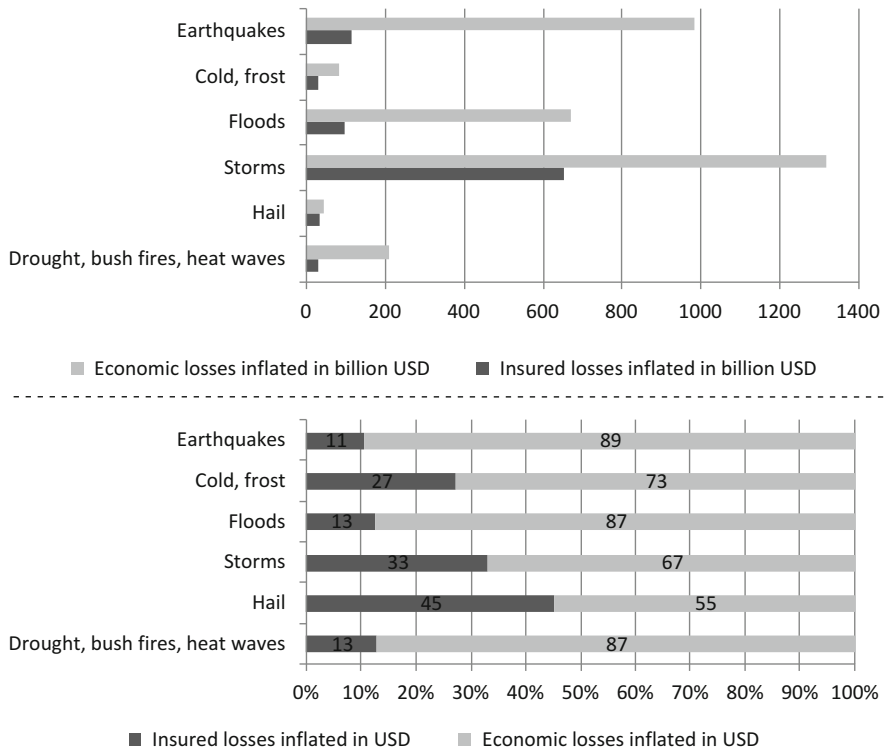
Looking at disaster statistics from the angle of climate change, there is no indication that climate-related disasters may be less insured (see Fig. 5.3). Until now, climate-related disasters, such as storms, floods, hail, cold, droughts etc., are still easier to predict, due to their slower onset, compared to geo-physical disasters, such as earthquakes.

However, this statement is more valid for developed countries. In South America, for example, earthquakes are better insured compared to climate-related disasters. The reasons for this variation, however, lie in the small size of natural hazards insurance markets in this region. Hence, variations of coverage are not surprising.

Finally, analysing disaster losses peril-wise, Fig. 5.4 shows that for earthquakes, storms and floods highest economic damages are recorded and also represent the main perils to which insurance companies have to provide financial compensation. However, looking at the lower figure, hail as a peril is best insured with a ratio of 45 % versus economic damage costs. This is largely due to mandatory inclusion of hail damage in car and building insurance policies.



**Fig. 5.3** Comparing insured losses between earthquakes and climate-related disaster – continent-wise – from 1970 to 2013 (Source: Swiss Re, *sigma* database. All rights reserved)



**Fig. 5.4** Comparing economic losses versus insured losses – peril-wise – from 1970 to 2013: *Upper figure* shows coverage in absolute numbers, *lower figure* shows ratio of coverage in % (Source: Swiss Re, *sigma* database. All rights reserved)

### 5.3 Insurance Coverage in Europe

The above data provides a clear picture about the current and past insurance coverage status continent- and peril-wise. From a European perspective, one may be concerned about the large gap between Europe and other developed continents, such as North America and Australia, particularly considering the seemingly equal legal and economic context. However, due to historic reasons, the insurance models vary between European nations (Table 5.1 provides a summarised description of the various insurance models in selected European countries). Whereas France, Spain and Switzerland have a quasi state-controlled monopoly insurer (either the state directly collects premiums (France, Switzerland) or through private insurance companies), other countries, such as Austria, Great Britain, Germany, Italy and Netherlands, rely on private insurance companies for natural hazards protection. In cases of France, Spain, Switzerland, Spain and also Norway, the insurance coverage is near 100 %. The reason for this high coverage is simply due to the legal mandatory requirement that fire insurances for buildings and properties must also include damages from natural hazards. Since every building/property is somehow legally recognised and registered, it is not very difficult to check whether they possess insurances against natural hazards or not. Although, Great Britain does have a pure private insurance system for natural hazards, the penetration rate is rather high (75 % of private buildings and 95–100 % of mortgage credits), according to Schwarze et al. (2011). However, this is simply due to a financial requirement for obtaining a credit for a building/property which expects a particular object to be financially secured against natural hazards.

In other cases, such as Austria, Germany, Italy and the Netherlands, there is a private natural hazards insurance system which is supported by state or ad-hoc created disaster funds; however, with no legal right for victims to claim financial support. Hence, victims rely on the goodwill of the politicians whether they get compensation for any incurred damages. This sort of relief support from governments is likely to be arbitrary as the identification of claimants and actual degree of adequate compensation is cumbersome.

#### 5.3.1 *Need of Compulsory Natural Hazards Insurance System?*

Looking at the Swiss system which is regarded as efficient (Schwarze et al. 2011), the underlying philosophy is, according to SIA (2011, p. 4) that “natural hazards insurance not only has great economic importance but is also social in character”. Extending this notion of dual function, economic and social duties, an insurance company by nature relies on solidarity among its clients (Clarke and Hill 2013; Schwarze et al. 2011; Lo 2013). In other words, the pooling of risk is only effective if insurance holders commit to a long-term participation and solidarity to

**Table 5.1** Insurance models of selected European countries

Country	Insurance model
Austria	<b>Private, no governmental regulation.</b> Widely available for storms, hail and snow. Insured density low (15 %) for flood, landslides and avalanches. Governmental disaster fund available, but no legal right for victims to get relief. And claimant cannot hold private insurance at the same time!
Belgium	<b>Private, but with governmental regulation.</b> Mandatory inclusion of all natural hazards in fire insurance building/property. Plus, state disaster fund available in case of governmentally defined extreme events
France	<b>Public (quasi monopoly).</b> State controlled reinsurance company (Caisse Centrale de Reassurance) provides insurance contracts which include all natural hazards. High insured density (nearly 100 %)
Great Britain	<b>Private, no governmental regulation.</b> However, high market penetration as to secure credit for buildings, fire insurance is required which includes protection from all natural hazards
Germany	<b>Private, little governmental regulation.</b> Through other insurance contracts (mostly household effects) insured density from fire, storms and hail (95 %). Other natural hazards, such as floods, landslides and earthquakes, the insured density was 33 % in 2012, as no obligation for insurance protection is required for buildings/property
Italy	<b>Private, no governmental regulation.</b> Ad-hoc governmental disaster funds, but no legal right for victims to get relief
Netherlands	<b>Private, no governmental regulation.</b> Governmental disaster fund available for 'uninsurable' damages. In case of extreme events, additional ad-hoc governmental funding likely to provide relief
Norway	<b>Private, but with governmental regulation.</b> Mandatory inclusion of all natural hazards in fire insurance of building/property. Funds are administered by the Norwegian Pool of Natural Perils (Norsk Naturskadepool). Coverage at 85 % of replacement value
Poland	<b>Private, no governmental regulation.</b> Ad-hoc governmental relief provided in extreme events, lump sum transfer system. Insurance market weakly developed
Spain	<b>Public (quasi monopoly).</b> Legal compulsory insurance against all natural hazards required. Insurance premiums collected by private insurance companies and passed-over to state-controlled consortium (monopoly insurer) (Consortio de Compensación de Seguros)
Switzerland	<b>Dual system of private and public insurance (monopoly).</b> In all cantons (states), all buildings/properties require mandatory fire insurance which must also include natural hazards (all natural hazards) protection. In 19 out of 26 cantons, a cantonal building insurance (Kantonale Gebäudeversicherung) provides coverage, in the remaining 7 cantons, private insurance companies provide insurance contracts, high insured density (100 %). Full (100 %) coverage at replacement value

Sources: ABI (2012a, b), Ahvenharju et al. (2011), Barredo et al. (2012), Erdlenbruch et al. (2009), FFFS (2013), GDV (2013), Michel-Kerjan and Kunreuther (2011), Næss et al. (2005), NNP (2012), Penning-Rowsell et al. (2014), Porrini and Schwarze (2014), Schwarze et al. (2011), SIA (2011), SVV (2011)



financially support other insurance holders who suffered from losses. Following severe incidents of avalanches in the early 1950s, Switzerland decided to create a legal mandate to require every building/property to be insured against natural hazards (SIA 2011; SVV 2011). The notion at that time was to make sure that minorities (in those cases victims of natural avalanches) are financially protected by others. The key benefits of this system are twofold: firstly, guaranteed financial assistance to property damages at the full value of replacement costs; secondly, lower insurance premiums since the number of insurance holders is stable and participation is long-term. Schwarze et al. (2011) have found out that insurance premiums are lower in Switzerland compared to Germany and Austria due to the above reasons.

Although, one may be critical to legally require every building/property owner to purchase an insurance against a risk which may perhaps never turn into any financial loss. Although, Norway has, similarly to Switzerland, responded to increasing disaster losses by creating a legal mandate to reduce the pressure on the government to provide ad-hoc relief or make use of disaster funds (NNP 2012). Thus, private insurance companies were made legally responsible to provide natural hazards contracts as part of fire policies for buildings/properties. Hence, as in the Swiss case, the insurance coverage is near 100 %. Interestingly, the state of Baden-Wurtemberg in the south-west of Germany also used to have a legal requirement for building/property owners to have insurances which include natural hazards protection. It was, however, abolished more than 20 years ago. Nonetheless, until today, the insurance coverage ratio was still at 95 % in 2012 which is considerably above the nation-wide average (33 %) and clearly higher compared to the neighbouring state of Bavaria which stood at 21 % in that year (GDV 2013); although, the latter state has witnessed several intense disasters in form of floods in the last couple of years.

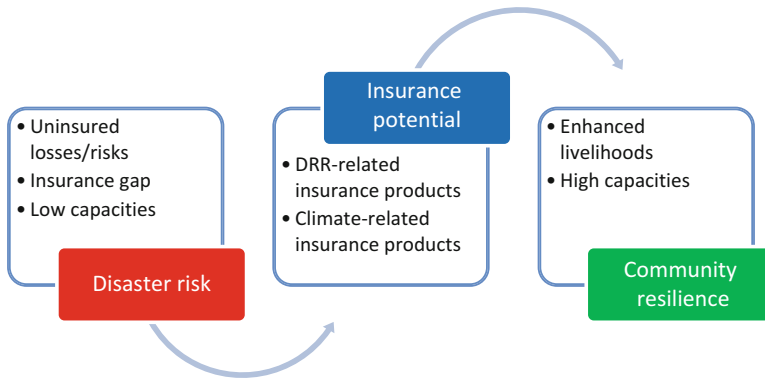
According to the European Commission (EC), there is a clear mandate to protect European citizens from any harm caused by natural and man-made disasters (EC 2013). The suggestions in the “Green Paper on the insurance and man-made disasters” call for support to facilitate increased coverage of disaster risk insurance at the regional (across-nation) level. This should allow for knowledge transfer, cooperation and seed financing (EC 2013). In this strategy paper, the EC, unfortunately, leaves the much needed question unanswered, such as whether members of the European Union should make it mandatory for every building/property owner to be insured against natural hazards. As shown above, there are different ways of implementing universal coverage either through, state-controlled insurance bodies (Switzerland), or through public-private partnerships (e.g. Great Britain, Norway) insurance systems. Although, a life-long commitment to natural hazards is desired through insuring buildings and properties, Botzen et al. (2013) also show another way which can increase a potential commitment to prevent damages from flooding. They assessed the willingness-to-pay among citizen of the Netherlands and found out that there is considerable demand for multi-year insurance policies against flooding.

### 5.3.2 *Is There Moral Hazard?*

The question whether a governmentally imposed natural hazards insurance system defaults in moral hazard has been conversely discussed (Neumayer et al. 2014; Raschky and Weck-Hannemann 2007). Essentially, a compulsory natural hazard insurance system is said to support risky behaviour and neglects potentially changing vulnerabilities and risk patterns. Members of the insurance industry also argue that it is unfair if those clients who reside in a low risk area have to support others living in high risk areas. However, those claims are unfounded by James et al. (2013) who advocate the strong public-private partnership in Switzerland where insurance and reinsurance companies are an integral part alongside state-controlled insurance bodies. Actually, the problem of moral hazard is rather visible in insurance systems where governmental regulations are absent. For example, in Austria, victims of disaster losses are not eligible to receive any relief from state disaster funds even if their insurance does not cover the entire damage costs (Schwarze et al. 2011; Raschky and Weck-Hannemann 2007). Accordingly, the term ‘charity hazard’ describes the phenomenon in Austria where certain building/property owners possess a natural hazard insurance, but still have to pay for other damages through a tax-based disaster fund. This is, according to Schwarze et al. (2011) regarded as ‘enforced solidarity’. In this case, owning a natural hazard insurance does not exempt an insurance holder from financially supporting others, but conversely causes another form of moral hazard.

## 5.4 Potential of Integrating DRR in Insurance Schemes in Light of Climate Change

Considering predictions (IPCC 2012, 2014a) that climate change will cause more frequent and intense natural hazards, more severe and costly disasters are likely to increase in numbers. As shown above, numbers of disasters are already increasing and cause higher costs, particularly uninsured costs. Thus, the problem of uninsured risk is already today prevalent and is likely to aggravate if climate change impacts are not adequately addressed in the insurance system in the near future (Lamond and Penning-Rowsell; Linnerooth-Bayer and Mechler 2006; Neumayer et al. 2014; Phelan 2011; Phelan et al. 2011; Schwarze et al. 2011; Suarez and Linnerooth-Bayer 2011); therefore, DRR should become part of this system (Suarez and Linnerooth-Bayer). Figure 5.5 highlights the role of the insurance sector to address disaster risk in order to support the building of resilient communities. The EC has in its Green Paper recognised the problem of lack of sufficient insured density among the member states of the European Union and proposes alongside UN efforts, outlined in the Hyogo Framework for Action, to better integrate DRR and disaster risk management into the insurance system.



**Fig. 5.5** Role of insurance sector in addressing disaster risk and supporting resilient communities

Whereas, the United Nations International Strategy for Disaster Reduction (UNISDR) will likely advocate for an enhanced role of insurance-based DRR solution in its upcoming post-HFA programme (from 2015), Phelan (2011) and Phelan et al. (2011) do not believe that the current system is sufficiently mitigative and instead focuses too much on adaptation. Although, DRR aims to address both, adaptation and mitigation in the context of disasters, the current insurance system does not provide sufficient incentives to actually reduce risk. Furthermore, in those countries where the government has a passive role (e.g. Germany, Italy, etc.), insurance products are not available for every natural hazard and for any location. In Italy, particularly, insurance companies avoid to provide insurance contracts in locations where natural hazard risks are too high. Considering that climate risk will further add to the problem of uninsurable risks (Lamond and Penning-Rowse 2014), it is questionable whether a pure free market-based insurance systems is capable to address climate risk appropriately. Actually, Lamond and Penning-Rowse (2014) urge that companies in those insurance systems will either not insure increasing climate risks, or may lose solvency as little can be done to steer mitigation through risk pricing. In other words, putting a higher price tag on premiums where the insured object is exposed to higher risk leads to potential clients being not willing to purchase insurance protection; whereas, insufficiently priced insurance premiums which do not properly reflect risk may cause higher financial claims. As a result, Lamond and Penning-Rowse (2014) advocate for a certain involvement of the state by providing a viable framework for insurance companies that allows them to operate in the interest of themselves and also recognising the need of the population.

Whether, a state involvement, such as in Switzerland, is popular among citizens has been proved in various public votes held in Switzerland. For example, according to Schwarze et al. (2011), on 26th November 2000, the people of the canton of Grisons were asked whether they like the current law of governing building insurance. The result was an overwhelming support (86 %) in favour of the current risk transfer mechanism. Schwarze et al. (2011) conclude that through a referendum

public trust and support can be generated for a system where strong solidarity is needed to perform sustainably. Considering again the nature of an insurance which holds the components of risk transfer through pooling of large numbers of clients, the goal must be to have appropriate protection against any type of damage in the case of an extreme event. Hence, expecting that by purchasing an insurance contract one may somehow see a “return of investment” does not coincide with the notion of the insurance philosophy. This will be even more relevant in the context of rising climate risk.

Although, the climate is expected to change globally (IPCC 2012, 2014b), there are likely regional variations which will make it more difficult to predict adequately the risk exposure of any type of natural hazards. Thus, private insurance companies will not be able to stem the ‘risk’ alone without governmental support (Cook and Dowlatabadi 2011). Governmental support does, however, not only include legal compulsory insurance for natural hazards, but also active involvement in adopting sound building codes and taking proper decisions for land-use planning (Schwarze et al. 2011). Thus, strict enforcement of building codes is a key step for DRR and reduces the risk exposure. This means that both is needed, governmental regulation and active progressive involvement in ensuring that future development is sustainable, as otherwise DRR cannot be implemented and the insurance system runs inefficiently. Or, the government, respectively the individual citizens, have to absorb economic losses from disasters.

### ***5.4.1 DRR in the Agricultural Sector***

Apart from protecting the built environment, weather-based insurance products are viable solutions for the agricultural sector (Clarke and Hill 2013). Particularly, with regards to changing weather patterns due to climate change. This market is already quite developed, particularly in developed and emerging countries (e.g. China, India) (Mahul and Stutley 2010; Smith and Glauber 2012). However, a functioning reinsurance market for agricultural losses is still not yet widely developed (Mahul and Stutley 2010). Instead post-disaster assistance in form of direct relief or compensation is made available. This, however, thus not provide the desired impact to reduce risks within the agricultural sector, as a risk averse behaviour is not encouraged. In other words, mainstreaming technologically available index-based weather insurances would be more favourable to transfer risk (Mahul and Stutley 2010). The key challenge to establish an insurance coverage in the agricultural sector is the development of an index which allows to set benchmarks when exactly a payoff should be made. This requires historical and current weather data which may not always be available at the scale needed to run simulation models that can estimate the risk pattern. According to Mahul and Stutley (2010), insurance products are available in most European nations, but the insurance coverage ratio varies as well as whether the system is subsidised or private. In Switzerland, where insurance premiums are not subsidised, 70 % of the farmers were insured to weather-related

impacts on their crops and livestock in 2008 compared to 91 % in the US where insurance premiums are subsidised. In Europe, Germany, Sweden, Netherlands, Hungary, Greece and Switzerland are among the countries which have no premium subsidies. Countries in Europe with premium subsidies include among others: France, Italy and Spain. There is little dispute about the viability of insuring the agricultural market for DRR, however, to what extent the government should control and subsidise this market little consensus exists.

## 5.5 Conclusion

This chapter highlighted the importance of universal (nation-wide) insurance coverage against natural hazards. A continuously rising gap between economic damages and insured losses shows across the continents that disaster events become more expensive and insurance coverage does not keep up with increasing losses, but lose ground which results in lower insurance coverage ratios in Europe and also in other parts of the world. In light of predictions which announce more frequent and intense natural hazards in the coming decades, appropriate protection is inevitable to secure the physical (property), economic (financial stability) and social (cohesion) environment of communities. As advocated above, mandatory natural hazards insurance for every building/property owner could solve the following challenges:

- universal coverage (no one is left uninsured);
- mitigation and adaptation measures (DRR) are supported by every citizen (through holding an insurance a risk transfer takes place);
- the solvency of insurance companies/consortium is upheld (rather stable number of insurance clients);
- and governments can be freed from arbitrary distribution of disaster funds.

In other words, a compulsory natural hazard insurance system would generate greater stability at all levels. Therefore, governments and private companies are advised to create public-private partnerships for assessing risk, provisioning of insurance policies and implementing effectively DRR.

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# Chapter 6

## Experiences of Africa: Status and Potentials

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**Abstract** This chapter reviews the African experiences of disaster risk reduction and involvement of private sector from a variety of perspectives. The private sector has the ability to create risks, reduce risks, but also transfers risk through various mechanisms. On a continent where the private sector is moreover a development partner, this chapter explores the contributions by the private sector to the African risk profile (positive and negative). It considers a number of case studies/examples on how the private sector in Africa has been involved in disaster risk reduction measures from a development perspective. The chapter provides a set of recommendations for future involvement of private sectors in risk reduction.

**Keywords** Disaster risk reduction • Private sector involvement • Public private partnership

### 6.1 Introduction

Countries and regional organisations have made significant strides in addressing disaster risk reduction on the African continent. However, despite the development of policies, plans and legislation, direct investments in disaster risk reduction in Africa remain low, and the involvement of the private sector limited. Most African countries have scarce resources to invest in disaster risk reduction and minimal fiscal space to fund relief and recovery efforts after a major disaster. Governments often lack the capacity to disaggregate specific budgetary allocations to disaster risk reduction, and the private sector rarely engage in direct disaster risk reduction activities. The private sector's involvement in disaster risk reduction can mostly be observed in related activities, linked to the sustainable

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development or humanitarian agenda. However, the private sector is moreover drawn into humanitarian and disaster risk reduction activities. The disaster epistemology of Africa, furthermore forces the private sector to engage in disaster risk reduction as part of their core business.

This chapter reviews the African experiences of disaster risk reduction and involvement of private sector from a variety of perspectives. The private sector has the ability to create risks, reduce risks, but also transfers risk through various mechanisms. On a continent where the private sector is moreover a development partner, this chapter explores the contributions by the private sector to the African risk profile (positive and negative). It considers, through a number of case studies and examples how the private sector in Africa has been involved in disaster risk reduction measures (knowing and unknowingly) from a development and humanitarian perspective. In conclusion this chapter provides a set of recommendations for future involvement of private sectors in risk reduction.

## 6.2 Disaster Epidemiology in Africa

The disaster risk profile of Africa has remained fairly constant throughout decades of recorded data (Guha-Sapir et al. 2013). Hydrological, meteorological and climatological disasters are most frequent and have the greatest impact. Compared to other regions of the world, Africa by far, sustains the least economic losses, due to its development profile. A major challenge remains poor reporting and loss estimation on the continent which actually skews the actual economic losses. Munich RE (2014), for instance, indicates that the overall and insured losses for Africa in 2013 amounted to less than 1 % of global losses. However, losses in human lives and livelihoods are on the increase. The Centre for Research on the Epidemiology of Disasters (CREED) in Brussels reported that in 2012 the number of recorded victims due to climatological disasters in Africa surpassed their 2002–2011 annual average of 23.9 million, to 28 million. The number of reported hydrological disaster victims (9.3 million) was far above their 2002–2011 annual average of 2.1 million. The most affected countries in the continent in 2012 due to drought and food insecurities were Angola, Burkina Faso, Chad, Ethiopia, Kenya, Malawi, Mali, Niger, Sudan, Tanzania and Zimbabwe. Floods in Nigeria alone affected seven million people. These 12 disasters represent 85 % of the total of victims in Africa in 2012 (Guha-Sapir et al. 2013). However, there are many “everyday disasters” on the continent which falls outside the reporting by mainstream media. These disasters, brought on by extensive risk, erodes away at the coping capacity of many communities, leaving them exposed and living in constant conditions of risk (Global Network of Civil Society Organisations for Disaster Reduction 2013). However, as Africa develops so does its risk exposure and vulnerability, with a direct impact on its ability to reach its development expectations.

### 6.3 A Business Case for Disaster Risk Reduction in Africa

Africa remains endowed with abundance of natural resources. Development in Africa is on an upward path (Nduna 2013) although many economies still struggle to shrug off the anaemic growth rate following the global financial crisis in 2007–2008. The African continent is increasingly becoming one of the fastest expanding economic regions in the world. Projections up to 2015 indicate that 7 out of the 10 fastest growing economies will be in Africa (International Monetary Fund 2012). With such growth one can expect a decrease in the number of people living in absolute poverty, with the resultant positive impact on resilience and livelihood security. However, many African countries still remain reliant on primary products, and development and humanitarian aid (Sparks 2012), which are on the decline (Phillips 2013). Some also argue that the current aid provided does not serve the needs of the majority (Moyo 2009). The NGO Health Poverty Action (2014), shows that the Global South is being drained of resources by the rest of the world and it is losing far more than it gains. Africa alone in 2013 lost US\$192 billion while only receiving US\$30 billion in overseas aid. Of the US\$192 billion leaving the country, US\$46.4 billion are profits made by multinational companies, US\$35.3 billion as tax evasion and illicit financial flows (though so called “tax havens”), and another US\$36.6 billion is lost due to climate change. The amounts lost can directly be ascribed to aspects such as unfair trade policies, tax dodging, practices of multinational companies, cost of climate change (which African countries largely did not contribute to), as well as the brain drain of skilled workers. However, the fact remains that for such vast amounts to flow out of Africa, the private sector has significant investment in critical infrastructure, supply chains and capital – all which could be impacted on due to the effects of disasters.

Beside the amount of aid coming into Africa and the amounts being expended, the spending on the critical issues of disaster risk reduction and climate change adaptation also looks dismal. Sixty-eight percent (68 %) of all disaster risk reduction funding stems from humanitarian aid. Since 2000, US\$3.7 billion worth of disaster risk reduction investment has been made from all aid (development and humanitarian) to the top 40 recipients of humanitarian aid (most of these countries are African). However, the average percentage of disaster risk reduction allocation in development aid remains below 2 %. By 2009, funding for prevention and preparedness reached US\$455 million of total humanitarian expenditure globally (Kellett and Sweeney 2011). This represents a 4.2 % share of total humanitarian aid and a 0.3 % of overall Official Disaster Assistance (Kellett and Sparks 2012). In the period 2007–2011, Africa received in total US\$471 million in disaster prevention and preparedness funding. This figure excludes funding associated with climate related mitigation projects of which Africa received approximately US\$1.5 billion. However, regional distribution of climate finance spending does not mirror the traditional distribution of development or humanitarian aid globally. Climate finance tends to be concentrated in a small number or large countries. Such spending is an alarming indicator of the lack of connectedness between climate change adaptation-related and disaster risk reduction investments.

Furthermore, the continent has surpassed the 50 % mark of total population urbanised in 2010 and now has a larger urban population than North America (McClellan 2010). Moreover small to medium business are established in such urban centres and in most cases make up the highest percentage of formalised business (Gatt 2012). Urbanisation in itself brings forth an array of complex disaster risks (Wamsler and Lawson 2012), exposing the heart of already fragile economic activities. Such growth opens various private sector opportunities within the disaster risk reduction field. One, and the most obvious, would be the insurance and reinsurance industry. Stefunko (2011) indicated that empirical evidence shows a correlation between a country's level of development and the extent of insurance coverage. This is evident in insurance penetration as the premium volume generated as a percentage of gross domestic product (GDP). For developed countries this figure stood at about 8,6 % in 2009, whereas for developing countries it stood at 2,9 % (with Africa only a fraction of this amount). The scope for growth and innovative risk transfer products in the insurance and reinsurance industry in Africa is thus great. However, with a growing insurance industry comes greater risk exposure which needs to be managed. Insurance and reinsurance is but one market driven mechanism which the private sector can use to manage their risks.

The above situation therefore does not bode well for a growing private sector in Africa. The private sector in Africa therefore has a significant interest in being involved in disaster risk reduction and a direct role to play in the management of their risks. The private sector must become a partner in disaster risk reduction and climate change adaptation to safeguard development. Stronger and direct involvement in disaster risk reduction by the private sector reduces uncertainty and strengthens confidence, it opens the door for cost saving and provides avenue for value creation (United Nations International Strategy for Disaster Reduction 2013).

## 6.4 The Need for Private Sector in Disaster Risk Reduction

The private sector consists of organisations that have a core strategy and mission to engage in profit-seeking activities through either by, production of goods, provision of services, and/or commercialisation. These include financial institutions, small and medium-sized enterprises (SMEs), individual entrepreneurs, and large corporations operating in the formal and informal sectors. While the private and public sectors often have contradictory value creation logics, recent studies have shown that partnerships between NGOs and the private sector engagements have the potential to co-create value for organisations and society (Austin and Seitanidi 2012; Stadler 2012; Selsky and Parker 2010). According to Lucci (2012) and Watson (2012) there are calls for greater private sector involvement in international discussions on aid effectiveness and in the establishment of the post-2015 development framework that will replace the Millennium Development Goals (MDGs). These calls point towards the private sector serving as a key development partner. In Africa, there is furthermore a growing emphasis on creating more resilient

communities (United Nations International Strategy for Disaster Reduction 2013). Through significant and widespread economic restructuring in African economies for example, the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET) have highlighted the need to alter the way disaster risk management is addressed. Risk reduction techniques need to be embedded in government, business and the community, thereby increasing overall resilience and continuity (Britton and Clark 2000; Lucci 2012). The current legislation which is based on the concept of Disaster Management in most African countries show the dominance of public sector organisations in disaster risk management. However, it is becoming more apparent that the private sector plays a crucial role in community resilience and recovery (Dalziell 2005). This is evident in the emphasis placed in the involvement of the private sector in all spheres of government in terms of disaster risk management in South Africa and Namibia (Namibia 2012; South Africa 2003, 2005). While private sector actors often produce positive development results, their operations can also have negative impacts on development through, environmental degradation, corruption, tax avoidance, poor labour standards, and human rights abuses (Nelson 2011). As disaster risk challenges emerge in the face of socioeconomic trends that are converging to increase the likelihood, magnitude, and diversity of disasters in Africa, the need for concerted efforts among the public and the private sector actors in disaster risk reduction cannot be overemphasised.

#### **6.4.1 Business Continuity Management**

Business Continuity Management (BCM) has recognised the important socio-economic role businesses play in community functioning and their susceptibility to hazards and proneness to crisis. Community economic development (Blakely and Bradshaw 2002) and business strategic planning (Zhang et al. 2009) both recognise that extreme events can have a devastating impact on business viability. However, emphasis of most research has been on economic recession and plant closings – originating in the economic system rather than the natural environment (Zhang et al. 2009; Tierney 2007). Disaster research in Africa, especially research based on the constructivism paradigm, has tended to focus more on families and households than on the private sector. Likewise in the disaster risk literature, research on private sector impacts and their contribution to disaster risk and risk reduction has been less developed compared to the extensive literature on community impacts or environmental impacts (Zhang et al. 2009). Until fairly recently, very little was known regarding such topics as, business vulnerability, public-private partnerships in disaster risk reduction, disaster risk transfer mechanisms, disaster impacts on businesses and business recovery in Africa. Systematic research on the private sector involvement in disaster risk reduction is still lacking despite the importance of businesses to a society, and the important role of businesses for Africa's development.

The private sector is a key driver of economic growth and wealth creation as investor, employer, source of finance, and in building capacity and human capital.

From the business perspective, public-private sector partnerships are a logical extension of business continuity planning. The Business Continuity Institute (BCI) defines BCM as “a holistic management process that identifies potential impacts that threaten an organisation and provides a framework for building resilience and the capability for an effective response, that safeguards the interests of its key stakeholders, reputation, brand and value creating activities” (CCTA 1995). The CCTA (1995) states that “BCM is concerned with managing the risks to ensure that at all times an organisation can continue operating to, at least, a predetermined minimum level”. According to BCI, the key objectives of an effective BCM strategy are to: ensure the safety of staff; maximise the defence of the organisation’s reputation and brand image; minimise the impact of business continuity events (including crises) on customers/clients; limit/prevent impact beyond the organisation; demonstrate effective and efficient governance to the media, markets and stakeholders; protect the organisation’s assets; and meet insurance, legal and regulatory requirements. It is in the best interest of businesses to invest in the continuity of their communities to protect their customers and employees. The private sector can achieve their goal of remaining in business by ensuring that critical services and public safety and health are provided. BCM is thus a logical, necessary and integral part of private sector survival. In the Africa context most of the borderline disaster risk reduction activities is labelled under the banner of BCM, albeit with mostly an internal focus. BCM therefore provides an ideal entry point for African businesses into the disaster risk reduction domain.

#### **6.4.2 Why Business Continuity**

Organisations (private and public) are vulnerable to both natural and anthropogenic hazards. In BCM, the vulnerability concept is used to characterise a system’s lack of robustness or resilience with respect to various threats, both within (e.g. internal crisis, pathologies, and improper reorganisation) and outside (e.g. dangerous situations, attacks, intrusions – human-based threats, natural threats, technological, or market threats) the boundaries of the system (Enarson and Rausand 1998; Mackenzie 1991; Gadowski 2006). According to Roux-Dufort (2007) vulnerabilities are produced by an accumulation and a combination of unmanaged or mismanaged organisational anomalies. Vulnerability is described in terms of a system’s susceptibility to the adverse consequences of a triggering event. This view of vulnerability is echoed by other well supported notions like incubation (Turner 1976) and the “resident pathogen” metaphor (Reason 1990, 1997). Researchers in “cyndinics” (science of danger) have also described vulnerabilities as a space of danger (Wybo, 1990 in Roux-Dufort 2007) that is a set of organisational conditions that make a system prone to disruptions and catastrophes (Roux-Dufort 2007). Organisational vulnerabilities are also considered as precursors or latent failure (Reason 1990). They are rooted at different levels of the organisation namely in the HOT (Human, Organizational, Technological) components (Shrivastave 1992). Vulnerabilities can

act as aggravating and amplifying factors when a crisis hits. Organisational and individual vulnerabilities are therefore capable of making a crisis situation evolve toward more chaos and disorder.

For vulnerable businesses, the consequences of disasters are dire. The sudden and destructive nature of disasters creates chaos and disorder for businesses (Gopalakrishnan and Okada 2007). When a disaster strikes, businesses are damaged – becoming either temporarily or permanently unable to continue operating (Tierney et al. 2001). According to the, London Chamber of Commerce (2003), 90 % of business that lose data from a disaster are forced to shut within 2 years of the disaster; 80 % of business without a well structured recovery plan are forced to shut within 12 months of a flood or fire; and 43 % of companies experiencing disasters never recover. DiMaria (2007) also noted that fires permanently close 44 % of the businesses affected. According to DiMaria (2007), in the 1993 World Trade Centre bombing, 150 businesses out of 350 affected failed to survive the event. Since businesses are the foundation of local, regional, and national economies, disruption by disasters produce not only direct losses but also indirect losses and economic ripple effects (Tierney 2007). Thus, business closures result in loss of jobs, negatively affecting incomes and creating greater challenges for households, neighbourhoods and communities who depend on them for survival. After a disaster, organisations face a number of challenges, including how to finance business recovery.

At local level businesses (in Africa) need to understand the importance of their linkages to the community, suppliers, customers, and employees as well as their dependence on a functioning infrastructure system (Lindell and Prater 2003). If any of these relationships is disrupted by a disaster, businesses can suffer serious economic losses, even if their own facilities are undamaged. For example, employees who lose their livelihood might move away from a certain geographic location creating changes in the labour market, customers are likely to change their spending patterns from luxury goods to more pressing needs such as home repair, and suppliers might have their own difficulties with their physical plants, infrastructure, or supply chains. Money flowing into African countries through the diaspora can be severely be affected should a disaster disrupt private sector entities in the developed world. It is therefore important for both businesses and communities to understand how they are connected and the mutual benefits of working together in risk reduction initiatives.

### ***6.4.3 Importance of BCM in Africa***

Implemented successfully, BCM brings essential benefits to organisations for their survivability. According to Sharp (2012), BCM provides a strategic and operational framework to review the way an organisation provides its services whilst increasing its resilience to disruption, interruption, or loss. This minimises revenue loss, enabling organisations to maintain market share, and ensure continued investor or stakeholder confidence, which is crucial for the survivor of business in Africa. BCM

reduces impact and likelihood of failure through establishing appropriate management practices and good corporate governance. As such, BCM has been recognised as a good business practise and as an integral part of corporate governance (Sharp 2012). This demonstrable continuity capability provides a business competitive and marketing edge (Hiles 2004) and instils confidence in its stakeholders, especially staff and customers, in its ability to handle disruptions (Sharp 2012).

According to Hiles (2004), a BCM culture helps to identify risks earlier and thus exposure is minimised earlier. BCM culture therefore proactively improves resilience of the organisation to achieve its key objectives when faced by a disruption. Through regular training programs and exercises, a BCM culture provides a rehearsed method for restoring the ability to supply critical products and services to an agreed level and timeframe following a disruption (Hiles 2004). Several authors (Smith 2002; Hiles 2004) agree that BCM produce clear cost benefits. Thus by identifying, preventing and managing disruptions in advance minimise the costs to an organisation in terms of financial expenditure and management time, and to a great extent minimises ripple effects within fragile economies.

#### ***6.4.4 Role of Private Sector in DRR***

Recently, private sector actors have started to see convergence between their business interests and development priorities (Lucci 2012). In Zimbabwe, Kenya, Cameroon and South Africa for instance, a number of organisations have begun to engage in corporate social responsibility activities that contributed enormously towards disaster risk reduction and related humanitarian sectors (see section below for some examples). More and more organisations are recognising that they can no longer afford to ignore their social, environmental, and economic impacts, especially under increasing scrutiny by civil society organisations and the media (Lucci 2012) and under conditions of heightened disaster risk world over.

According to UNISDR (2014), a private sector committed to disaster risk reduction can steer public demand towards materials, systems and technological solutions to build and run resilient communities. The private sector can also support making communities safer by; (1) setting standards and quality assurance criteria for safer structures in urban areas; (2) investing in programmes or individual county and community risk reduction efforts; (3) providing expertise to help with administration, internal business processes, and external disaster risk assessments and; (4) acting as a wellspring for socially responsible volunteers and funding. Private sector engagements for development include activities such as funding and/or carrying out development projects, adopting and implementing inclusive business models, aligning core activities to contribute to the achievement development outcomes (including health and education objectives), creating inclusive value chains, adopting and supporting the widespread adoption of responsible business practices, incorporating climate sensitivity into business operations, implementing human rights principles in business operations including gender and child human rights frameworks,



improving accountability and transparency in business operations, and targeting the transfer of technologies to host communities.

### **6.4.5 Risk Transfer Mechanisms**

There are several options for disaster funding that disaster risk management authorities can embark on. According to Coppola (2007) disaster recovery funds can be obtained from government-based emergency relief funds, insurance, donations, loans incentives among other sources. Major incidents normally require large sums of money for recovery. How quickly funding can be organised determine how quickly recovery can be done (Coppola 2007). Funding is largely needed for rescue operations, restoring public works and infrastructure as well as replacing or repairing basic, essential personal property of individuals and business. However, such mechanisms remain reactive in nature and do not address the underlying disaster risk reduction problem.

### **6.4.6 Corporate Social Responsibility**

Corporate social responsibility (CSR) can be defined as the ongoing activities and commitments by private sector entities to ensure economic growth and development while contributing to the well-being of its employees, their families, communities and society at large (Matten and Moon 2008). However, a weak private sector (as is the case in many Africa economies) means less focus on issues of CSR. Examples of CSR projects by companies in development and disaster risk reduction in Africa is limited to some of the bigger economies such as South Africa, Nigeria, Egypt, Angola and Algeria. Most CSR initiatives addresses underlying issues of vulnerability and disaster risk and very few specific disaster risk reduction projects are ever mentioned. Twigg (2001) (echoed by the work of Pearson and Crabtree (2014a)) shows that the private sector normally becomes involved (knowingly and unknowingly) in disaster risk reduction in five different ways:

- Philanthropic/charitable – Though the provision of grants, donations, goods, services or facilities;
- Contractual – Contracting other organisations to carry out work for public good, or through sponsorship;
- Collaborative – Creating working partnerships with other organisations;
- Direct commercial engagement as part of core business;
- Adversarial – Business response to lobbying about human and environmental impacts of business activities; and
- Unilateral – Businesses undertake their own non-commercial actions independently of others.



For CSR to make any sense for companies, it must address their so called triple bottom line. Therefore an argument can be made that CSR for disaster risk reduction could easily become a CSR focus of many African and foreign companies if disaster risk reduction activities can be packaged to make sense for profit-driven companies.

## **6.5 Challenges and Opportunities in Building Public Private Partnership in Disaster Risk Reduction**

The time is ripe for more and better private sector engagement in Africa. However, some challenges remain towards building public private partnerships in disaster risk reduction. With challenges also comes opportunities, and these will be highlighted below.

### **6.5.1 Challenges**

Relations between government and business in Africa, and Zimbabwe in particular, have remained lukewarm for a considerable length of time. Business always complains of business unfriendly environment due to over taxation, labour laws and suffocating economic policies. There is mistrust (mutual suspicion) between the two which hinders meaningful engagement around social and community developmental concerns. Governments label business as profiteering, hence political pressures exerted on industry to fund political activities of ruling parties for them to safeguard their operations and remain in business. Any tenders, given to the private sector by governments to respond to humanitarian or disaster challenges, are fraught with political interference and corruption, resulting in contracted companies doing shoddy jobs of questionable quality. Many private sector entities see an opportunity to make money during disasters, hence very little investment in disaster risk reduction interventions.

While there are benefits of working together, both mostly lack a common language of engagement. Issues at stake are never understood from the same angle and this is compounded by lack of information particularly on the side of governments. In Zimbabwe for example, disasters are political sensitive and any entity funding disasters is viewed as supporting opposition politics. In disaster risk reduction issues, governments have tended to work with UN agencies and other humanitarian organisations, in effect sidelining the private sector in the process. Very thin platforms for engagement exist, much to the detriment of possible benefits emanating from positive engagement. Zyck (2013) considers private business as first respondents to any crisis by opening up their shops, warehouses, volunteering their trucks and machinery to clear roads and get supplies into affected areas. Given this understanding, it is disconcerting to fail to find common ground between many governments and the private sector.

### ***6.5.2 Future Opportunities***

Engagement is likely to increase in the near future given the complexities of disasters, specially climate change, and humanitarian crisis that threaten industrial resource base. The disappearance of forests, the need to promote green technologies, and opening up of new markets, all dictates the need for positive engagement where all involved benefit. Traditional aid agencies were hardest hit financially in recent times and governments are fast focusing on the private sector to promote collaborations. There is more to benefit from responses to crisis situations in terms of economic growth and development by the private sector. For countries like Zimbabwe, currently regarded as a pariah state, the donor community has not been willing to render increased support in terms of disaster risk reduction or humanitarian aid and therefore, turning to the private sector will be the only way out for economic development and poverty reduction. Banks, for example, can partner with government and humanitarian agencies to run cash transfer vouchers for food aid beneficiaries. Mobile phone operators can avail their SMS technologies to teach distant farmers improved farming techniques in the face of climate change, send early warning signs and related information, with such initiatives as Frontline SMS (2014).

### ***6.5.3 The Private Sector as Risk Creator***

The private sector has been involved for a long time in traditional disaster management without realising their actions were tantamount to disaster risk reduction initiatives, either with the entity's operations or by working in various vulnerable communities. The drive for profits has resulted in the private sector funding or sponsoring activities or community interventions where they would maximise on profits. Such ventures included sports (soccer, tennis, golf and athletics), drilling of boreholes for schools or hospitals, dam construction, bridge construction and in some cases, road construction and maintenance. Association with sporting activities have done very little by way of community empowerment in the face of the changing scope of disasters except to help market the companies involved through advertising and promotional activities. The phrase "social responsibility" has been a buzz word for decades now and private sector involvement in community work either through school fees payment for the vulnerable children or sponsoring a debate sessions for schools. While this empowered individual children and schools participating, it does little to entrench disaster risk reduction interest within the larger community.

Mining companies in Zimbabwe have done very little by way of uplifting communities where they extract the resources they need. Communities complain of companies importing labour at the expense of the local people, thus it would suffice that the private sector in certain circles has contributed to worsening community vulnerability and exposing locals to hazards through their operations. Mining

companies stand accused of contaminating water sources for both humans and livestock through their unsustainable waste disposal practices. They have created “bad land” environment which becomes useless after their operations, but remain a cause for concern and death trap for livestock and humans. Communities in the diamond rich area of Marange in Manicaland province in Zimbabwe have complained about the increasing numbers of their livestock dying from contaminated water. The water quality in Save and Odzi Rivers in Manicaland Province, that are allegedly being polluted by Marange based diamond mining companies, has deteriorated in the past 5 years to the extent that most ecosystem services and livelihoods had been greatly affected. Diamond mining operations have resulted in massive siltation, chemical and heavy metal pollution of the Save and Odzi Rivers (ZELA 2012). The pollution of the two rivers has adversely affected the sources of livelihoods for communities that live along the river in four districts namely Chipinge, Chimanimani, Buhera and Mutare West (Marange communal lands). It is now evident that road construction and maintenance into these mining ventures was/is meant to benefit more the mining entities than the local communities. Logging companies in Matabeleland North Province of Zimbabwe, for example, which was endowed with forests resources, have depleted the forests resources due to over-exploitation and very little or no rehabilitation efforts. Schools in Matabeleland North go without school furniture and yet the province has the resource exploited on a daily basis. Agricultural processing companies plough back very little to local communities that provide raw materials for their industries. Food industries like beer companies donate beer during major government and political party functions in the name of social responsibility. Given the huge profits the private sector makes, it is possible that their involvement in community disaster risk reduction initiatives can go a long way in building the resilience of local populations. The private sector has not operated transparently over the years and many have under declared their profits, thus robbing governments of the necessary tax income to fund disaster risk reduction activities across the vulnerable provinces. In Zimbabwe, government, realising the unscrupulous dealings of the private sector came up with the “Community Ownership Share Trusts” (COST) concept where through the Indigenisation Policy, companies were coerced to donate huge sums of money to empower the local communities where they operate. Such schemes have been fraught with a lot of corruption and lacked transparency and their effectiveness is yet to be measured. These were entities given to local chiefs to oversee but politicians have intervened much to the disempowerment of the local people.

The private sector in Africa, it would appear, mostly understand disasters only as they affect their operations (business continuity) and investments in this regard have gone towards insurance for their operations and funding of activities with companies that would reduce the impact of disasters. Thus a common practice has been the creation of Health and Safety departments to promote the viability of their workers to ensure maximised production levels. In many instances, they have been introduced with very little consideration on sustainable incomes for workers to reduce the disaster impacts on their part. It is also evident that engagement between gov-

ernment and the private sector on the issues lacks in many ways. It is only after a disaster that government will then appeal for emergency funding from the private sector.

### ***6.5.4 Promising Practices***

All is not lost when it comes to private sector involvement in Africa. In recent year some examples of promising practices can be identified.

#### **6.5.4.1 The Pan African Institute for Development in Cameroon**

The Pan African Institute for Development – West Africa (PAID – WA), is an international NGO with 50 years experience in providing support, research and consultancy services to several development areas including environmental protection, human resource development, disaster prevention and natural resource management, among others. PAID-WA has been providing technical directives and support to disaster risk reduction especially in the areas of climate change and biodiversity management. Such support has been achieved through working in collaboration with institutions such as World Wide Fund for Nature and GIZ. These initiatives have been realised especially in the area of needs assessment, advocacy, Green Business Plan development, strategic planning and organisational governance. In recognition to WWF’s philosophy that Poor environmental management is one of the root causes of disaster risk, PAID-WA has partnered with WWF in order to minimise risk to the environment and communities.

For instance, in 2014, PAID-WA in partnership with the World Wide Fund for Nature (WWF-CFP) enhanced the capacities of 25 WWF-partner Civil Society Organisations on organisational governance, strategic planning, monitoring and evaluation among others. This was intended to strengthen advocacy and other activities that seek to improve wildlife management and mitigate climate change and other natural disasters. Between 2013 and 2014, PAID-WA in Partnership with the World Wide Fund for Nature (WWF-CFP) enhanced the capacities of some 70 WWF-CFP supported Community Based Organisations in the South West and Littoral Regions of Cameroon on Green Business Development. This was intended to encourage a win-win situation between livelihoods of communities and protected area management and conservation. This activity also saw the creation of 6 cooperatives which are undertaking Green Business activities within protected area communities in the target area. Furthermore, as a service provider to the Programme for the Sustainable Management of Natural Resources for the South West Region (PSMNR-SWR) and the Ministry of Forestry and Wildlife under the Technical Supervision of the German Technical Cooperation (GIZ), PAID-WA supported the co-park management programme of the Mount Cameroon national park by assessing

possible livelihood activities that are compatible with national park conservation. This was followed by some advocacy on possible areas of synergy for concerted and sustainable park management activities. In addition, PAID-WA is working to promote public private partnership on food security, rural infrastructure, gender mainstreaming in natural resource management in collaboration with the Cameroon Development Corporation (CDC), RUDEC (Rural Development Centre), and Mukete Estate Ltd. PAID-WA is also advocating for a public private partnership to strengthen disaster risk reduction, through various media in the government, civil society, local NGOs, international community and multi-lateral stakeholders to implement concerted, decent and sustainable development practice in Africa. The Pan African Institute for Development-West Africa also envisages setting up a Regional Disaster Management Plan to assist national disaster risk reduction platforms to improve existing legislature governing disaster risk reduction.

#### **6.5.4.2 Ingwebu Breweries' Contract Framing and Community Resilience in Zimbabwe**

Ingwebu Breweries in Zimbabwe manufactures traditional beer and relies heavily on small grain producing farmers. Before the 'fast track land distribution programme' in 1999, the company relied heavily on commercial farmers for the supply of its raw material (sorghum grain). The agricultural disturbance in the 'lost decade' (2000–2008) meant Ingwebu Breweries had raw materials challenges due to reduced agricultural production and the ravages of climate variability and change, hence business continuity woes that resulted in the downsizing of the entity through retrenchments and reduced operations. Similar industries were equally affected and many closed down during the economic meltdown. In the past 5 years (2009–2014) Ingwebu Breweries has invested heavily in communal farming areas, and is contracting vulnerable farmers in dry prone regions in Matabeleland and the Midlands provinces for sorghum grain supply. The breweries needed to build a resilient supply chain to fortify itself against eminent prolonged drought and the uncertainty of the land reforms. The regions targeted fall under agro-ecological regions four and five (dry and hot areas) characterised by erratic rainfall and short crop growing season. Small grain production through "contract farming" arrangements entails the supply of inputs by the company, training and education and the provision of other relevant support structures. After the harvest the farmer retains 90 % of the produce and sells to the company what they retain. Thus, the company provides a ready market for the grain. Sorghum is considered unpalatable by many Zimbabweans; hence it was long abandoned for maize which needs more rainfall. If the farmer has money, they then can buy maize grain from where it can be sourced. The tendency has been the excellent prices for sorghum grain has forced some farmers to abandon maize and extend their sorghum hectare. Thus farmers' food security has improved in the last 3 years and some households have used the money to buy livestock (diversification in the face of climate change), they now can afford to send their children to school (risk transfer at its best). Other beer brewing industries like Delta

Corporation and Chibuku Breweries in Harare are fast considering venturing into contract farming, not only as an alternative way of sourcing raw materials, but an act of building community capacities for resilience in the face of impending droughts. Once the communities they serve are resilient, it surely means their market share remains viable and profitable, all are winners. Delta Cooperation has also adopted a children's wing at a hospital in Bulawayo, where they provide nutrition support. Such an initiative provides for speedy recovering from illnesses and boos the immunity of the under 5 year old children.

#### **6.5.4.3 Business Adopt a Municipality (BAAM) Project in South Africa**

One of the key features of the South African Disaster Management Act (South Africa 2003) is that it recognises that the function of disaster risk management cannot be undertaken by government alone. It requires co-operation and collaboration on the part of all spheres of government, civil society and the private sector. The private sector has an important role to play in managing disaster risk. Companies often create a risk situation within a specific area, and they should therefore also contribute to the mitigation of the risk by putting risk-reduction measures in place. Furthermore, private sector companies should be encouraged to participate in disaster-risk reduction projects as part of their overall Corporate Social Responsibility. The role of the insurance industry in disaster risk management activities in South Africa can also be significant and options for joint projects and collaboration should be explored. There is a need to establish and strengthen partnerships to reduce risk. One of the initiatives that have already proven to be successful is the Business Adopt a Municipality (BAAM) Project which supports identified municipalities in fire services and disaster risk management projects. Through this joint initiative and strategic engagement with the private sector, five municipalities in South Africa already received the benefit of the interventions to improve fire services and address risks in some of the most vulnerable communities. Apart from guidance and advice to the local structures throughout the process, the municipalities are now receiving fire equipment to strengthen their capacity and improve their response time to fires. Communities will also receive the benefit of better trained fire fighters. In addition, awareness and education programs will also build capacity in the community. Guidelines were also developed for municipalities to address fire, storm water and flood risks.

#### **6.5.4.4 Damco in Africa**

Pearson and Crabtree (2014b) reports on the involvement of Damco in Africa. In recognition of increasing global vulnerability to pandemics, WFP has been running a series of Pandemic Preparedness and Response Exercises (P<sub>2</sub>RX), in East, West and southern Africa. These exercises simulate the effects of a severe pandemic and develop a 'whole-of-society' approach in preparing for such an outbreak.

These preparedness exercises have significant benefits in terms of preparation for other hazards. Damco (part of the A.P. Moller Maersk Group and a specialist in integrated supply chain management) was one of four private sector organisations to participate in a recent SADC exercise (Pearson and Crabtree 2014b). Other participants included the Southern African Development Community (SADC); the National Disaster Management Organisations (NDMO) and government ministries of Lesotho, Madagascar, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe; Red Cross/Red Crescent National Societies and WFP. Through their engagement with private sector organisations such as Damco, participants in the P<sub>2</sub>RX explored cross-sector sharing of disaster management and business continuity planning methodologies and alignment of preparedness planning processes which had previously occurred in parallel.

#### **6.5.4.5 Econet Mobile Telecommunications Transforms Rural Economies in Zimbabwe**

Econet Mobile Telecommunications in Zimbabwe established two welfare organisations (NGOs): The Capernaum Trust and the Joshua Mqabuko Nkomo Foundation. These two entities are funded directly by Econet, and are Econet's strategy to reduce the impact of disasters, build resilience across communities, and tackle poverty issues in Zimbabwe. The Joshua Mqabuko Nkomo Foundation funds university education for students from poor households in rural areas but with a potential for future leadership. The Capernaum Trust funds primary and secondary education for children from poor households. The long term vision is that beneficiaries will come back home and contribute meaningfully to the development of their communities and reduce vulnerabilities currently bedevilling the nation. During school vacations, students are brought together to interact, build networks and collaborations and are also taught leadership skills and how they can bring positive change in their respective communities. Econet also engage in agricultural promotion drives to end hunger through improving food security amongst the poor farmers across the country. Farmers are taught improved farming skills in the wake of climate variability through the use of mobile phones. They need not travel for training, but training comes to their doorsteps, a very innovative disaster risk reduction initiative. In 2011 Econet introduced crop and livestock insurance. Under their scheme, farmers receive coverage for as little as eight US cents per day, which is deducted from their prepaid phone account during the farming season. If there is no rain, registered farmers are given up to US\$100 for every 10 kg of seed they planted. Mobile cash transfers by the same company have seen poor parents and family members receive money (remittances) from their sons and daughters across the globe and other far places within the country. Initially it was difficult to send cash to places where there are no banks and such an initiative has greatly benefitted many vulnerable communities. This is a future investment for reduced poverty and increased resilience.

#### **6.5.4.6 Hunger Safety Net Programme in Northern Kenya**

The Hunger Safety Net Programme (HSNP) provides cash to food insecure households in northern Kenya in an effort to enhance their resilience to shocks and stresses (Pearson and Crabtree 2014b). With the assistance of Equity Bank, an innovative agency banking model is used to deliver payments to recipients through the use of biometric smart cards. This initiative provides a solution for Kenya's under-banked and un-banked sector. This is undertaken mostly to address the need for cash transfers in humanitarian crisis situations. The HSNP provides small, regular social assistance transfers to the very poor of northern Kenya. These communities face extreme poor infrastructure, low level of education and poorly developed cash economy (Pearson and Crabtree 2014b). As a commercial bank, Equity is well placed to address the identified need. Currently, it has over seven million clients, constituting over 57 % of all bank accounts in Kenya. It is also the largest bank in the region in terms of customer base, operating in Rwanda, South Sudan, Tanzania and Uganda. Equity has been partnering with a number of international organisations and NGOs to deliver payments through their network of agents. As a hunger safety net, the HSNP proved fairly effective at protecting beneficiary households in northern Kenya against the worst effects of the 2011 Horn of Africa drought (Pearson and Crabtree 2014b).

#### **6.5.4.7 Tetrad Insurance Sees Potential in Vulnerable Rural Communities in Zimbabwe**

Insurance has become the most relevant platform for risk transfer for poor farmers in drought prone agro-ecological regions of Zimbabwe. Previously, insurance has benefited the urban elite and for lack of knowledge and possible poor marketing strategies, the rural communities have been regarded as not bankable, hence no banks or insurance companies ever ventured to attract the potential communal market. Given the ravages of climate variability (the protracted droughts) that have destroyed both crop and rangeland, poor communal farmers are slowly buying into risk transfer through insurance, especially for their livestock. It has now become mandatory for farmers to insure their livestock in Zimbabwe, but enforcement on the part of relevant state organs is not occurring. Funding for the livestock sector is a challenge, given the economic meltdown in the past 10 years. There is no designated government programme on livestock development except for short term livestock fodder relief aid with funding from FAO and other agencies during pasture thin periods. The bulk of the 5.1 million herds of cattle in Zimbabwe is owned by communal farmers with very little knowledge and appreciation for risk transfer (African Farm News Review 2014). The 2009–2010 farming season was a disaster in terms of livestock deaths, with most communal farmers losing three quarters of their herd due to grazing and water challenges. Cattle farming is dependent on rain-fed pastures lands, but poor rains in 2010 dried up grasslands and water sources. Matabeleland South alone lost over 9,000 heads of cattle and farmers become to



appreciate the benefits of insurance once companies moved in after the dollarization of the economy. Tetrad Insurance Company moved into drier provinces to insure livestock against losses due to fire, droughts, lightning, diseases, accidents, explosion and electrocution. Premiums range between \$50 to \$500 per month, depending on the number of livestock, and for a good number of serious farmers this has become beneficial. Some of the farmers have made claims and were refunded, and this has motivated many farmers to seek insurance cover for their livestock. Some have moved to insure their crops as well. Serious farmers cannot ignore insurance anymore, because insurance creates a sense of security in the face of multiple hazard challenges.

## **6.6 Recommendations for Future Involvement of the Private Sector in Disaster Risk Reduction in Africa**

In the light of the above it is clear that business in Africa still has a long way to go to truly engage in disaster risk reduction activities. Some recommendation in this regard can be made. Constructive engagement between government and the private sector, with a view of crafting a policy for active involvement of the private sector in disaster risk reduction interventions should be pursued. The private sector is well aware that one cannot assume “business as usual”. The disaster risk profile as well as the effect of climate change necessitates the private sector to reconsider their role in the prevention and mitigation of disasters. Similarly, disaster risk management centre/units at national government level must approach the private sector for better collaboration and joint prioritisation of needs. The private sector furthermore has a significant role to play in the creation of awareness which could be linked to their corporate social responsibility programmes. As is the case in South Africa, companies can be encouraged to work closer with their municipalities and communities in transferring skills and knowledge at a local level. Communication still remains one of the key factors to economic development. The telecommunication sector in Africa is one of the richest and fastest growing. Government and companies alike should engage in fruitful discussion to pursue mutually beneficial programmes in this area aimed at poverty reduction and addressing disaster risks. The private sector should embrace the notion of creating disaster risk management departments in their entities, as is the case in many mines and utilities companies in South Africa. Such departments should be well funded so that they produce evidence based operations, thus promoting disaster risk reduction within the entity and the wider community (though their corporate social responsibility projects). These recommendations are aligned with those made at the 4th Africa Regional Platform on Disaster Risk Reduction, convened by UNISDR, in February 2013 in Arusha, Tanzania. The following recommendations were made with regards to improving private sector engagement in disaster risk reduction: (a) Promote public-private partnerships for disaster risk reduction to analyse the root causes of continued

non-resilient activity and develop frameworks to change these causes; (b) Leverage sectoral private sector expertise and strengths to advance disaster risk reduction and mitigation activities, including enhanced resilience and effective response; (c) Foster a collaborative exchange and dissemination of data: Share information on assessment, monitoring, prediction, forecasting and early warning purposes and action between the public and private sectors; (d) Support national or local risk assessments and capacity-building, and demonstrate opportunities where resilience building is a sound economic strategy towards corporate sustainability; and (e) Develop and implement internal codes of conduct and procedures, support the development of national and local laws, regulations, and policies when possible and needed (United Nations International Strategy for Disaster Reduction 2013).

## 6.7 Conclusion

Private sector involvement in disaster risk reduction in Africa occurs, but mostly after the occurrence of a disaster, and then only because of the effects on private companies, or due to some benefit they can derive from it. However, the private sector in Africa is very diverse and many entry points exist which could allow for better and integrated disaster risk reduction activities. In this instance, as Twigg (2001) emphasise, much value adding to the corporate social responsibility of companies can be done through a disaster risk reduction focus. It remains that philanthropy is still the main form of disaster risk reduction engagements for companies through the provision of financial or in-kind resources. This being said, most of these assistance is still aimed at disaster response and recovery and not disaster risk reduction exclusively.

This chapter aimed to provide a brief introduction to the involvement of the private sector in disaster risk reduction in Africa. It is evident that such involvement is severely limited and in most cases does not address pure disaster risk reduction activities. Business continuity management still remains the most relevant entry point into disaster risk reduction, but then only as an internally focussed business process. However, the private sector, as a growing entity in Africa stand to lose the most on the current disaster risk trajectory of Africa. Some convincing case studies has shown that through innovation the private sector can made a meaningful contribution to disaster risk reduction and in doing so serve their own interests as well.

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# Chapter 7

## Elements to Enhance Private Sector Engagement in Disaster Risk Reduction in Central America

Tsuneki Hori

**Abstract** Private sector plays an important role in disaster risk reduction (DRR) in Central America. The countries have already incorporated private sector DRR promotion in their respective national policy instruments. Despite this promotion by the national policy framework, progress in the private sector's DRR engagement has seen limited success in the region. The aim of this article is to discuss the elements that may enhance private sector DRR engagement. Interviews were conducted in Costa Rica, focused on two important private sectors of the country: agriculture and tourism. The study found that private entities in Costa Rica have recently started implementing some DRR related activities. Analyzing the reason for these recent activities in the country, this study finally found that the majority of the interviewees were more concerned about the impacts of climate change rather than disaster risk. Finally, this study found three elements that may enhance the private sector's engagement in DRR.

**Keywords** Disaster risk reduction • Private sector • Costa Rica • Agriculture • Tourism

### 7.1 Introduction

Central American countries<sup>1</sup> are exposed to a variety of natural hazards such as earthquake, floods and landslides (Lavell 1993, 2005; Serrano 2007; Hori and Shaw 2012), and the private sector plays an important role in disaster risk reduction (DRR) in these countries. The sector's estimated probable maximum loss (PML) in these

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<sup>1</sup>This chapter considers Central America as a group of six countries: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama, on the basis of their geographical, cultural, historical, and geopolitical backgrounds.

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countries – including direct industrial infrastructure losses, loss of business, and damage or destruction to housing, private schools and hospitals – is in average five times larger than that of the public sector (IDB 2010a, b, c, d, e, f). The high exposure of the private sector to hazardous risks significantly affects the countries' productivity. For example, Costa Rica has lost more than US\$128 million in the agricultural sector as a result of disasters from 2005 to 2011 (MIDEPLAN 2013). Furthermore, when disasters occur, the countries' recent global-linked businesses model, including agricultural exports and income from the tourism sector, could even have an effect on the world economy (Comfort et al. 1999; Kunreuther 2001). Therefore, focusing on approaches to promote private sector's engagement in DRR is important not only to reduce human losses but also to maintain macroeconomic stability.

The importance of the private sector's engagement in DRR is already known worldwide; the Hyogo Framework for Action 2005–2015 (HFA 2005–2015), for example, has already incorporated this subject in its understandings (UNISDR 2005). Additionally, Central American countries have already incorporated DRR in their respective national policy instruments. For example, the National Emergency and Risk Prevention Act (*Ley nacional de emergencias y prevencion del riesgo, Ley No. 8488*) of Costa Rica, approved in 2006, promotes active private sector participation in the national disaster risk management system.

Despite this promotion by the national policy framework, progress in the private sector's DRR engagement has had limited success (UNISDR 2009a; CEPREDENAC 2011). Similar trends are observed in other regions, and overall, there has been little evidence of successful and effective private sector DRR engagement because private sector activities are primarily being focused on post disaster operations such as emergency assistance, and not DRR as an ex-ante context (Roeth 2009).

The aim of this chapter is to discuss the elements that may enhance private sector DRR engagement in Central America. This chapter is divided into five main sections. The next section reviews the national DRR legal framework in Central American countries and clarifies the role of the private sector in the national DRR systems. Section 7.3 reviews the study's methodology and summarizes the results of the case study in Costa Rica. Section 7.4 discusses possible elements to enhance private sector DRR engagement. This section also discusses the potential role of the public sector in supporting the private sector's further engagement in DRR. The final section summarizes the results and discusses the implications of this study. The basic concept of DRR in this article is as outlined in the UNISDR (2009b); the concept and practice of reducing disaster risk through systematic efforts to analyze and manage the causal factors of disasters, including a reduction in hazard exposure, a lessened vulnerability of people and property to hazards, the wise management of land and environment, and improved preparedness for adverse events.

## 7.2 Framework of the Private Sector's DRR Engagement

### 7.2.1 *General Framework in Central American Countries*

Actions related to the private sector's engagement in DRR vary in general. These include risk mitigation measures, such as engineering and construction works (Kunreuther 2001; Roeth 2009), vulnerability reduction of people and property to hazards, such as ensuring farmers' preparedness against floods through community education and early warning of possible disasters (Roeth 2009; UNISDR 2008), and the provision of economic safety nets including insurance schemes (Linnerooth-Bayer and Mechler 2007). Lal et al. (2012) categorized these actions into three approaches; (i) corporate social responsibility (CSR); (ii) public–private partnerships (PPP); and (iii) businesses model approaches. The DRR policy framework of the Central American countries prioritizes the PPP<sup>2</sup> to promote the private sector's engagement in DRR (Table 7.1). For example, the Act 8488 of Costa Rica states that “public entities organize, coordinate and harmonize organs for disaster risk reduction [...] ensuring the participation of entire private sector,” which highlights the importance of the public and private entity coordination to enhance DRR activities. Therefore, this chapter discusses the elements necessary to enhance the private sector's engagement in DRR, and the potential areas in the PPP framework that could support further private sector engagement in DRR.

### 7.2.2 *Approach to Disaster Risk Reduction in the Region*

Independent from the public, private, or academic sectors, DRR should lay greater emphasis on allocating resources for activities such as (i) risk identification (studies for assessing the risk), (ii) risk mitigation and prevention including structural and non-structural works, (iii) disaster preparedness including installing and operating early warning systems, and (iv) financial protection (IDB 2008; UNISDR 2008). As outlined in the IDB (2008), the definitions of these four components are as follows:

**Risk Identification** This component includes the need to increase the understanding of individual perceptions and social and institutional representations related to natural hazard impacts. Methodologies include the evaluation of hazards, estimation of the different aspects of vulnerability when faced with hazardous events, and estimations regarding the possible consequences resulting from hazards.

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<sup>2</sup>This article defines PPP by applying the UNISDR (2008) definition; a public organizational or institutional environment that should encourage the private sector to foster a DRR culture.



**Table 7.1** National DRM policy framework for Central American countries and the private sector engagement context

Country	Title of the act – approved year	General objective	Context of the private sector's involvement in national DRM
Costa Rica	National Emergency and Risk Prevention Act (No. 8488) – 2006	To reduce the cause of loss of life and social, economic, and environmental resources induced by natural and anthropogenic risk	The national system of disaster risk management to organize, coordinate and harmonize all state institutions ensuring the participation of entire private sector and civil society organizations
Guatemala	Disaster Risk Reduction Policy (Act 03-2011)	To increase resilience and to reduce the vulnerability of populations, sectorial and territories production processes in order to improve the quality of life and the safe development of the country	To establish a high level national coordinator for disaster reduction that is composed by the public sector, private sector and autonomous entities
Honduras	National Disaster Risk Management Act – 2010	To develop the country's capacity to prepare for, respond to and recover damages caused by natural phenomena or by human activities	The National Risk Management System (SINAGER) shall be regulated in an inter-institutional framework that include public, private and all sectors of Honduran society
Nicaragua	National Policy for Integrated Disaster Risk Management of the Republic of Nicaragua 2010–2015	To reduce disaster risk, through building a culture of prevention in the different social actors, considering equity gender and multiculturalism	To encourage the incorporation of risk management into development plans, public and private investment and the implementation of mitigation and capacity building of the nation's response to disasters
Panama	National Policy on Integrated Disaster Risk Management (Executive Decree No. 1101, 2010)	To provide guiding to the institutions in the country a framework for developing integrated DRM to reducing vulnerability and promoting prevention, mitigation and effective response to disasters	The National Civil Protection System (SINAPROC), coordinated by the Directorate General of the same, must involve both public and private sectors
El Salvador	Civil Protection, Disaster Prevention and Mitigation Act (Act No. 777, 2005)	To prevent, mitigate and respond effectively natural and manmade disasters	The national system of civil protection, prevention and mitigation, participating both public and private agencies, are responsible for formulating and implementing prevention and mitigation of disaster risk

**Risk Mitigation and Prevention** This component aims to increase the execution of structural and non-structural prevention or mitigation measures. These actions aim to avoid or diminish the economic, social, and environmental impact of natural hazards. This component emphasizes the importance of planning and execution of preventive measures through corrective and prospective interventions in existing framework for mitigating potential future vulnerabilities.

**Disaster Preparedness** This component outlines the appropriate response to emergencies and post-disaster recovery through the preparation of national, local, and community level action plans. This component includes the following: (i) emergency preparedness (planning, equipment installation and testing of early warning systems, and simulations); (ii) community training; and (iii) planning for post disaster rehabilitation and reconstruction.

**Financial Protection** This component focuses on the adequate allocation and use of financial resources for the management and implementation of appropriate actions for the minimization and transfer of disaster-related economic losses.

On the basis of these definitions, the following section assesses the actual progress made in terms of the private sector's engagement in DRR activities in each of the aforementioned components and identifies the elements needed for their further engagement.

## 7.3 Case Study

### 7.3.1 Study Country

This study conducts a case study in Costa Rica, where private entities have the largest exports of all six Central American countries. In the last decade, Costa Rican exports have contributed 36–40 % to the total export of all six Central American countries (SIECA 2013). The country's Gross Domestic Product (GDP) in 2013 was US\$61.43 billion, the second largest in the region next to Guatemala. Because of its geographical location and geological structure, 80.1 % of the nation's GDP is exposed to multiple natural hazards (World Bank 2005).

Costa Rica's public authority for DRR is the National Emergency Committee (CNE). Act 8488 nominates this institution as the national disaster risk management system coordinator to promote the participation of the public, the private sector, academic entities, and civil societies. The CNE updates the National Plan for Disaster Risk Management (Plan Nacional para la Gestión del Riesgo, or PNGR) every 5 years. The current PNGR was approved in late 2009 (PNGR 2010–2015) and was ratified in 2010 to be in force until 2015. The objective of this PNGR 2010–2015 is to reduce the possible causes for the loss of life and social, economic, and environmental resources induced by natural and anthropogenic hazards. The PNGR 2010–2015 includes more than 40 indicators as goals to be accomplished by 2015, 10 of which are related to the private sector's engagement in DRR. These

indicators include: 100 % of the private entities will have protocols and procedures in place for emergency intervention; the private sector will be responsible for preliminary determination of sectorial contingent liabilities; and the private sector will have in place multi-disciplinary coordination mechanisms to assess damage and loss in disasters. However, it appears from PNGR 2010–2015 that even though this national plan considers the importance of the role of the private sector, it focuses more on disaster preparedness than risk identification, risk mitigation, and prevention or the financial protection of the aforementioned DRR components.

### 7.3.2 Interviews

Interviews were conducted focused on two private sectors in Costa Rica: agriculture and tourism. These two sectors have a large proportion of the country's economy and provide the highest employment. Both two sectors are highly sensitive to natural hazardous events as outlined below.

**Agriculture** Approximately 53 % of the nation's land is used for agriculture, with the main products being coffee, bananas, sugar, and pineapples (World Bank 2009). In recent years, agricultural production has made up over 35 % of all exports from Costa Rica and employed 15 % of the available labor force (COMEX 2014). However, loss of agricultural products due to floods, hurricanes and intense rain can be enormous. As a consequence, the World Bank (2005) ranks the country second in the world for multiple hazard exposure.

**Tourism** Around 1.6 million foreign tourists visit every year, contributing 6.5–7 % of the country's GDP (La Nación 2006). Costa Rica is internationally recognized as a country with a thriving ecotourism market (Honey 2008). Ecotourism provides job opportunities to individuals and small businesses, even in the local areas, and thus contributes significantly to their economies. However, tourism activity is vulnerable to even the smallest natural hazard. For example, Poas volcano national park, one of the most popular sites for foreign tourists, was closed from March to April 2006 because of a minor volcanic eruption leading to a loss of US\$8,500/day. Although this amount does not appear large, the impact on the local small businesses was indeed significant (Aguirre 2008).

Interviews were conducted with the representative associations and institutions related to agriculture and tourism businesses (Table 7.2). The interview questions were developed in an open-end format with a specific rationale to guide the respondent to answer in accordance with the DRR framework shown in the previous section: (i) risk identification; (ii) risk mitigation and prevention; (iii) disaster preparedness; and (iv) financial protection. Each of these four components address the following questions: (a) experience of the implementation of any related activities (questions include what is to be implemented, why and how to finance); (b) expectation of activities that need to be implemented in future (questions include whether and what actions are necessary and why); and (c) the current status of

**Table 7.2** Characteristics of the interview entities

Name	Mission	Association members	Characteristic
CORBANA (National Banana Corporation)	Contribute to the banana development by strengthening the participation of local companies in the production and marketing	Dole, Chiquita Brands, Del Monte, Association of Independent Banana Producers	Non-state public agency
ICAFFE (Coffee Institute of Costa Rica)	To promote the national coffee growing activity	Small and medium coffee producers	Public, non-governmental institution
LAICA (Agricultural Industrial League of Sugarcane)	To organize, promote, protect and defend the interests of the country's sugarcane farmers and sugar producers	Domestic companies and association of farmers	Non-state Corporation
PINDECO (The Pineapple Development Corporation)	To promote the development of better value of the productions	Del Monte, etc.	Public company
CANAECO (National Chamber of Ecotourism)	To promote sustainable tourism activities includes the protection of the natural and cultural heritage	Private companies including lodging, travel agencies and transportations	Non-profit private organization
CCH (Costa Rican Chamber of Hotels)	Provide to hotel developers appropriate solutions to address needs of the market and make the sector more competitive	More than 300 companies including hotels, apartment hotels and small size lodgings	Non-profit private organization

public entity coordination (questions include how is the current progress, is coordination needed and why). The interviews were conducted between June 2 and 13, 2014 using conference calls. Each interview took between 1.5 and 2.5 h.

### 7.3.3 Study Results

**Risk Identification** Two risk identification actions were found from the interviews; the elaboration of flood risk maps for the banana farmlands that are located in flood prone lowland area especially in the Province of Limon (Box 7.1), and the installation of precipitation monitoring stations in the coffee farmlands especially in the central area of the country. The former flood risk maps for the banana farmlands were developed, or are being developed with financial support from the public sector. The Ministry of Agriculture and Livestock (Ministerio de Agricultura y Ganadería, MAG) approved Law No. 37313-MAG to establish a thematic fund in 2012 to prevent hazardous risks and to implement risk reduction or mitigation works mainly for banana producers. The initial fund was nearly US\$6 million, which can be used for both disaster risk assessments and risk mitigation and prevention pilot works. The banana production promotion entity, CORBANA, is the coordinator of this fund.

#### **Box 7.1 Program for Flood Risk Reduction in the Municipality of Rio Matina**

Most of the banana farmlands in Costa Rica are located on the east coast or Caribbean region. The region is hurricane-prone and the area has often flooded during hurricanes. The province of Limon, especially the municipality (canton, in term of Costa Rica) of Rio Matina is one of the most flood prone areas and indeed, the area has been affected by 195 events from 1970 to 2013 (DesInventar 2013). Consequently, these events affect banana producers and their production. In order to reduce the flood risk, CORBANA formulated a program for flood risk reduction in this area in early 2014. This program is divided in two phases: (i) the flood risk assessment, including topographic data collection, hydraulic analysis and flood risk map elaboration; and (ii) mitigation works that may include flood control dikes construction as part of the solution. The first phase of the program started in mid-2014 and the second phase is planned to be implemented in the following years. Financial source of this program is provided from the thematic fund. The CNE and other public entities participate in this program as technical supervisors. Their activities include a review of food risk maps and the design of flood dike constructions.

An interesting private–private partnership initiative was additionally found. Flood risk maps originally developed for the banana farmlands are being shared with sugarcane producers. The geographical area for these two production types is on the east coast or Caribbean region of the country. This private–private partnership was established through an initiative of the private entities, so is independent of national laws or the national disaster risk reduction system presided over by the CNE.

Despite these unique developments, in general, the majority of interviewees thought that risk identification activities were not a priority for the private entities. The reasons for their passivity were given as follows: (i) in most of private institutions, there is no person in charge of these activities; (ii) there are few experiences documented in the private sector because its engagement in DRR has only been relevant in recent years; and (iii) there are insufficient budget allocations for risk identification activities.

The interviewees, however, insisted that there was some need for action. For example, CORBANA pointed out that coordination with the public entities in Panama, a neighborhood country, was needed to develop a comprehensive risk assessment plan because one of the major banana producing floodplains is along with the Sixaola river that crosses the border between the two countries. The sugarcane production promotion entity, LAICA, said that they did not have the experience or knowledge to be able to estimate long-term climate change scenarios nor its negative influence on the sugar production. The LAICA additionally said that there needs to be more collaboration with the public entities, especially with the Ministry of Natural Environment, Energy and Mares (Ministerio de Ambiente, Energía y Mares, MINAE) and the National Meteorological Institute (Instituto Meteorológico Nacional, IMN), both of which have relevant knowledge regarding climate change scenarios.

**Risk Mitigation and Prevention** The majority of the interviewees insisted that private entities were not well engaged in structural or non-structural DRR implementation measures; in turn, they thought such measures should be handled by public authorities. Despite these passive opinions, two actions were found to be taken by the private entities. The first is the construction works that have recently commenced in the banana farmlands. These works include the construction of a river dike and bridges, so that floods would not affect the farmers. These construction works were funded mainly by private companies and in some cases realized with the public financial resources; the private banana production companies proposed the construction of small dikes and new bridges, and then, CORBANA coordinated the project formulation and implementation. The second action is a unique secondary forest installation in the coffee farmlands. According to the interviewee from the coffee production promotion entity, ICAFE, over 80 % of the coffee plantation fields in the country are covered with this secondary forest, which is a system to shade the coffee trees to obtain better quality coffee production. Further, this system is a well-known effective method for controlling erosion and thus reducing landslide risks.

The interviewee from CORBANA said that besides their recent experiences with the works to mitigate river-basin floods, they had not yet started mitigation activities in the coastal zone farmlands. Even though farmers in this area may suffer from

additional hazards caused by climate change, such as tidal waves, storm surges, and coastal floods from severe hurricanes, the CORBANA interviewee felt that they had a lack of long term climate change impact knowledge and so felt they did not have enough experience.

**Disaster Preparedness** Two actions were found to be implemented in this category. The first was an action carried out by LAICA, which publishes newsletters that include precipitation forecasts for the sugarcane farmlands for the following 3 months, using resource data extracted from the public repository provided by the IMN. The principal objective of these newsletters is to provide information to farmers to allow for the effective planning of the sugarcane production. However, the information is also useful to warn farmers about possible meteorological hazards, such as droughts or hurricanes, and therefore, the LAICA proposed that these newsletters could be useful for disaster preparedness.

Another action was implemented in the coffee production sector. The ICAFE said that farmers are willing to cooperate with national authorities when dealing with post disaster rehabilitation activities. For example, when tropical storm Alma hit the country in 2008, from which the country lost nearly US\$80 million of public infrastructure (EM-DAT 2014), the coffee producers in many local areas participated in coffee plantation facilities rehabilitation activities, such as the removal of rubble and the temporary repair of the road network. The interviewee thought this type of collaboration corresponded with the PNGR 2010–2015 framework, especially in its goal for the establishment of multi-institutional coordination mechanisms in case of disasters. However, there is no regular budget item allocated for such post disaster rehabilitation works by the ICAFE.

Some additional challenges were found in this category. The CORBANA interviewee commented that there was no coordination mechanism between the Ministry of Finance, the Ministry of Public Works, the CNE and the private agricultural producers for the implementation of effective post disaster rehabilitation works when large infrastructure damage occurred. Because of the lack of this mechanism, rehabilitation activities were sometimes delayed, affecting agricultural productivity. The interviewees from LAICA and the ecotourism promotion entity, CANEACO, both said that even though the PNGR 2010–2015 goals included the installation of a national early warning system to observe climate change impacts, this goal seems far from being met by 2015.

**Financial Protection** There were no actions found in this category from the interviews. The majority of the interviewees recognized the existence of the various insurance policy instruments in the market, such as weather derivative or earthquake insurance policies, but they had not made any concrete decisions to promote these financial instruments to private companies or farmers. The reason for this passive action was explained by the LAICA interviewee in that insurance policies are extremely expensive in Costa Rica because of the lack of robust probabilistic disaster risk assessment. Additionally, the physical strength of private assets against natural hazards have not been well assessed, so insurance companies do not correctly estimate the probabilistic disaster risk. However, some private companies, especially international banana and pineapple producers, already have the risk transfer insurance policies.

### ***7.3.4 Summary of the Study Results***

This study found that only a small number of the private sector's DRR activities have been realized in Costa Rica. This result was especially found in the tourism sector where no actions have been developed in any one of the four necessary DRR components. Two tourism sector entities involved in this study thought that the principal responsibility for DRR should be the national authority and thus, this area was not a priority for the sector. Furthermore, the majority of the agricultural sector institutions and all the interviewed tourism entities responded that they had no person responsible for DRR.

However, some recent and interesting activities were uncovered through the interviews. These activities included the development of a banana farmland flood risk map, the construction of dikes and bridges for flood protection in the banana farmlands, the installation of shade forests to protect coffee farmlands from landslide risk, and the publication of newsletters to raise awareness of hazardous risks for sugarcane producers. Additionally, coffee producers were found to have participated in post disaster rehabilitation activities after the 2008 hurricane. A private-private partnership to share flood risk information between banana and sugarcane producers was realized on their own initiative without support from the public sector. Apart from these actions, overall, both the agricultural and tourism sectors expressed anxiety about climate change's invisible but potential long-term effects and its negative impacts on their respective productivity.

Some suggestions for further DRR engagement were raised in the interviews. The CORBANA interviewee commented that coordination with neighboring countries is important to develop a comprehensive flood risk assessment when the floodplains are located on a river basin that crosses a border. This interviewee additionally raised the need to establish a coordination mechanism between the public and private sectors for rapid post disaster recovery.

This study did not find any private sector actions related to financial protection, such as the promotion of insurance policies, even though research reports that financial protection is considered an effective incentive to encourage private sector investment in DRR measures (Kunreuther 2001; Linnerooth-Bayer and Mechler 2007; Lal et al. 2012). The reason for this seems to be a lack of robust probabilistic disaster risk assessments and the lack of an adequate physical strength assessment for private assets.

## **7.4 Discussion**

This study observed only a small number of activities related to the private sector's engagement in DRR. This passive progress is similar with the situation in other developing countries (Roeth 2009). The reasons for this situation in developing countries include (i) traditional inadequate coordination between public and private entities (Linnerooth-Bayer and Mechler 2007); (ii) public entity excessive reliance



on assistance from the international community, so they don't look for opportunities with private entities (Comfort et al. 1999); and (iii) private entity lack of interest because of short term horizons and an aversion to up-front costs (Kunreuther 2001).

It was also found that private entities in Costa Rica have recently started implementing some important DRR related activities. These activities include flood risk map development, the construction of dikes and bridges, shade-forest installations and newsletter publications. Analyzing the reason for these recent activities, therefore, could assist in meeting this study's objective, which is to identify those elements needed to enhance private sector DRR activity. This section discusses three possible elements.

The first element is related to the incorporation of DRR into daily productive activities. The principal mission of private entities is to supply products or services to customers to satisfy demand. Disaster risk seems to be a hidden, unseen or immaterial aspect for the accomplishment of this mission, so disaster risk, before materializing as a disaster, is unseen (Hori and Shaw 2012). This may be the reason why DRR is often ignored, or not considered a high priority for the private sectors productive daily activities. Therefore, the result of this study, from which only a few DRR engagements have been uncovered, is understandable. However, DRR actions can guarantee stable productive daily activities when hazardous events occur. In fact, this study found two interesting developments that have successfully integrated DRR. One is the shade-forest installation in the coffee farmlands that was originally developed for better agricultural productivity, and additionally reduces landslide risk. The other is the newsletter that includes precipitation forecasts for the following months, which is distributed to sugarcane producers to allow for effective production planning, and can also warn farmers of possible hazardous events. These two examples demonstrate that the incorporation of DRR in sustainable production planning and activities does not always require specific action, high technology or expensive measures, but can be done as part of the framework of daily production activities.

Sometimes, individuals, families or even private entities do not always recognize their engagement in DRR actions, and even unconsciously implement such actions (Hori and Shaw 2013). To bridge this gap, therefore, public entities need to provide advice to the private entities to ensure the sharing of daily, non-specific, non-high technology and inexpensive DRR measures. The two activities identified in this study, the shade-forest installation and the newsletters, can be shared with other private entities to encourage similar innovations. List of easy-to-do but effective DRR measures can be a useful input for private entities; national authorities or international organizations should provide this list to private entities including estimated cost, expected impact and empirical experience of each measure.

The second element is related to resource mobilization. The study found some recent activities related to risk identification studies that had been developed by the fund established by MAG. This fund is additionally eligible for the mitigation activities included the costly construction of river dikes. Research reports that risk mitigation works are cost-effective from a macroeconomic perspective; for every dollar invested, between two and four dollars are returned in terms of avoided or reduced

disaster impacts (Mechler 2005; Moench et al. 2007). Therefore, the fund established by MAG is an appropriate investment arm, not only to protect farmers from floods but also for sustainable macroeconomic administrations.

This thematic fund is proposing further long-term developments for private sector DRR engagement. The first long-term development relates to institutional knowledge enhancement, whereby CORBANA have established a DRR office to take the responsibility for the use of the fund's resources. Further, the institution has developed technical solutions for the effective design and implementation of mitigation works. CORBANA has realized that DRR is a priority for long-term effective production planning. The consequence arising from the establishment of the fund, the assignment of institutional responsibility, the current DRR experiences and finally, the promotion of incorporating DRR into long-term production planning, all of which could be important to encourage increased private sector DRR engagement. The second long-term development relates to the private-private partnership initiative between the banana and sugar production entities, in which they share flood risk maps that were originally developed for banana producers. This private-private partnership was initiated independently without input from national laws or norms. The consequences arising from the establishment of the fund, the elaboration of technical products (the flood risk maps), and the generation of private-private partnerships can encourage further activities to spread disaster risk knowledge. In sum, these two examples demonstrate that the thematic fund is useful for not only implementing mitigation works but also for the development of further long-term DRR activities, such as institutional development, long-term effective development planning, and private-private collaborations.

Even though there are positive impacts from the establishment of the thematic fund, the idea of this fund has not been commonly applied in other agricultural sectors or the tourism sector. As discussed earlier, risk mitigation works are effective from a macroeconomic perspective; however, this may not be commonly known both by the public and private entities. Unless knowledge about these initiatives is more widely disseminated, these entities will remain unwilling to establish DRR funds until they are clearly aware of the cost-benefit of these investments (Kunreuther 2001; Lal et al. 2012). Therefore, a cost-benefit analysis is important to bridge this gap. The federal government of Mexico, including the Secretariat of Finance and Public Credit and the Civil Protection National System developed an easy methodology for the cost-benefit analysis of flood risk mitigation measures (UNISDR 2014); this methodology may be useful for neighboring countries. The public entities, especially academic or technical entities could provide technical assistance to ensure this analysis.

The thematic funding amount does not seem to be important. The thematic fund approved by MAG was allocated US\$6 million for use only in the banana production sector and indeed, this is just a small seed fund. There are other small seed funds that could be used to efficiently leverage mitigation works. For example, the Inter-American Development Bank (IDB) established a US\$9 million disaster prevention fund in 2007 that is available for all its 26 member countries. The fund can be used to conduct risk assessment studies, and could be used to leverage the

implementation of mitigation works which mostly use other financial resources, such as loans. In sum, the public sector should not always need to establish a large fund but could establish small seed funding to encourage the private entities' initial but important engagement in DRR.

The third element necessary to enhance private sector DRR activities is related to the approaches needed for climate change adaptation. This study found that the majority of the interviewees were more concerned about the impacts of climate change rather than disaster risk. They especially showed concern about the economic threats of climate change's long-term negative impact on farm production. CORBANA pointed out that coastal zone disaster risk management is important because climate change may result in additional effects from tidal waves, storm surges or severe hurricanes. Moreover, the two tourism sector entities that showed low or no interest in disaster risk reduction demonstrated their concerns about long-term climate change impacts. This is interesting as the tourism sector's concern included the effects on their businesses from the increasing number of floods or hurricanes, which is, in fact, the same context as disaster risk. However, they tended to look at this issue from a climate change rather than a DRR perspective.

DRR and climate change adaptation are complementary policies. Research has stated that the climate change adaptation approach does provide a chance to revisit some of the unresolved or unaccomplished DRR measures (Subbiah 2002; Shaw 2006). Indeed, these two policy initiatives are addressed under a higher sustainable development policy umbrella meaning that these two policy initiatives, DRR and the climate change adaptation, are aimed at the same goal. CNE, therefore, should deal with DRR under a two policy umbrella, one for DRR and the other for climate change adaptation measures, and invite the private sector into the national disaster risk management system. This will allow public sector stakeholders to understand the characteristics of DRR and climate change adaptation and respond accordingly to the private sector's demand to develop sustainable production activities.

Some interviewees raised the need to estimate long-term climate change scenarios and the possible negative influences. Even though they are concerned about long-term climate change impacts, they do not have the experience to conduct impact assessments. In turn, public entities including MINAE and IMN should have the relevant knowledge to determine these estimations because they have participated in the international meetings, including the Intergovernmental Panel on Climate Change (IPCC). The support from these public institutions, therefore, can be one of the potential areas for the promotion of private sector DRR engagement.

The three elements that may enhance private sector's DRR engagement, examples of approaches to these elements, and possible support from the public sector are summarized in Fig. 7.1.

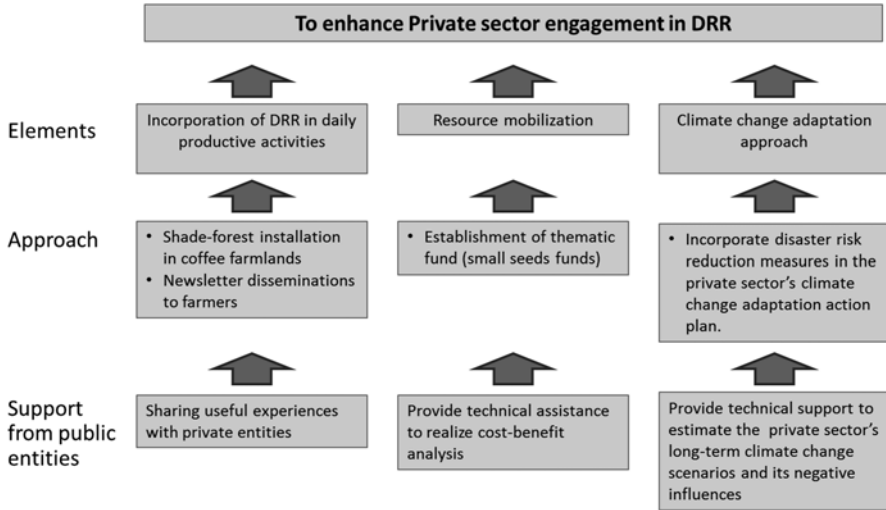


Fig. 7.1 Three elements that may enhance the private sector's DRR engagement

## 7.5 Conclusion

This study found three elements that may enhance the private sector's engagement in DRR. Most importantly, the incorporation of DRR into daily production activities is the easiest path to enhance private sector's engagement in DRR as it does not require any specific, high-tech, expensive DRR measures. The shade-forest installation and the newsletter publication are useful examples of this found in this study. Sharing these examples or other useful experiences between the private entities should be important. Public entities could have an important role in promoting these sharing initiatives among private entities. Secondly, resource mobilization is a fundamental approach, not only to realize risk mitigation or prevention works but also to develop further long-term activities to ensure the entrenchment of the private sector in DRR engagement. Establishing thematic funds can be an ideal approach to realize this resource mobilization. The public sector could provide support to establish such funds, which would not necessarily need large financial commitments as there are examples where even small seed funds have been shown to play an important role in DRR. The public sector can play an important role in conducting a cost-benefit analysis to estimate the magnitude of DRR investments needed to be financed with thematic fund resources, which could be an important trigger in the development of such funds. Lastly, a focus on climate change adaptation measures provides an opportunity to revisit unresolved or unaccomplished DRR measures. Even entities that may not be interested in DRR may be aware of the importance of the

climate change adaptation. The challenges of the private sector seem to be more related to an estimation of long-term climate change scenarios and the possible negative impacts. This means that public entities, especially scientific and academic institutions that have access to the international communities, can potentially provide support to the private entities.

The earlier part of this article reviewed the three private sector approaches to DRR engagement as reported by Lal et al. (2012). These were (i) the CSR; (ii) PPP; and (iii) the businesses model approaches. This article identified that the current national policies in Central America and Costa Rica focus on the PPP to promote private sector's engagement in DRR. However, this study found that in addition to the PPP, the business model approach could be the key to enhancing the private sector's DRR engagement. All three elements identified in this study – the incorporation of DRR into daily production activities, resource mobilization, and climate change adaptation – address the private sector's long-term sustainable business models. While CSR and the PPP are important for the private sector disaster preparedness focused on in short term DRR plan such as the PNGR 2010–2015, further comprehensive DRR measures, such as risk identification, risk mitigation and prevention and financial protection may require a business approach to enhance the private sector's engagement in DRR. Public stakeholders need to understand this new requirement from the private sector, and this should be taken into consideration for eventual policy reforms.

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# Chapter 8

## The Role of Micro Enterprises in Disaster Risk Reduction in India

Nitin Srivastava and Rajib Shaw

**Abstract** This chapter focuses on the strategies to involve micro enterprises in the recovery processes assisted by other entities of the private sector. The recurring nature of disasters does not allow the communities, involved in smaller businesses, to recover, countering their resilience. The micro enterprises engage a large segment of the low income population and they can serve as a vehicle for disaster recovery. This would allow the upliftment of the lower income segments of societies without any requirement of focused strategies for recovery. The chapter also takes up case study from India to understand the key challenges and role of micro enterprises in disaster recovery. These challenges range from lack of skills and formal education amongst the proprietors of the enterprises, climate variability, aligning corporate sector's interests with micro enterprises', providing micro finance, technology transfer, and combining Disaster Risk Reduction with micro enterprises policies. Both poverty reduction and gender issues are important aspects to be considered for disaster risk reduction. Additionally, urban-rural dependency can also be utilized to share the onus of disaster recovery on urban and rural micro enterprises. Overall, micro enterprises have the potential to act as socio-economic safety nets.

**Keywords** Micro enterprises • Disaster recovery • Vulnerable occupations • Private sector • Poverty

### 8.1 Introduction

Disasters have potential to inflict loss of life and physical suffering, and can dent the “socio-economic fabric” (Galbraith and Stiles 2006) of the affected population as well as the coping capacity of the entire region and its population. In other words, “disasters are not isolated from the social structure within which they occur; rather, they are social phenomena” (Newton 1997). The socio-economic fabric also includes the entities that employ people. These can range from large industries to

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small businesses, from service sector to manufacturing sector. In most of the recent disasters, whole communities and towns were completely obliterated or severely damaged. With the obliteration of the entire towns, the economy also collapses leaving the population to fend for their needs.

After a disaster in most of the countries the part of the rebuilding process has been facilitated by aggregation of humanitarian foreign and domestic relief aid. More and more, relief aid agencies appear to be recognizing the importance of economic recovery and rebuilding, yet the computation of the loss, both direct and indirect, is still complicated. Lesser developed or smaller countries rely heavily on the humanitarian aid for assistance as they are unable to finance their own risks.

Global Assessment Report (GAR) 2013 highlights that small and medium size enterprises (SMEs) often directly absorb the costs of large scale disasters, it is thus important to support these SMEs to be resilient (UNISDR 2013). Similarly, micro enterprises (MEs) have a huge role to play in facilitating recovery as they employ a significant population, especially in developing countries. Micro enterprises are small businesses employing a small number of people with limited investment (MEs explained in detail in Sect. 8.2). These micro-enterprises act as partners and suppliers for various SMEs and large industries. Hence, the disaster risks for these entities are interrelated and dependent on each other.

Galbraith and Stiles (2006) point that literature exists in the areas of (a) appropriate relief aid management, (b) the impact of disasters on both short-and long-term economic development, (c) hazard and natural disaster risk management, and (d) the relationship between disasters and socio-economic condition, such as poverty and gender. Most of such literature recognizes the importance of small businesses with reference to disaster risk management. However, the number of references with empirical study on smaller businesses is smaller and focused on natural disasters within well-developed countries.

The reason it is important to study in detail these enterprises is because it has been duly established that micro and small and medium enterprises (MSMEs) play an important role in low, middle and high-income economies (UNISDR 2013). MSMEs account for one-third of low-income countries' employment, and figures of their contribution to total employment in high-income countries range from more than 50 % (IFC 2012) to 65 % in OECD countries (UNDP 2004) and more importantly 70 % globally (ILO 2012).

With the above background, this chapter explores the micro enterprises as a poverty eradication tool and its role in disaster reduction. It also takes up case study from India to understand the key challenges and role of micro enterprises in disaster recovery.

## 8.2 What Are Micro Enterprises?

Micro enterprises do not fit a particular definition. They can involve a range of occupations and businesses of various types, sizes and scales like peasant farmers, street vendors, carpenters, machine shop operators, seamstresses and other small service providers. This diverse group requires a variety of support to grow and improve. Even though their scale is micro, they cannot be considered marginal at all. Despite of their comparatively poor access to services, infrastructure and utilities, they possess huge potential in terms of employing and supporting a large number of population. They accounted for as much as half of all employment in many countries (Berger 1995) and have grown considerably in numbers in recent decades. Micro enterprise sector is essential in connecting urban and rural economies and small and large scale industries.

Simply defined, a micro enterprise is “a small business that employs a small number of employees” (Investopedia n.d.). It usually operates with fewer than 10 people and is started with a small amount of capital. The definitions across the globe usually employ two criteria for defining micro enterprise in their country/region: number of people employed and the investment required. See Table 8.1 for some of the definitions. In general, MEs consist of less than 10 people but the local definition takes precedence for comparative studies (Kushnir et al. 2010).

## 8.3 Case Study from India

Micro enterprises tend to be the most frequent form and size of businesses in developing countries, as a result of the relative lack of formal or organized sector jobs available for the unemployed and the poor. The figures brought out by the latest all-India Census of MSMEs revealed the size of the registered MSMEs sector to be

**Table 8.1** Definitions of micro enterprises from various countries

Country	Definitions	Source
<b>India</b>	Manufacturing Sector - Investment in plant and machinery does not exceed twenty five lakh INR (8,200 USD) Service Sector - Investment in plant and machinery does not exceed ten lakh INR (16,400 USD)	Micro, Small and Medium Enterprises Development (MSMED) Act, 2006
<b>Australia</b>	A business with a single owner-operator, having up to 20 employees	Fair Work Act 2009
<b>European Union EU</b>	Fewer than 10 employees Balance sheet total below EUR 2 million (USD 2.5 million) Turnover below EUR 2 million (USD 2.5 million)	EU 2003
<b>United States of America</b>	A business with five or fewer employees Such micro enterprises generally need less than USD 35,000 in loan capital And do not have access to the conventional commercial banking sector	U.S. Small Business Administration

1.56 million. Of the total registered working enterprises, the proportion of micro, small and medium enterprises were 94.94 %, 4.89 % and 0.17 % respectively. This comprises of 67.10 % manufacturing enterprises and 32.90 % services enterprises. About 45.23 % of the enterprises were located in rural areas (GoG 2014).

The provisions of Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 categorizes the Micro, Small and Medium Enterprises (MSME) into two types:

- (a) **Manufacturing Enterprises:** The enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the industries (Development and regulation Act, 1951) or employing plant and machinery in the process of value addition to the final product having a distinct name or character or use.
- (b) **Service Enterprises:** The enterprises engaged in providing or rendering of services and are defined in terms of investment in equipment as explained in Table 8.1 earlier.

### 8.3.1 *Case of Gujarat State*

Gujarat is one of the fastest growing states in India and a major contributor to the country's economic growth. Gujarat is situated on the northwest coast of India bordered by the Arabian sea in the west, state of Rajasthan in the north and northeast, and by Maharashtra in the south and southeast. Gujarat has an area of 196,024 km<sup>2</sup> with 41 urban agglomerations, 242 towns, and 18,066 villages.

The state is a multi-hazard state which has experienced both natural disasters, such as earthquake, cyclones (Bhuj earthquake 2001), and climate-related disasters, such as frequent floods (Surat floods 2006) and droughts. Additionally it has a huge number of micro enterprises existing in the state engaged in various types of activities (see Table 8.2). This combination of hazard profile and livelihood initiatives at the gross root level makes it an interesting case study.

### 8.3.2 *Government Initiatives with Regard to Micro Enterprises*

Government of Gujarat's initiatives with regard to Micro enterprises include launch of state livelihood mission known as 'Mission Mangalam' in 2010. It is an integrated poverty alleviation approach in a demand-driven convergence mode. Under Mission Mangalam, the State aims to create livelihoods for about a million people, in the rural sectors, through self-employment. It aims to channelize the critical mass of resources and mitigate poverty by creating a single platform for stakeholders. The approach is to integrate *Sakhi Mandals* (self-help groups (SHGs)) or Producer Groups (PGs) or Service Groups into the corporate value chain.

**Table 8.2** Group wise registered micro enterprise in Gujarat

<b>Sr. No.</b>	<b>Group</b>	<b>Registrations (from 02-10-2006 to 31-03-2014)</b>
1	Textiles	68171
2	Machinery and parts except electrical	20668
3	Mining and quarrying	2778
4	Food products	4853
5	Chemical & chemical products	7078
6	Wood products	3043
7	Rubber & plastic products	5414
8	Non-metallic mineral products	3927
9	Basic metal industries	16908
10	Paper product & printing	4269
11	Electrical machinery and apparatus	5156
12	Transport equipment and parts	1906
13	Leather products	3641
14	Beverages, tobacco & tobacco products	1052
15	Service activities	25606
16	Trading activities	48200
17	Other	10597
	<b>Total</b>	<b>233267</b>

Source: GoG (2014)

The convergence of developmental activities is taken care of by the Gujarat Livelihoods Promotion Company (GLPC), a PPP (Public-Private-Partnership) company registered under the Companies Act 1956. The GLPC collaborates with large industries, banks, professional institutions, skill-development agencies, industry associations, to facilitate finance, skills and market information to SHGs. The statistic from Mission Mangalam speaks volume about the upliftment it has brought about during the last 4 years. It has around 0.24 million operational Sakhi Mandals covering more than 2.9 million rural households. The bank savings of these Sakhi Mandals have reached the mark of INR 400 crores (approx. 88.5 million USD). This has empowered the Sakhi Mandals to undertake economic activities in the form of micro-enterprises, as the average fund availability has increased now to INR 62,500 per Sakhi Mandal as compared to just INR 18,000 prior to the launch of Mission Mangalam. Around 58,000 Sakhi Mandals have been graduated to micro enterprise activities providing livelihood to more than 0.6 million rural households.

Mission Mangalam not only advocates community groups but also gives prominence to individual efficiency programmes such as training programmes for the rural youth in association with non-governmental organizations (NGOs), polytechnic training institutes, and national development banks. It mainly focuses on rural entrepreneurship and skill development with a view to generate employment and income in rural areas and building an entrepreneurial culture. This would again facilitate

credit flow and provision of linkages for small, cottage and village industries, handicrafts and other rural crafts and service sector in the decentralized sector in the rural areas.

### **8.3.3 *Micro Enterprise and Disasters***

#### **8.3.3.1 Jeevika Program in Kachch District of Gujarat**

The International Fund for Agricultural Development (IFAD) and World Food Programme (WFP)'s "JEEVIKA" Livelihood Security Project for earthquake affected rural households in Gujarat tried to utilize micro enterprise for disaster risk reduction (Thacker 2007). This project was designed in response to the devastating Bhuj earthquake in Gujarat on 26 January 2001 claiming more than 20,000 lives, injuring 167,000 people, and destroying or severely damaging over 1.2 million houses, rendering 1.7 million people homeless. The earthquake followed a series of disasters that had struck the region in the last few years, including a devastating cyclone in 1998 and debilitating droughts in 1999 and 2000. This project therefore had objectives to address the immediate needs of the communities for rehabilitation of their livelihoods as well as addressing their inherent vulnerability. The project had five components: capacity building and empowerment of stakeholders, livelihood systems enhancement and crisis coping capabilities, disaster preparedness and mitigation, social development and project management activities, and food handling (Thacker 2007). The final status of the project is unknown as it was a 7 year long project; nevertheless, the project identified the need to combine formation of micro enterprises along with the disaster risk reduction of the rural communities through their own efforts.

Sliwa (2011) in her study on business strategies of micro enterprises in disaster affected area of Gujarat, tried to understand how micro enterprises manage their businesses, and handle credit, savings and investments. This was investigated in the light of impacts of shocks on livelihoods and their adaptive capacities; and what factors define success or failure of micro enterprises. The study showed that business and investment strategies, as well as the handling of finances, differ between the genders: females tend to have a greater degree of financial literacy irrespective of their formal education (Sliwa 2011 in Schneider-Sliwa 2012). Schneider-Sliwa 2012 notes that it is possible that "the greater financial and economic vulnerability of micro enterprises in rural areas studied may at least partially be rooted in gender-discrimination".

The above case from Gujarat, India is an example where the public sector is taking efforts to instill entrepreneurial skills among the population, especially the rural population. This is achieved through the joint efforts of public sector institutions and large private sector entities. The Jeevika program targeted at these poverty reduction efforts to impregnate the population exposed to multi-hazards with disaster risk reduction measures while Sliwa (2011) correlates gender to business strategies of micro enterprises. Both poverty reduction (as intended goal) and gender

issues (as tool for recovery) are important aspects to be considered for disaster risk reduction.

## **8.4 The Potential Role of Micro Enterprises in Disaster Risk Reduction**

Micro enterprises add value to a country's economy by creating jobs, enhancing income, strengthening purchasing power, lowering costs and adding business convenience (Munoz 2010). The role of micro enterprise in disaster risk reduction in developing countries, based on literature study, can be enumerated as:

### ***8.4.1 Mitigating Adverse Economic Impacts***

A strong entrepreneurial foundation might act as “a mitigating buffer to reduce a community's vulnerability to disasters” (Galbraith and Stiles 2006); especially one which is embedded in the social fabric of the community. MEs are said to have such strong entrepreneurial foundation. The evidence points to both short-and long-term negative economic impacts from disasters but the entrepreneurial tendency within an affected community have the potential of mitigating some of these structural economic impacts.

### ***8.4.2 Reducing Poverty***

Local MEs play an important role in economic and social recovery after a natural disaster. They contribute significantly to economic growth. The sector is one of the most important vehicles through which low-income people can avoid poverty and in some cases escape from it. These micro enterprises can be especially useful for regions suffering from slow-onset disasters as policies that emphasize small business development may offer an effective intervention strategy.

### ***8.4.3 Social Stability and Equity***

#### **8.4.3.1 Mainstreaming of Marginalized and Vulnerable Groups**

Entrepreneurial solutions may assist to mitigate some of the apparent unevenness of natural disasters on certain socio-economic groups of people, especially in Indian case where there are diverse communities with varying vulnerabilities. The age old differences can be bridged through such enterprises. This is especially true in a post-disaster scenario.

### **8.4.3.2 Economic Opportunities for Women**

Women are the primary stakeholders and the owners of micro-enterprises, as seen in various cases. Women-owned businesses make up one of the fastest growing sections of micro enterprise sector. The social equity can be achieved through women empowerment and diversification of household income reaching the women of the households. As is evident from past case studies, an increased income in the hands of women is invested in health, education and housing for their families, thereby creating reliable social safety nets for their families and communities. In year 2006–2007 the percentage of women enterprises against total units in Gujarat was just 10.18 (ISED 2013).

### **8.4.4 Business Continuity**

Like any other private sector entity, MEs need to adapt their business strategies to remain viable or sustain the business competition. This adaptation demands for innovative adaptive measures, not only from micro enterprises but also from small, medium and large private sector operators. In this world of globalization, these are dependent on each other and swift recovery of one would surely ensure the faster recovery of others. The authors advocate for interlinked enterprises of various magnitude and scales where the collective cushion would be able to bear the brunt of the disasters.

### **8.4.5 Identifying Vulnerability**

The World Development Report 2000/2001 (World Bank 2001) argues that the “effects of natural disasters (are) an important dimension of poverty. Low-income families typically live on marginal land, in the informal sector and have few, if any, resources with which to protect themselves.” The calculation of indirect economic loss to the population becomes incomprehensible, yet identification of the spheres of loss would help prepare for reduced loss in the event of next disaster. The parameters developed by Srivastava and Shaw (2014) to identify vulnerable occupations in a climate-related hazard scenario in Gujarat (see Table 8.3), can be contextualized to find the comparative vulnerability of micro enterprises under various groups of activities as shown in Table 8.2. This would allow the government to identify the priority group of micro enterprises which needs interventions. Through the study of impact on the said parameters the vulnerability traits can also be identified. Once such groups of activities are identified, the population affiliated with such enterprises can also be distinguished, together with the structural causes of vulnerability.

**Table 8.3** Parameters to identify vulnerable occupations/enterprises

S. no.	Parameters
1	Loss of productive assets
2	Displacement and migration
3	Loss of employment
4	Decline in productivity
5	Reduced income
6	Workforce participation
7	Change in occupation
8	Effect on social structure
9	Recovery time

## 8.5 The Challenges for Micro-enterprises

Micro enterprises in developing countries are facing a whole lot of challenges when it comes to sustenance after a disaster event. First of all, they are mostly unrecognized or informal in nature. Official policies often hinder these enterprises rather than encourage them to expand. Improved business regulations, tax regimes, licensing requirements, financial sector reform and bank supervision will promote better conditions for micro enterprise development. Secondly, they also lack access to services such as marketing, to formal financial services, deposit services, training in basic business skills, and technology transfer (Berger 1995). Most such entrepreneurs, being very small, have little collateral security to offer.

*Lack of Skills and Formal Education* The promoters of micro enterprises normally are neither skilled nor educated. This situation demands greater efforts from the policymakers and private sector to bring these enterprises under the umbrella of a new program or policies.

*Climate Variability* In the wake of climate variability, the number of hazards would increase and erratic weather phenomena would hit the traditional industries and enterprises, dependent on primary sector of economy. This situation demands for improved risk assessment at the local level with micro enterprises at the focus of such assessments.

*Urban-Rural Dependency of Enterprises* Another challenge that can play an important role in future of Indian urban centers and village is the nature of co-existence between its urban and rural areas. Urban areas serve as markets for small rural entrepreneurs, while rural areas often provide raw materials for urban enterprises. Often disasters happen in either urban or rural areas, but it influences the economy of the whole region. In this regard, the urban-rural dependency of these enterprises can play supportive role for each other. In year 2006–2007 there were 57,851 rural MSMEs (employing 248,379 persons) and 229,577 urban MSMEs (employing 1,041,650) in Gujarat (GoG 2014). The rural enterprises were 20 % of total enterprises. This situation poses challenge, as well as a huge opportunity in



reviving the rural population which is dependent on these enterprises; and to increase the number of such enterprises. If properly regulated and supervised, they have great potential in poverty alleviation and development, both in rural and urban areas, especially in the recovery phase. This dependency also has demographic aspects to it. While youth is concentrated in urban locations, the rural areas mostly have young women entrepreneurs. This surely has implications of recovery policies associated with the youth and gender policies in the country.

Other challenges would include aligning corporate sector's interests with micro enterprises', providing micro finance with little or no collateral, technology transfer from big corporate houses to MEs for capacity building, and combining Disaster Risk Reduction (DRR) with micro enterprises policies (see Table 8.4).

Micro enterprises cannot provide a financial safety net to an entire affected community, but can play an increasingly constructive role in disaster preparedness and response. It also allows for establishment of long-term relationships between individuals and enterprises, access of poor households to the formal financial environment. A culture of disaster preparedness amongst the proprietors of micro enterprises would help build a similar culture amongst the communities that host these enterprises.

**Table 8.4** Challenges and actors in micro enterprises inclusion in disaster risk reduction

Challenges	Primary actors			Potential role of actors
	Private	Public	Academia and research	
Business continuity				Private-public partnerships to bail out affected enterprises through micro loans and creating demand for their products
Micro finance				
Micro insurance				
Climate variability				Climate risk assessment and adaptation strategies
Formal inclusion				Policies to include unorganized and informal sector enterprises in the formal financial setup of credit and loan
Technology transfer				Risk reduction strategies and stepwise technology transfer would ensure minimum damage to the enterprises
Combining DRR with micro enterprise policies				Policy initiatives by the government with the help from large private sector entities

## 8.6 Conclusion

The developing countries need to realize that both macro economy and micro economy of a region can be taken care by taking care of micro enterprises. Also, business continuity can be maintained through this sector of business. Micro enterprises provide better opportunities of recovery ‘managed by community themselves’. However these enterprises also need external help for their recovery and targeted aid might play a role in accelerating the recovery following disasters as seen in Sri Lanka after Indian Ocean Tsunami (De Mel et al. 2012). Nevertheless, not every recovery has to be initiated by governments. Neef et al. (2015) states that certain small businesses in Thailand recovered due to strong individual support systems in their social networks and diversification of their business strategies. There was no government support or large scale institutional donations to these businesses. Such initiatives are more sustainable in taking care of the communities involved than the ones dependent on large scale doles, which is often withdrawn after a few years of the disaster event. This includes individual enterprise as well as inclusive entrepreneurship or community-enterprises.

Increasingly programs are being developed that encourage entrepreneurial activities as part of the overall recovery strategy. While economic recovery, and to some extent the role of entrepreneurial behavior, appears to be recognized as an important component of post-disaster response in institutional reports, there are only few specialized efforts for recovery of micro enterprises in post-disaster scenario. Understanding how micro enterprises successfully respond within a post-disaster environment may be critical in framing future relief efforts targeted toward the local business community.

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# Chapter 9

## Role of Private Sectors and BCP in Japan

Takahiro Ono

**Abstract** The roles of stakeholders in civil society are dependent on each other and closely intertwined with economic development. Private sectors have played a major role in supporting of the local economy in normal and disaster time and thus Japanese government have promoted Business Continuity Planning as a part of their policy framework. And after the Great East Japan Earthquake and Thailand Flood, the Japanese Private sectors found their efforts were incomplete. This chapter will focus on Japanese Government policy, embedding situation and challenges on private sector resilience.

**Keywords** Policy framework • Great East Japan Earthquake • Thailand Flood • Private sector preparedness • Supply chain

### 9.1 About Japan

#### 9.1.1 *Prone to Disaster*

Japan is located in the Pacific Ring of Fire where large number of earthquakes and volcanic eruptions occur constantly and in fact about 80 % of the world's largest earthquakes occur along this area and Japan has been experiencing a series of large-scale earthquakes (see Fig. 9.1). Also there are many tectonic plates around Japan which moves at a rate of about 10 cm per year. This motion accumulates the stress which will cause tsunami periodically by releasing the power. And because of geographical, topographical and meteorological conditions, Japan is subject to frequent natural hazards such as typhoons, torrential rains and heavy snow.

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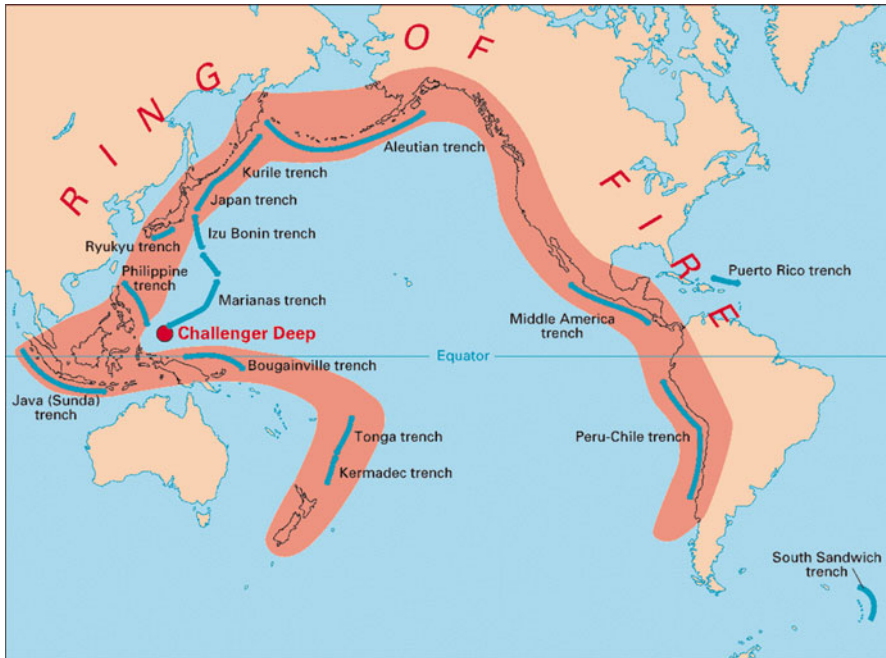
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**Fig. 9.1** Pacific Ring of Fire (From United States Geological Survey)

### ***9.1.2 Disaster History***

Every year there is a great number in loss of people's lives and property due to natural disasters. Up until the mid-1950s, numerous large-scale typhoons and earthquakes caused extensive damage and thousands of casualties (see Fig. 9.2). However, with the progress of society's capabilities to address disasters and the mitigation of vulnerabilities to disasters by developing disaster management systems, promoting national land conservation, improving weather forecasting technologies, and upgrading disaster information communication systems, disaster damage has shown a declining tendency (Cabinet Office 2011, 2012).

In spite of such efforts, in 1995, more than 6,400 people dies of the Great Hanshin-Awaji Earthquake or Kobe Earthquake. Also, in 2011, the Great East Japan Earthquake and Tsunami occurred and more than 20,000 people lost their lives or went missing. There is also a high probability of the occurrence of large-scale earthquakes in the coming decades. It is critical issue for Japan to continuously tackle with natural disasters.

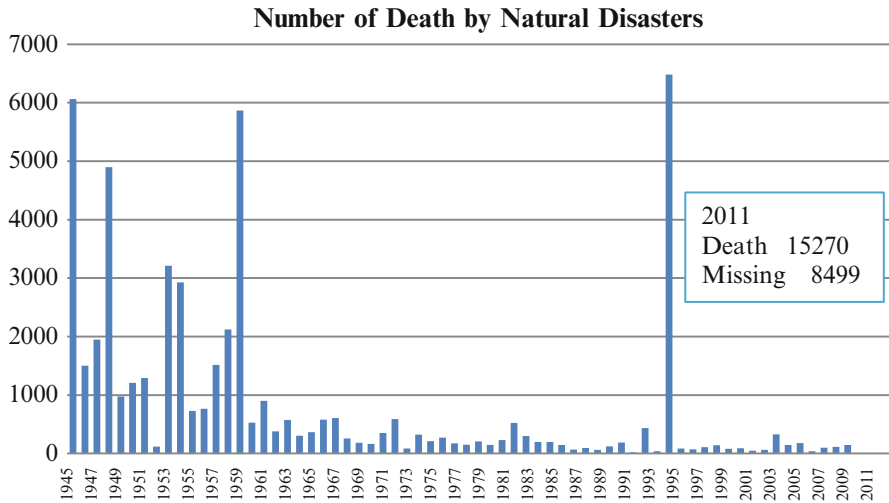


Fig. 9.2 Number of death by natural disasters (From White Paper)

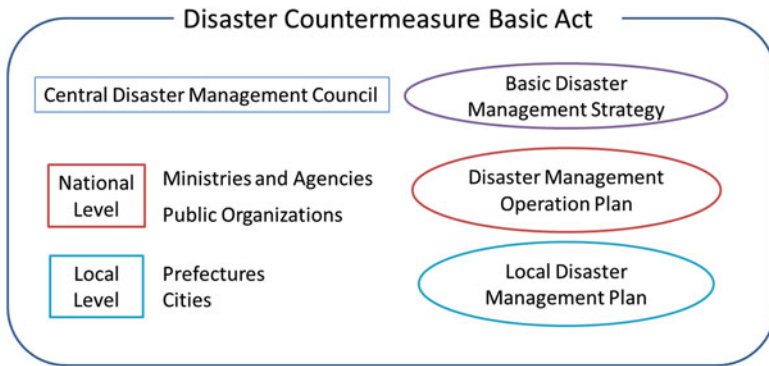


Fig. 9.3 Disaster management framework

### 9.1.3 Disaster Management Framework

The framework of disaster management in Japan has been developed and strengthened by the experience of large-scale disasters in the past.

The starting point for considering and strengthening the comprehensive framework of disaster management came after the severe damage caused by the Ise-bay Typhoon in 1959 which killed over 5,000 people. Two years later, the Disaster Countermeasures Basic Act was enacted in 1961, which formulates a comprehensive and strategic framework for disaster management. This framework has been further developed and strengthened following the lessons learned from large-scale disasters (see Fig. 9.3).

The framework of disaster management in Japan addresses all of the disaster phases of prevention, mitigation and preparedness, emergency response as well as recovery and rehabilitation. With clear roles and responsibilities of the national and local governments, the relevant stakeholders of the public and private sectors cooperate in implementing various disaster countermeasures (Cabinet Office 2011, 2012).

The Central Disaster Management Council is established in the Cabinet Office based on the Disaster Countermeasures Basic Act. The council consists of all ministers, public infrastructures and experts chaired by the Prime Minister promote disaster countermeasures comprehensively.

The Basic Act stipulates to build disaster management plan for public sector including local governments and according to this rule, many local governments have their disaster management plan requiring private organization who located in the area to build BCPs in advance to prepare for natural disasters.

## **9.2 Keep Society Resilient**

### ***9.2.1 Roles of Private Sector***

Some type of businesses such as “Business to Business” do not expose in the society so that people tend to think the private sector has no relation with the region. However all Private Sector regardless of business type, play a major role in supporting of the local economy with creating jobs and in ensuring of the sustainability of the region. And they play the role not only in normal time, but also in emergency situation for recovery of the regional community so that if disasters cause business activity to suspend, the impacts are felt not only by individual enterprises, but also in the employment levels and the overall economy of the stricken region. And when trade and commerce are conducted with businesses in other areas, the economic damage can also affect distant regions through supply chains and value chains (Ono and Ishiwatari 2012).

The Great East Japan Earthquake that occurred on March 11, 2011, suspended business production in the affected regions, disrupting supply chains and affecting businesses across Japan. And in the event, many local governments were hit by tsunami and lost their function of disaster response activities which slowed down the recovery processes of the community including Private Sector enterprises. With the result, the need for improving individual resilience of both Private Sector enterprises and local governments, as well as their collaboration were highlighted.

### ***9.2.2 Private Sector Preparedness***

Because social functions and each actor in the region are highly interconnected and interdependent, any disruptive incident can have region-wide impacts. In the event of a disaster, the role of the Private Sector becomes even more important in this

respect. Effective cooperation among disaster-resilient private sector players helps ensure a resilient and sustainable civil society. It is necessary that in light of past natural disasters, all the actors in communities should recognize their respective positions, roles and responsibilities, once again, and move into action for making disaster resilience in the civil society (Ono and Ishiwatari 2012).

The Thailand Flood of 2011 also affected many manufacturing enterprises outside of Thailand through supply chain disruptions. This event demonstrated when supply chains are closely interconnected; a single disaster can affect the economic activities throughout the globe.

With these experiences, the enterprises recognized the need for incorporating supply-chain consideration into their Business Continuity Planning as one of organizational strategic issues.

### 9.2.3 Business Continuity Management (BCM)

A BCP identifies the critical operational functions of an organization and the potential impacts of a threat prior to its occurrence. Figure 9.4 shows the concept of business continuity and the recovery curve of an organization’s level of service before, during, and after a disaster. Developing a BCP helps an organization identify what preparations must be made before a disaster strikes to secure its employees, assets,

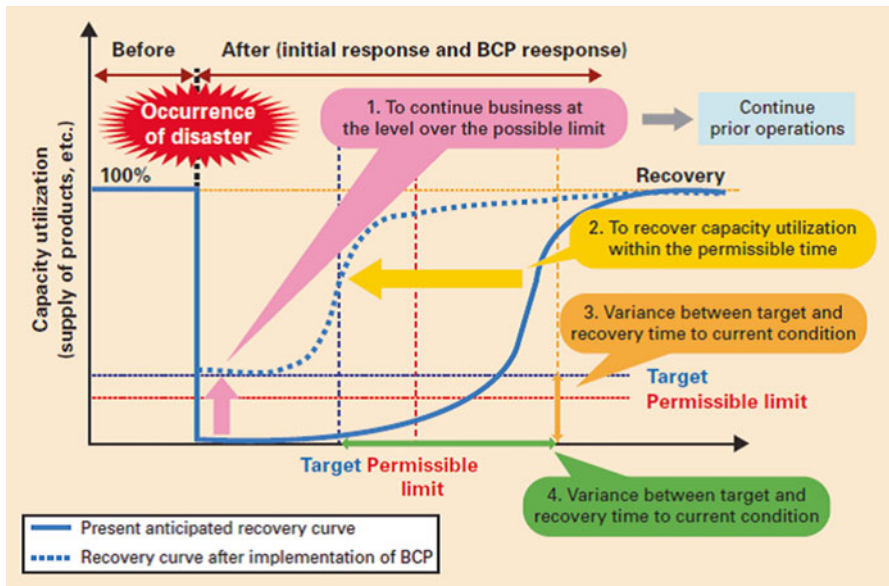


Fig. 9.4 Concept of business continuity (From World Bank)



information communication technology (ICT) systems, and information, as well as its reputation. It specifies effective ways of responding and quick recovery measures so that a business can continue to operate at acceptable levels and avoid disruptions for a specified period of time (See Fig. 9.4) (Ono and Ishiwatari 2012).

BCM is a risk management strategy that focuses on maintaining the continuity of critical operations to ensure the supply of goods and services, and embedding BCP to the organization. To ensure the effectiveness of BCP, the BCM must introduce properly into the organization.

## 9.3 The Policy Framework for Business Continuity

### 9.3.1 *Protect City of Tokyo from Mega Disaster*

It has been pointed out with a great sense of urgency that Japan can be struck by large-scale earthquakes in the next few decades in several areas including Tokyo, the capital city of Japan.

The Central Disaster Management Council chaired by the prime minister has carried out damage estimates for the Tokyo metropolitan area in the event of a strong inland earthquake (see Fig. 9.5). A magnitude 7.3 earthquake with an epicenter in the northern part of Tokyo Bay has been forecasted and one scenario assumes extensive damage, including a death toll of approximately 11,000 people, the total collapse of 850,000 buildings, and a maximum economic loss of JPY112 trillion. And in 2005 after the estimating of the damage for Tokyo area, the council estab-

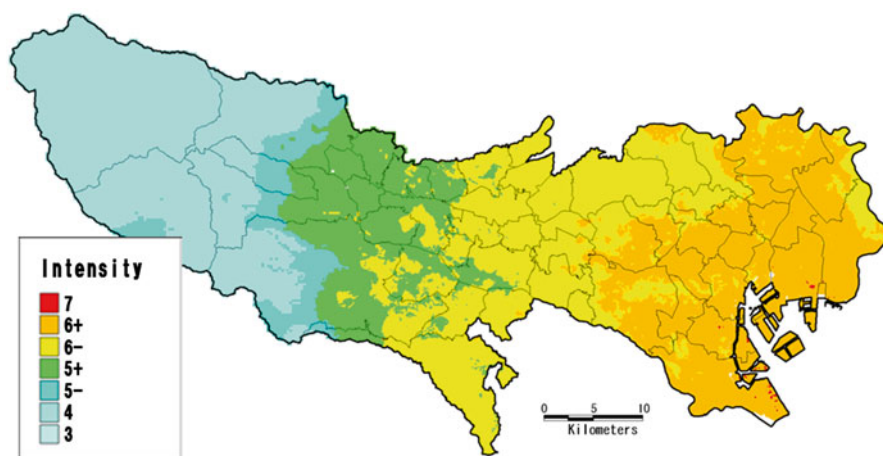


Fig. 9.5 Earthquake intensity estimate (From Tokyo Government)

lished the Policy Framework Strategy for Tokyo Inland Earthquakes to ensure the continuity of functions in the capital, and to establish countermeasures for reducing the death toll by 50 % and economic losses by 40 %. It also set strategic goals that included increasing the earthquake-proof houses and buildings to 90 %, increasing the fixed furniture to 60 %, and increasing the BCP adoption rate to 100 % for large companies and 50 % for medium-sized companies within a 10-year period. In addition, the Cabinet Office has published business continuity guidelines to help companies develop their BCPs (Ono and Ishiwatari 2012).

### ***9.3.2 Government's Effort for BCP Promotion***

Promotion of Business Continuity Planning for Private Sector in response to disasters, corporations are required to secure the safety of their customers and employees, and continue their business activities which contribute to mitigate social and economic difficulties in disaster situation. And as such, the Cabinet Office promotes the enhancement of disaster reduction activities of Private Sectors (Ono and Ishiwatari 2012).

By developing a Business Continuity Management strategy for ensuring the continuation of business operations in the event of a disaster Japan can ensure the stability of society and economy by creating an image of reliability and the Private Sector could win the confidence from around the world.

In 2005 the Government published a set of “Business Continuity Guidelines” and by experiencing the massive natural disaster such as the Great East Japan Earthquake in 2011 and Swine Flu Pandemic in 2009, the Cabinet Office has revised and published “Business Continuity Guidelines ver.3” in 2013 by incorporating the essence and concept learnt by those events. The government set a target of convincing “virtually all large companies and 50 % of medium-sized companies” to develop BCPs. And in 2006, the Small Medium Enterprise Agency has published “BCP Guideline for SMEs” to especially support developing BCPs for small medium enterprises.

Since then, many Industrial Associations, Headquarter and branches of Chamber of Commerce and Local Governments have published guidelines, toolkits, case study book etc. and the concept of Business Continuity Planning become very familiar to Private Sector enterprises.

In this way Japan's central government has played a critical role in encouraging the development and implementation of BCPs in the private sector.

Also in 2006, the Business Continuity Advancement Organization (BCAO) was established by knowledgeable experts to promote BCP concept across sectors and enhance regional disaster preparedness and crisis management.

For Private Sector enterprises, it is essential to recognize the role and promote disaster management activities. To encourage companies to engage in disaster

management activities willingly, markets and local communities must evaluate properly and give appropriate recognition to those enterprises. The Development Bank of Japan (DBJ) has launched “Enterprise Disaster Resilient Rated Loan Program” which assesses and evaluates the status of the enterprise and fixes the interest rate according to the rated result for loan finance which leads to give awareness of BCM and promote the concept as secondary benefit. Now similar financing programs are released in several banking firms in Japan. After the Great East Japan Earthquake in 2011, many local governments revised their own hazard maps and damage estimate to worse scenario than before and Private Sector pays more attention to effective BCP and BCM than before.

### 9.3.3 Business Continuity Planning Status

Since the government set a target of promotion as 100 % for large companies and 50 % for medium-sized companies to develop their own BCPs, the Cabinet Office has conducted the survey to the industries once in 2 years from 2007 to understand the current situation of Business Continuity Planning and promotion. In 2013 survey, the questionnaire was distributed to about 5,000 companies and almost 2,200 companies responded. Among all respondents of Large Scale Companies, 53.6 % claim they have written BCPs and 19.9 % said their BCPs are under construction (see Fig. 9.6). And for Medium Companies, 25.3 % claim they have written BCPs and 12.0 % said their BCPs are under construction (see Fig. 9.7). It is clear that the companies which have BCPs and planning to have BCPs are increasing constantly until now from 2007 (Cabinet Office 2011, 2012).

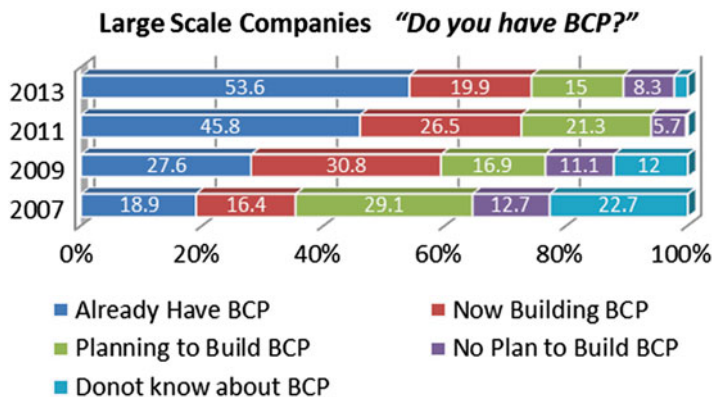


Fig. 9.6 BCP status for large scale companies (From Cabinet Office)

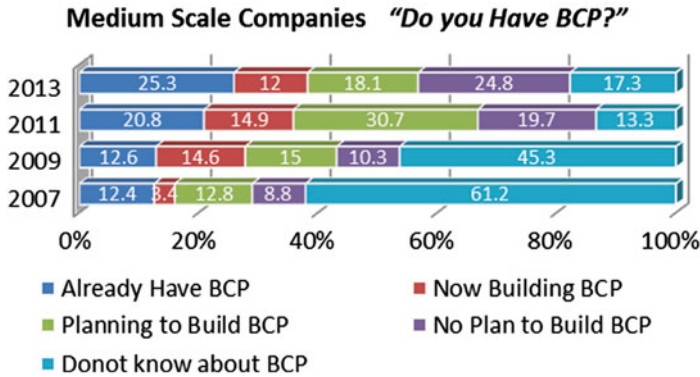


Fig. 9.7 BCP status for medium scale companies (From Cabinet Office)

## 9.4 The Great East Japan Earthquake (March 11)

### 9.4.1 Overview of the Event

On 11 March 2011, at 14:46 JST (5:46 GMT), a 9.0 magnitude earthquake occurred off the coast of northeastern Japan. Its epicenter was approximately 70 km east of the Pacific coast of the Tohoku region and the hypocenter was approximately 32 km below ground. Multiple epicenters were linked, resulting in a source area 400 km long and 200 km wide (see Fig. 9.8). This was the most powerful known earthquake ever to have hit Japan and the fourth most powerful earthquake in the world since modern record-keeping began in 1900. The earthquake triggered powerful tsunami waves which reached the coast around 30 min after the shock. Along the coast, the observed tsunami heights reached about 20 m. In some areas, with geographic conditions causing run-up heights of more than 30 m and travelled up to 10 km inland. As a result, about 20,000 people were left dead or missing and as many as 75,000 people were evacuated. 120,000 buildings were completely and 180,000 were partially destroyed. The economic loss was estimated at JPY 17 trillion billion. This amount was larger than Hurricane Katrina in 2005 and Kobe Earthquake in 1994.

### 9.4.2 Effectiveness of BCP

The Great East Japan Earthquake caused 656 private companies, which employed 10,757 workers, to go bankrupt within 1 year. But only 79 companies of them, 12 %, were located in the Tohoku region while the others were located all over Japan. The reason for bankruptcies among the latter group was indirect loss or damage caused by disruptions in their supply chains (Ono and Ishiwatari 2012).

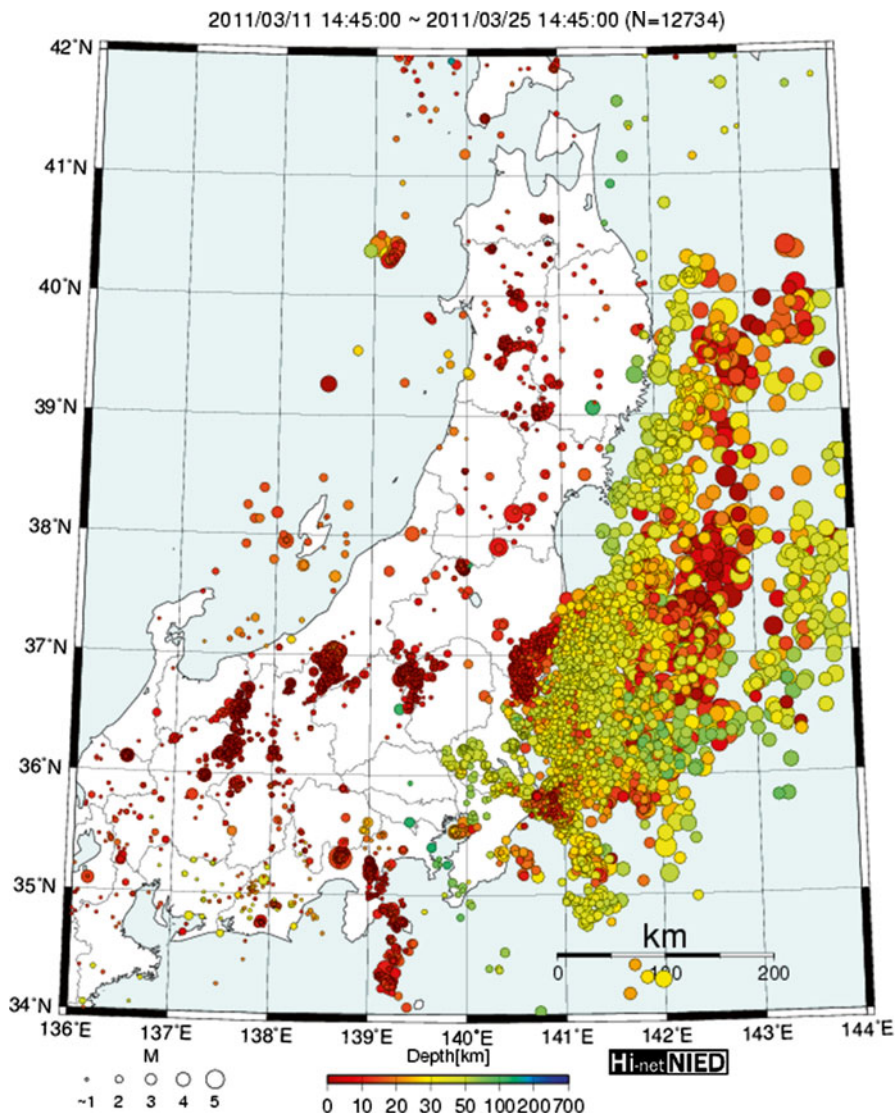


Fig. 9.8 Epicenters at Great East Japan Earthquake (From NIED)

According to a survey conducted regarding the BCP status of private companies located in the devastated area of the Tohoku region before and after 11 March, and 286 out of 1,000 companies responded. The responses showed differences in BCP development by company size. Among large companies, about 50–60 % had prepared BCPs before 11 March, while only 15 % of small and medium-sized enterprises (SMEs) had done so (see Fig. 9.9) (Ono and Ishiwatari 2012).

And the survey provides, about 80 % of large and medium-sized company respondents indicated that their BCPs were effective in the response and recovery

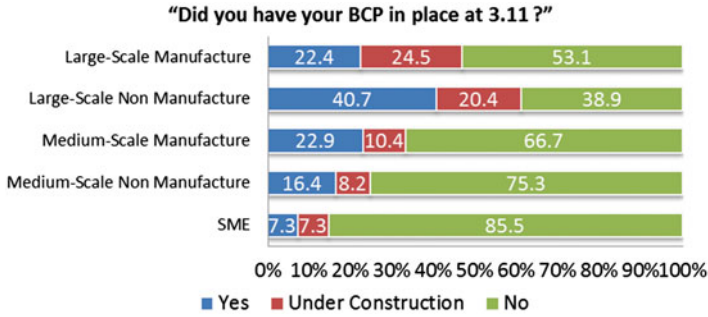


Fig. 9.9 Survey result (From TRC: Tokiomarine and Nichido Risk Consulting)

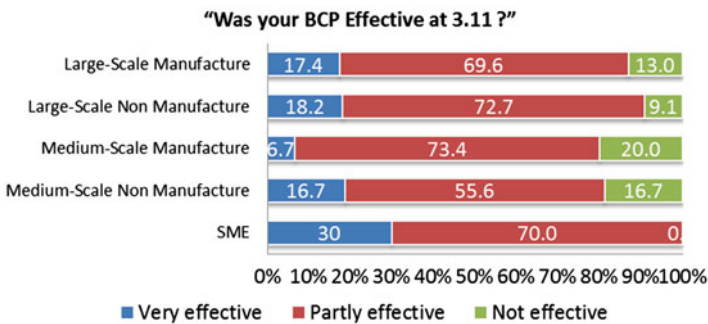


Fig. 9.10 Survey result (TRC)

phase after the 11 March disaster and all SME respondents indicated that their BCPs were “very” and “partly” effective to some degree (see Fig. 9.10).

The Suzuki Kogyo Co. is a waste management company with 67 employees in Sendai City, which suffered from the GEJE. The company equipped itself with satellite phones and standby generators, and conducted training and drills based on a BCP formulated in 2008. The emergency center was established at 3:30 p.m., 45 min following the earthquake on March 11. Two days later the company resumed the critical operation of treating medical waste from dialysis. Other companies took over the waste management operations (Ono and Ishiwatari 2012). (From Knowledge Note, World Bank)

Seven & i Holdings Co., Ltd. operates convenience stores, general merchandise stores, department stores, and supermarkets. The company has revised its BCPs seven times since the Kobe earthquake in 1995. A supermarket in Ishinomaki City, one of the most devastated cities, started selling foods and other goods outside its own buildings starting at 6 p.m. on March 11. On the next day, all ten supermarkets opened in the Tohoku Region. The decision to reopen in times of disaster was delegated to the individual shops, which could assess the situation quickly. Multiple logistics routes were secured and 400 workers were brought from other areas to sup-



port the stores in the devastated areas (Ono and Ishiwatari 2012). (From Knowledge Note, World Bank)

Due to the efforts made by the private sector in Japan, it is clear that their BCPs worked effectively in some extent when the Great East Japan Earthquake and Tsunami struck on 11 March 2011. However the ratio of companies without a BCP was still high and the consciousness and attitude towards mega disasters differ greatly among businesses regardless of size and industry. This event also revealed lessons for making BCPs even stronger and more effective.

### ***9.4.3 Lesson Learnt***

The Private Sector in Japan has made substantial efforts to develop BCPs, which proved to be useful when put into action following the Great East Japan Earthquake. At the same time, however, some lessons were learned that could make BCPs even stronger and more effective. These points are raised by many Private Sector experts.

Firstly, ensure BCP effectiveness through regular drills and continuous education. These drills and training must target specific departments in the company and should address specific capacities and skills; generic training is of no use. The plan should list specific activities and give detailed directions to be followed in emergencies and to facilitate recovery. These should be explained in detail to those officials and employees who are expected to implement them. Drills and training should be regular and ongoing, and some coordination at the sectorial level is recommended.

Secondly, radically shift from a “disaster-based” to a “consequence-based” perspective in strategy development. Private companies should develop their BCPs to reflect the results or outcomes they expect from implementation, rather than specific measures to counter specific disasters. They should identify key services, and examine how long the service will be disrupted and how they can shorten the disruption time.

And thirdly, focus more on supply chain disruption risk by knowing more about the situations of stakeholders. In addition to the company’s own operations, BCPs should address supply chain issues that affect other companies and markets. To facilitate this, meetings should be held regularly with companies in the same sector and with supply chain companies, first to assess the potential risks and then to develop concerted measures to ensure business continuity throughout the supply chain.

Until recently there had been an attitude of tolerance toward business disruptions caused by disasters of a certain scale, as they were considered to constitute force majeure.

The major opinions from the Private Sector that BCPs did not function were “The damage was much greater than predicted” and “Because the companies followed government scenarios that underestimated reality” and “Not enough training was conducted so the people could not take the necessary action.”

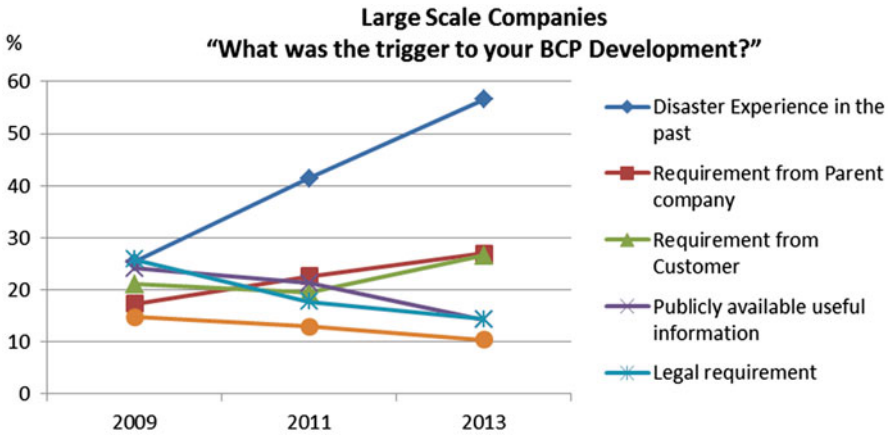


Fig. 9.11 Trigger to BCP development (From Cabinet Office)

Public opinion has shifted since March 11. Now, even if the scale and intensity of a disaster exceeds assumptions and predictions, disruptions are deemed to constitute negligence, and top managers are expected to be able to take appropriate measures to ensure the continuity of critical operations.

Also it is interesting to understand the reason for developing BCPs when considering about the BCM effectiveness of the Private Sector for further consideration. According to the survey conducted by Cabinet Office, major reason for developing BCPs are “From past disaster experience” for both Large and Medium Scale companies and the percentage increased significantly after series of recent severe disasters. Also the requirement from the parent company, comply the group company policy, customer requirement and legal requirement are popular answers as well (see Fig. 9.11).

Trigger event is surely important for developing BCPs as first step for every organization but the most important issue is to improve their BCPs’ effectiveness continuously through periodical activities.

### 9.5 Conclusion Towards Resilient Society

If well prepared for disasters, the private sector can play an important role in reducing local and regional economic damage. BCPs are an effective tool for strengthening the private sector’s disaster resilience. However the opinion is often heard that BCP is difficult to develop and because this fact slows down the promotion of effective BCPs (Ono 2012, 2014). These are the key points to solve those problems.



- Raise public awareness

Private companies and organizations do not always recognize the importance and usefulness of BCPs. Efforts should be made to raise awareness about BCP concept throughout the sectors in the society and develop effective BCPs to achieve greater regional resilience. Therefore good practices, cases and lessons from disasters should be widely shared with private companies and organizations.

- Start from a small disaster

Private companies should begin with a small hazard scenario as the first step in developing BCPs, and then add greater or different kinds of hazards. For example, in Japan, since earthquakes are a very familiar hazard, most companies start by preparing BCPs for earthquakes which are considered easier to produce. They then proceed to develop BCPs for more complicated disasters, such as pandemics.

- Mobilize government support

Governments may feel that providing support to BCPs for the private sector is not their role. But securing livelihoods and the local economy is certainly a public sector concern. Governments should provide private companies with the necessary information such as methodologies for risk assessments and guidelines for producing BCPs. Also, governments should collaborate with relevant organizations such as chambers of commerce and other industrial associations that provide support to these companies.

BCM is a risk management strategy to continue critical operations which support core business of the organization and thus the concept is a matter of top management to consider as an important investment issue.

Also BCM concept became important as a part of Corporate Social Responsibility and Creating Shared Value perspective with multi-stake holders for sustainable development. Furthermore should deepen the recognition and understanding that the concept will provide the winning the confidence and competitiveness of the organization (Ono and Ishiwatari 2012).

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# Chapter 10

## District Continuity Intensification by Supporting a BCP for Construction Companies: A New Development Model in Japan

Chikako Isouchi

**Abstract** When district continuity after large-scale disasters is discussed, it is necessary to consider the business continuity of local organizations such as administrative groups and companies at first. However, only 53.6 % of large companies and 25.3 % of middle-sized companies have their own Business Continuity Plan (BCP). The revival of the local community and economy significantly depends on the early recovery of local infrastructures, such as electricity, gas, roads and railways. Immediately after a disaster occurs, the construction industry, which is familiar with the local conditions, can play a significant and highly expected role. Therefore, it can be said that a BCP for construction companies can contribute to achieving district continuity. This study suggests countermeasures to intensify district continuity acquired through the developing support system to formulate BCP for construction companies.

**Keywords** Business Continuity Plan (BCP) • District Continuity Plan (DCP) • Business Continuity Management (BCM) • District Continuity Management (DCM) • Community Disaster Management Plan (CDMP)

### 10.1 Instruction

In a disaster-stricken area local organizations such as administration and companies in that area have a important role to maintain its residence, economic activities and social functions. In the Great East Japan Earthquake that occurred on March 11, 2011, many municipal government buildings were swept away by a tsunami, and many government offices stopped functioning. A fish processing company located in the coastal areas was affected by the disaster and it took a long time to restore business.

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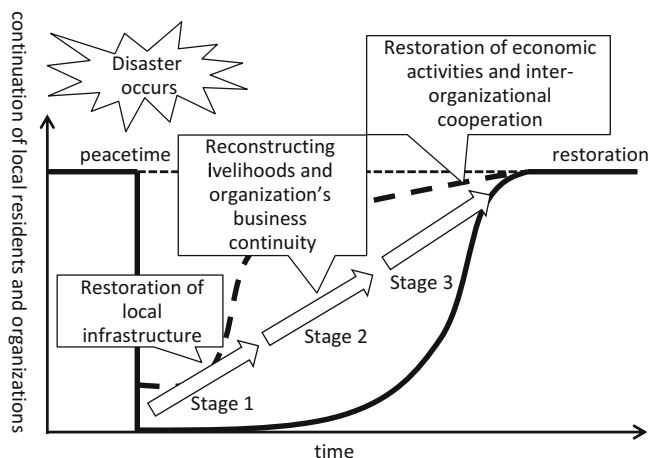
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**Fig. 10.1** Stages of district continuity

To prevent similar situations, the development of a Business Continuity Plan (BCP) has been suggested. BCP is a plan including previous preparedness in peacetime and actions taken in an emergency to enable continuity of the operations or swift recovery from damage with suffering minimum losses of business assets if the business is affected by risks such as disasters or accidents. In the case that BCP is in practical use, it is possible to make the current expected recovery curve (a solid curve in Fig. 10.1) closer to the target recovery curve (a dashed curve in Fig. 10.1) by effective response against disasters. Also, the level of the business continuity can be maintained to be more than its tolerance limit against disaster. Therefore it can be said that formulating BCP is required as disaster prevention in every organization.

However, only 53.6 % of large companies and 25.3 % of middle-sized companies in Japan have their own BCPs. Therefore, it is necessary to promote the concept of BCP (Investigative commission on measures promoting business continuity plan 2014). In January 2010, it was predicted that the Nankai earthquake has a 60 % probability of occurring within the next 30 years in Japan. A delay in the organization's business continuity leads to a delay in the restoration of infrastructures, such as roads, railways, and the lifeline of the region. As a result, district continuity also declines. The revival of the local community and economy significantly depends on the early recovery of local infrastructures. Thus, a delay in the organization's business continuity must be prevented. In the recovery period after a disaster, the construction industry has an important role because of its familiarity with local conditions. Therefore, the business continuity of the construction industry is considered to contribute greatly to achieving district continuity.

As a results of survey on disaster prevention and BCP conducted by the Crisis and Security Management Research Center, Kagawa University in September 2008,

it was indicated that the formulation rate of BCP was low (Isouchi and Shiraki 2008). Only 16 % of companies have formulated their BCPs, broken down as follows: companies capitalized more than 1 billion Yen – 72 %; small- and medium-sized enterprises – 6 %. As for the construction industry, 41 % of companies have formulated their BCPs. Although the value of 41 % looks like a high percentage compared to 16 % of all industries, many of these are companies capitalized more than 1 billion Yen. The reason for the lower formulation rate of BCP is due to the lack of know-how and skills needed to formulate BCP and the lack of internal awareness about the need for BCP. Solving these problems and supporting the formulation of BCP in the construction industry will thus lead to the improvement of district continuity.

This article suggests countermeasures to intensify district continuity. The countermeasures were created by new knowledge acquired through the developing support system to formulate BCP for construction companies. Herein, to discuss district continuity, District Continuity Plan (DCP) is defined as a plan for the continuity such as maintaining infrastructure and economic activity in the entire district suffered from disaster. It includes strategic recovery actions and agreements among local organizations already owning their BCP to improve their coordination before and after disasters. With considering DCP in mind, an ideal support system to formulate BCP, establishing an organization centered upon University and the clarification of sharing appropriate roles among the organizations are proposed to intensify BCP practices. In addition, the DCP formulation guidelines and upcoming challenges which are based on some cases of formulating DCP practices in the Kagawa region are discussed.

## 10.2 Problems of the Construction Industry Regarding District Continuity

### 10.2.1 Concept of District Continuity

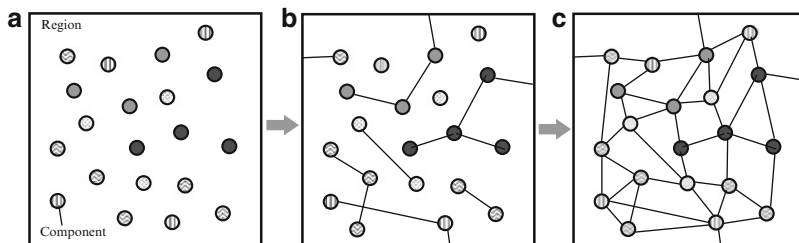
Figure 10.2 shows the concept of district continuity (Isouchi et al. 2010). A region has many components represented as dots (Fig. 10.2a), such as individuals, families, communities, businesses, infrastructures, community assets, and so on. For the purpose of achieving district continuity, these dots form lines (Fig. 10.2b) to cooperate with other components. Then lines grow to form a plane (Fig. 10.2c) to cover entire region. Each status mentioned above would be formed gradually at following phases.

Phase a: Improvement of the organization's business continuity

Phase b: Improvement of the organization's business continuity through inter-organizational cooperation

Phase c: Improvement of the entire district continuity

$$\text{degree of district continuity} = \sum \text{degree of organization's business continuity} + \text{synergy of inter organizational cooperation}$$



**Fig. 10.2** Concept of district continuity (“O” represents many components in the region, such as individuals, families, communities, businesses, infrastructures, community assets, and so on)

### 10.2.2 Problems of the Construction Industry Regarding District Continuity

District continuity is achieved through the restoration of local infrastructure (Stage 1), reconstructing livelihoods and the organization’s business continuity (Stage 2), and restoration of economic activities and inter-organizational cooperation (Stage 3) as shown Fig. 10.1. To foster district continuity, the regional construction industry plays a great role because the restoration of local infrastructure is the first stage for the entire restoration and must maintain for the next stage. Before mentioning problems of construction industry, the importance of formulating a BCP in the construction industry is described here based on current situations and business characteristics. “Business Continuity Guidelines for the Construction Industry, 2nd ed.” (Japan Federation of Construction Contractors 2006) has reported the business characteristics of the construction industry as following.

- The construction industry is a pyramidal organization with many business locations.
- The construction industry is labor-intensive. Their business is not conducted by a standalone company.
- It deals with a number of partner companies, equipment manufacturers and others associated with construction. Also, there are the workers and the construction machinery. During disasters, these are immediately available.
- There are a number of completed structures. Since responsibility for a certain project continues after delivery of works, it has a long-term relationship with customers.
- During disasters, the construction industry is responsible for important work, such as restoration of infrastructure and removal of obstructions.
- Because the construction site is always in close contact with the local community, construction companies are able to conduct rescue operations in the region during disasters.

- The construction industry owns disaster prevention and mitigation technology. Construction companies can survey the physical durability of buildings.
- Immediately after a disaster, it will be a very busy season for the construction industry.

Construction work is performed in cooperation with other companies, and the construction industry is in close contact with the region. It is familiar with local conditions in the region because of its construction activities. Since a construction company is an organization that is able to respond to an emergency, it is expected to help out in the region during disasters.

On the other hand, the actual financial situation of the construction industry is a very difficult one. The Japan Federation of Construction Contractors has reported that construction investment in 2009 has decreased by up to 50 % (42.2 trillion yen) of the peak (84.0 trillion yen), whereas the decrease in the number of construction companies has stopped at about 85 % (513,000 companies) of the peak (601,000 companies) (Japan Federation of Construction Contractors 2010). The number of workers engaged in the construction industry has decreased by about 75 % (5.17 million people) of the peak (6.85 million people) (Japan Federation of Construction Contractors 2010).

Compared to the decline in construction investment, the number of construction companies and workers has not decreased relatively. Therefore, this indicates that the financial conditions per company are very tight.

In such situations, some construction companies may not be able to respond to the emergency because they do not possess important assets for the construction industry such as human resources and heavy equipment. Because disaster recovery may create business opportunities for the construction industry, the BCP can be a countermeasure for their survival and an important factor having a direct impact on district continuity.

### **10.3 Support for the Formulation of District Continuity in the Construction Industry**

Various initiatives such as the public dissemination guidelines for the BCP have been taken by government and industry groups. However, there is a limit to their countermeasures that target an unspecified number of companies, which means there is not a practical guideline focusing on construction industry. Therefore, it is necessary to support the formulation of a BCP for the construction industry. A study, was specifically described in reference (Isouchi et al. 2011), developed a support system to enable small and medium-sized construction enterprises which do not have the necessary know-how and skills to easily formulate their BCP. With this development the BCP can be connected to the concept of improving district continuity.

### ***10.3.1 Development of a BCP Support System***

#### **10.3.1.1 Dissemination and Awareness Raising Activities at BCP Workshop in the Kagawa Construction Industry**

A workshop for the formulation of a BCP has been held by the Crisis and Security Management Research Center, Kagawa University since September 2009. In the workshop, the basic concepts based on the “Certification procedure for business continuity on disaster” which was compiled by the Shikoku BCP Construction Committee (composed of the Shikoku Regional Development Bureau, administrative organizations and universities in Shikoku) were lectured as for BCP in the construction industry as a first step. In the lecture the objective of formulating a BCP, is not only to help the company survive, but also to enable it to contribute to district continuity, were explained. After that in order to have solidarity of participating companies against District Continuity Plan (DCP) in their mind the workshop has been conducted as a group work style rather than lectures. Each company was given certain challenges in advance and shared them as common challenges to discuss and solve them as a group work.

In the workshop a consensus was obtained from their opinions “Not only coordination and cooperation within their own company but also coordination and cooperation with competitors, the region or the government is important to formulate a practicable BCP.”

#### **10.3.1.2 Problems Encountered in the Workshop**

In the workshop, various opinions were presented as follows:

- Even if the company has decided on its important business priorities, confusion may occur without manual created by administrations including the State, Prefecture and Municipality as the trinity policy.
- It is true that disaster recovery is the mission of the construction industry but no activity may be started unless the safety of the family has been secured.
- Administrative organizations have to unify the chain of command from the State down to cities and towns. It is also necessary to work in close cooperation with construction industry associations.
- It is necessary to exchange opinions as much as possible with the relevant organizations on the formulation of a BCP.
- It is necessary to create a network and establish cooperation in the region and with other companies.
- It is significant if regional cooperation occurs during the formulation of the BCP.
- Each company should not formulate its own disaster recovery plan. A management organization such as the local government should determine the priorities for recovery. It should assign responsibilities also, including contractors outside the prefecture as a top-down decision making.

- It will be for the benefit of this BCP workshop to ask the local government to build a larger framework which a single company alone cannot build.

Based on these opinions, improvements on the DCP were described in the next section.

### 10.4 Proposal for Improving District Continuity by Support of Formulating BCP in Construction Industry

Supporting the formulation of a BCP in the construction industry leads to district continuity. A BCP is also effective in making the construction industry survive.

On the other hand, there are various challenges in disaster recovery, which become important concerns for the construction industry. In this section, a solution is proposed with taking these challenges into account. District continuity management (DCM) is aimed at keeping ideal relationship for each organization as shown in Fig. 10.3 to make countermeasure for reducing damage and to prioritize restoration work for civic life against disaster in pre-disaster time. In a disaster, the

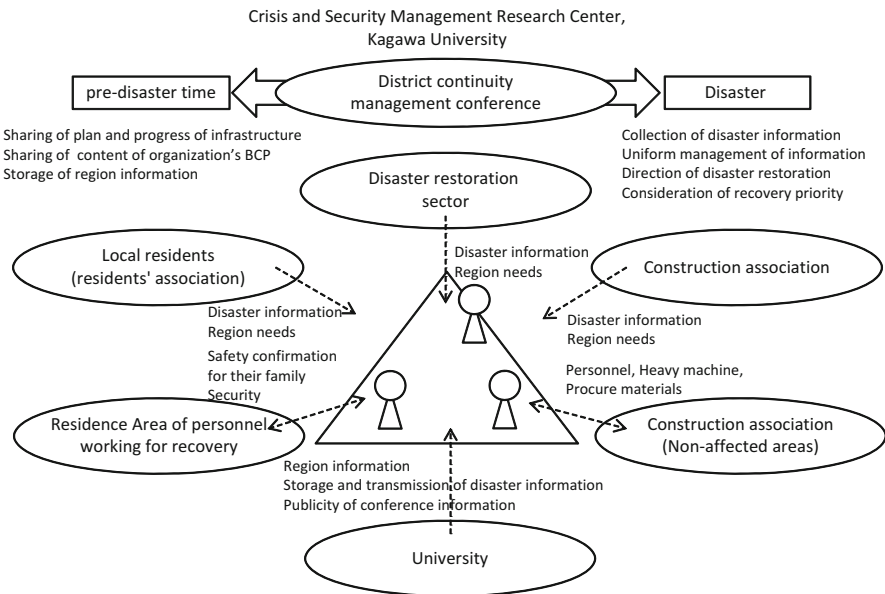


Fig. 10.3 Overview of the management of the DCM Council



council acts as the coordinating agency for each organization, and adjustment personnel are assigned as a coordinator from each organization. Adjustment personnel provide disaster information and local needs for the council to share them each other. Then, they coordinate the recovery priority, workforce, heavy equipments and materials in the council. To perform their role in a disaster as shown in Fig. 10.3, various pieces of information would be shared in pre-disaster time by the council. Decisions of the council should be based on the consensus of the community.

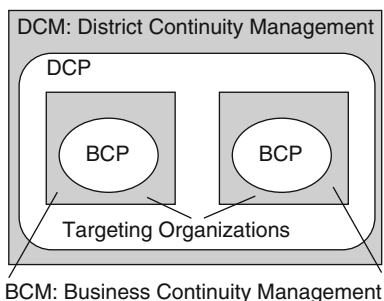
## 10.5 DCP; a New Way of District Development

BCP is a plan for business organizations. DCP is a plan for local district organizations to achieve the same objectives. Figure 10.4 shows relationship between BCP and BCM with DCP and DCM. BCM and DCM are defined as management process such as PDCA cycle which includes planning of formulation, doing the plan, checking the practice of the plan and Acting improvement.

Priority operations of the business organizations are not always priorities for the district to pursue. To ensure continuity in the region, it is important to build relationships between the BCP and the DCP, specifically when district priority operations are added to the BCP. This is a new way for district development.

## 10.6 Need for DCP Development

In the case of emergency response, it is necessary to prioritize the district continuity response by strategically coordinated local organizations. With a presumption that the entire region would be damaged, it is necessary for each organization to establish a guideline to prioritize the recovery sites and to consensually decide structural countermeasures in pre-disaster time, and to be able to implement actions strategically in the event of an emergency. This strategic plan is the DCP, and the plan needs to be formulated ahead of time.



**Fig. 10.4** Spatial relationship between BCP and DCP

BCP is a response project focused on the individual business scale. BCP is intended to continue business services by prioritizing critical operations with an assumption that organizations stop functioning. It is up to the chief executives to make decisions regarding business continuity strategy. On the other hand, development of DCP requires a consensus decision of standardized criteria by various organizations.

However, very small numbers of studies regarding DCP have been reported. In the study by Sashida (2006) it was pointed out that in the U.S., small business involvement in achieving in regional recovery after Hurricane Katrina was important. The study also made it clear that the maintenance of continuity concerning small businesses relies on the support of local government. In this regard, the study mentions the necessity of a DCP. Nishikawa et al. (2007) defines DCP and points out the challenges faced with commitments toward DCP using an example of a company's creation of a "Disaster Prevention Neighbouring Group" in the operating business district. Also, Mori (2010) states the necessity of continuing lifelines to support the implementation of DCP, and also points out the importance of a continuity plan for information communication networks. The economic challenges in implementation are also made clear. As regard DCP, as well as District Continuity Management (DCM), the study points out the importance of proposing countermeasures. However, there seems to be little research with examples of formulated plans or practical detailed countermeasures that can be studied.

## 10.7 Contradiction Between BCP and DCP

BCP is a proposed countermeasure for business service focused on continuity with some of critical operations prioritized, pre-selected by assuming that organizations have stopped functioning. It is not a proposed countermeasure to continue all of operations in the organization. To consider BCP, alternative methods and recovery actions have to be taken into account estimating the level of damage, capacity limit, and targeting time after the loss of functions. However, the formulations of timelines in continuity plans are up to the chief executives' business continuity strategy.

Here lies the contradiction between BCP and DCP. The critical functions for BCP (organizations) may be unlikely necessary for DCP (region). In some cases, in the process of BCP for the maintaining critical business function, it is plausible for organizations to physically relocate elsewhere or switch their policy to promote primary products mainly without pursuing development for their unique techniques.

As mentioned above, business continuity strategies, including the selection of critical functions, relies heavily on the chief executives' judgment. Business continuity strategies are truly a management strategy, and an organizations' survival can be determined by the strategy's effectiveness. Table 10.1 shows standardized criteria for selection of critical functions.

**Table 10.1** Standardized criteria for selection of critical functions

Availability of alternatives	Unique services provided only by relevant organizations (There is no alternative products, service contents and locations due to technical, legal rights, logical and social stereotypical reasons)
Social responsibilities	Socially responsible services
Income/loss of income	Services heavily affect income and tax revenue, also loss of customers and residents to be considered

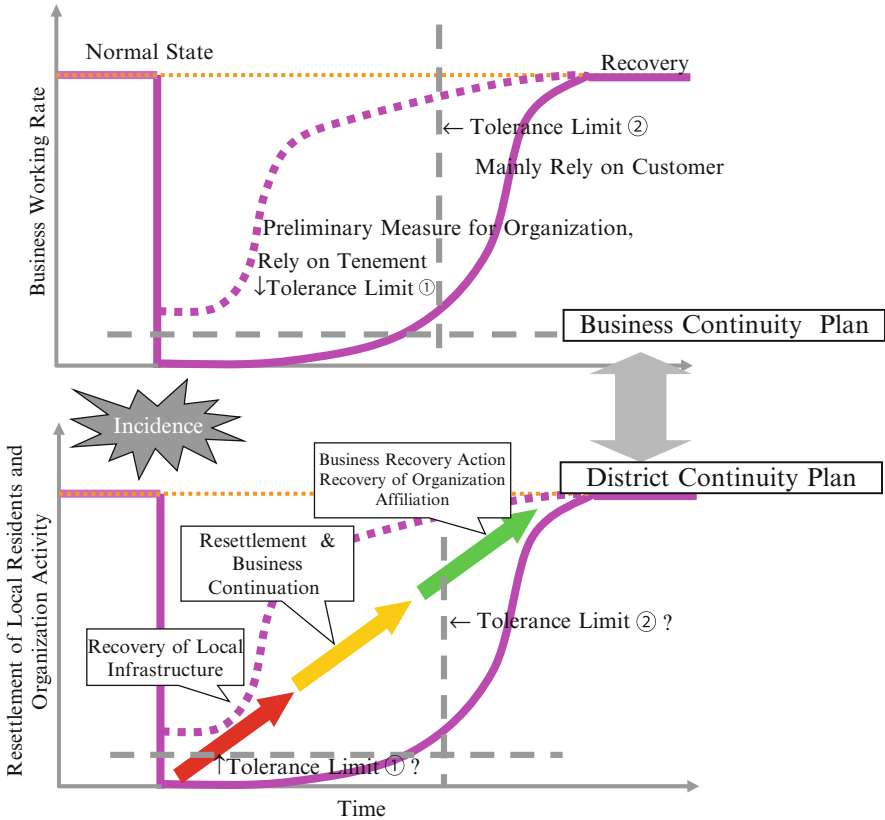
It is a decision to be made by the relevant organizations to weigh which criteria out of the three factors shown in Table 10.1, availability of alternatives, social responsibilities and income and loss of income. In the case that a particular organization operates a unique service without alternatives in the local area, from the point of view of for-profit organizations as an example, the priority for the third factor may be lowered even if they lost remarkable income from customers. Further, it is not always necessary to publicize their own weighing of standardized criteria to the community. Such publicity may lead to losing more customers to other companies in the same line of business.

Therefore, it is necessary to tackle the DCP formulation, recognizing that there is likely to be a contradiction between BCP and DCP.

## 10.8 Social Capacity and Tolerance of Interruptions of Continuity and Ideas for District Continuity Strategy

DCP is a strategic countermeasure to maintain the important social functions of the area. The potential social functions in the area depend upon social structures such as size of the whole area, integration, and geographical features of the region in question. When it comes to formulation of a DCP, the major differences from that of a BCP are selecting which functions are to be continued, considering tolerance limits in case of interruptions of continuity and assessing standardized criteria for the targeting time. For example, in the case of BCP, it is possible for a corporation to set up the time limit if considering the balance of tenement and potential expenses such as the payment of fixed cost and interest on loans without income due to outflow of customers.

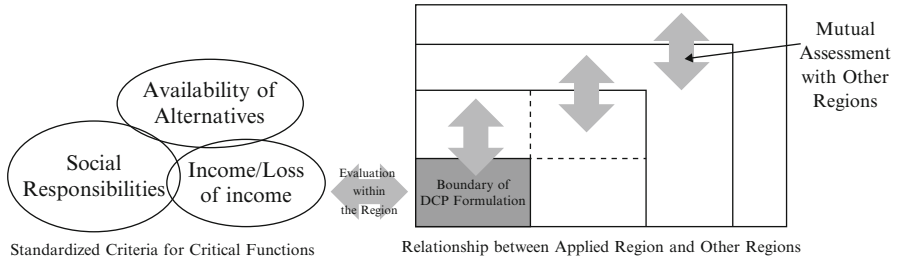
Whereas it is difficult for DCP to evaluate the setting-up (see Fig. 10.5). The evaluation depends upon social tolerance limits (This study, due to social stereotype, defines the social tolerance limit as the maximum capacity based on factors of the interruption of continuity, the level of damage, and the progress situation of pre-formulated countermeasures). Because the social tolerance limit will constantly shift in the midst of the interruption of continuity depending on damage level and the recovering situation at hand, it is difficult to set up the tolerance limit against time and continuity level.



**Fig. 10.5** Tolerance limits of BCP and DCP

Thus, this process to determine the social tolerance limits previously as a consensus decision of the whole region could be the core of DCP, which includes expectancy of possible damage level on distinct functions and sharing the limit of responses from each organization, and extracting the critical functions for the survival of the region.

Now, the evaluation of critical functions in the region is focused on. When the standardized criteria shown in Table 10.1 can be applied to a region’s functional service, multi-step evaluations must be considered. The first evaluation can be considered within applied region only and then the next evaluation would be considered with relationship between applied region and size of other regions. Figure 10.6 shows that if a local government such as a city or town is considered as an applied unit having the boundary of DCP formulation, the relationship against other regions, such as the prefecture or the regional block or the entire nation of Japan, would be changed. This suggests that according to the range of the damage, the extracting critical functions from the mutual relationship between applied region and other regions are important. In other words, spatial formulation boundaries of DCP must



**Fig. 10.6** Idea of district continuity strategy

be flexible based on the perspective; it is largely different from other plans such as existing BCP within organizations.

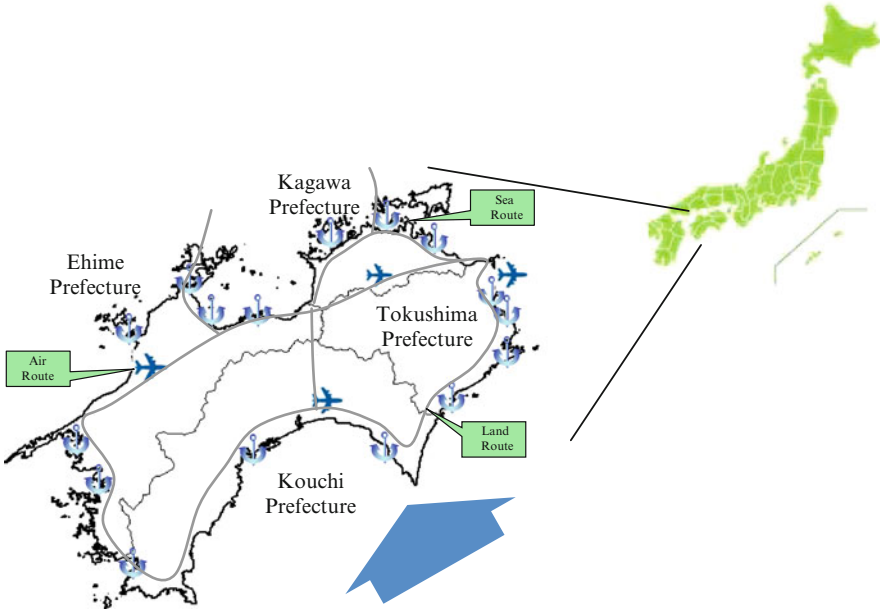
DCP is a plan with prioritized goals of critical functions continuity in the region, and planning needed to be done by essential organizations to achieve the goals (see Fig. 10.4). This suggests that it is important to integrate the concept of DCP into the social system as achieving goal. This is not conventional concept just dividing responsibilities which are for Self-defense, Neighbor-cooperation, Government-rescue and assistance. To be able to implement DCP, it is necessary to consider district continuity strategy into BCP of each organization and to properly express the function of the DCM to the community. DCM is to realize each phase shown in Fig. 10.2, Phase a: Improvement of the organization’s business continuity, Phase b: Improvement of the organization’s business continuity through inter-organizational cooperation, phase c: Improvement of the entire district continuity, by strategic and chronological setting of achievable goal.

## 10.9 Formulation Guideline for District Continuity Plan in Kagawa

In this section, the formulation guideline is discussed, utilizing an example of the Kagawa District Continuity Plan based on logical structure.

### 10.9.1 District Continuity Strategy (the Purpose of Kagawa DCP) and the Main Organization Bearing DCM

When Kagawa district is referred to the evaluation by standardized criteria for critical function shown in Table 10.1, results were as following. The Kagawa district has been identified as a location for Shikoku Emergency Disaster Management Operation Centre by “Guideline for Eastern Nankai and Nankai Earthquake Emergency Management Operation”, which was established by Central Disaster



**Fig. 10.7** Integrated network infrastructures in Shikoku Area, Land Route, Air Route, Sea Route

Prevention Council in April 2006 in the case of earthquakes in Nankai area and Eastern Nankai area. Specifically, Takamatsu-City is considered as a critical location because many Shikoku area government offices and corporations locate their headquarters there. Considering the infrastructure they have, the district is especially fortunate to be an important traffic point among Shikoku area locations. As land route its location is a key position for freeways from Okayama and Kansai area, as air route Takamatsu airport is the only inland-located airport in Shikoku, and as a sea route major ports such as Port Takamatsu and Port Sakaide are located (Fig. 10.7).

Under that situation as a main organization bearing DCM, Kagawa District Continuity Investigation Committee has been established, which consists of the members from Shikoku Eastern Nankai and Nankai Earthquake Countermeasure Strategy Committee (2011) as a main body; government agencies of the State, Prefecture, and Municipality; lifeline corporations; Chamber of Commerce and Industry; and Japan Committee for Economic Development. And Crisis and Security Management Research Centre at Kagawa University has been assigned to be an executive office.

This committee's responsibility is not only to evaluate and improvise existing BCP of each organization from the point of view of DCP, but also to support BCP formulation for those institutions and organizations that are behind. The operation of the committee, creates regulations, evaluates those regulations four times a year at their regular meetings, and reports the management condition, and related

material data for the operation are open to the public on the website of Crisis and Security Management Research Centre at Kagawa University, which is an executive office ([K U K D C I C Crisis and Security Management Research Center](#)).

### ***10.9.2 Conceivable Complications***

The members of the committee, as a group work style, extracted the opinions with an assumption of damage of an earthquake which originated from Nankai Trough. The result estimated that there will be immense damage caused by the earthquakes ground motion, liquidation, and tsunami in the coast line of Takamatsu City where Kagawa district's critical functions are clustered, and that a tsunami may cause long-term flooding because of reflective propagation in the Inland Sea of Japan. This may lead to Takamatsu Station and Port Takamatsu becoming unusable which will cause traffic interruptions. The critical locations for each institution will become isolated areas because of long-term floods and be unable to be accessed until tsunami warnings have been released. Without alternative locations outside of the flooded area, they will lose function completely. It is assumed that delays in starting of infrastructure recovery will affect immensely in the function continuity of entire Shikoku area, as well as Kagawa district. Based on the common understanding mentioned above, the district continuity countermeasure was developed.

### ***10.9.3 Development of the District Continuity Countermeasure***

To develop the district continuity countermeasure, five functions of the Kagawa DCP (Fig. 10.8) based on the district continuity strategy and conceivable complications were established, and drafted to ensure alternatives and recovery countermeasures at early-stage in case of a disaster (Shiraki et al. 2012; Isouchi et al. 2013). The first stage that Kagawa DCP focused on is restoration of local infrastructure among three stages, restoration of local infrastructure, reconstructing livelihoods and organization's business continuity, and restoration of economic activities and inter-organizational cooperation as shown Fig. 10.1 (S. E. N. a. N. E. C. S. Committee 2011; [K U K D C I C Crisis and Security Management Research Center](#)).

Specifically, workshops were held, once a month, totally ten times for each function shown in Fig. 10.8. In the workshop some developed scenarios about functions and topic offerings related to current operational situation were discussed. In addition, issues to work on were extracted, and a main outline of the Kagawa DCP was formulated. To formulate the main outline, countermeasures against challenges which came up at the workshop were extracted from attendee's opinions. The main outline is constituted of guidelines and countermeasures for each function. The following abstract is one of the contents regarding distribution and access function excerpted as an example of guidelines and investigation from functions of Kagawa DCP.

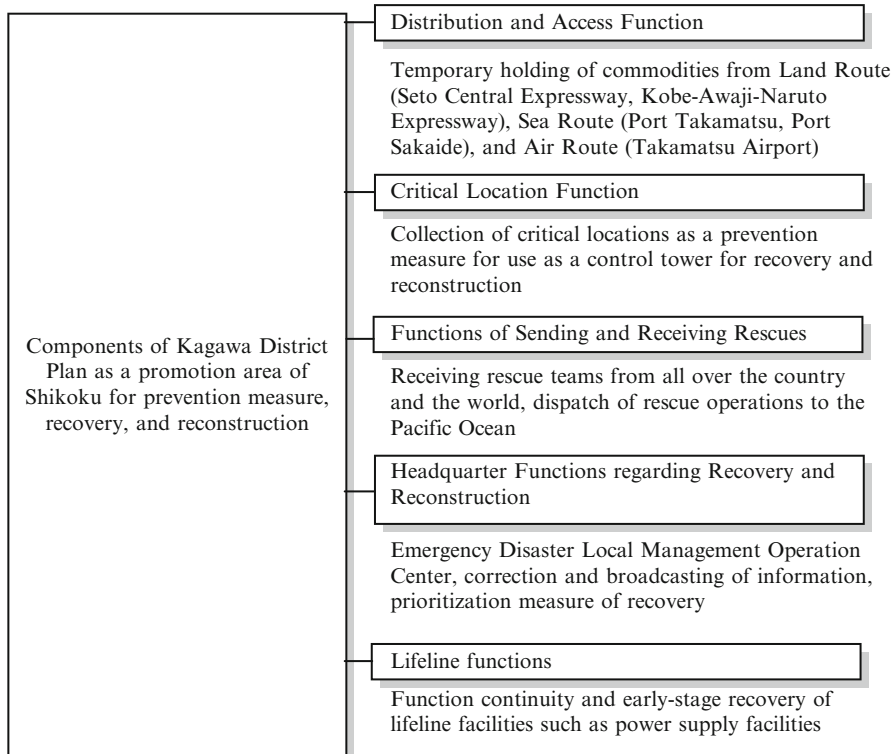


Fig. 10.8 Components of Kagawa District Continuity Plan

### 10.9.3.1 Distribution and Access Function

Immediately after a disaster, the center of the distribution functions need to be secured at inland-located area such as Takamatsu Airport since it could be predicted that critical damage would happen around coastline area. Based on the situations of recovery, distribution functions, Expressways in Shikoku as well as Seto Central Expressway, Port Takamatsu and Port Sakaide, must be secured. The knowledge and facilities owned by distribution companies, who are familiar in transportation of relief supplies and management business of stocks, must be fully utilized.

#### 10.9.3.1.1 Land Route

- Secure expressways to allow the required amount of emergency traffic routing within 24 h, start recovery process within 3 days, and start full-scale reconstruction within 7 days.
- Check all land routes which connect temporary helipad locations, and secure them to maintain their function.



#### 10.9.3.1.2 Air Route

- Secure the facilities of Takamatsu Airport as a main rescue location to serve other areas in Shikoku
- Secure the access routes to Takamatsu Airport
- Execution of contracts ensuring reliable fuel delivery
- Identify potential locations for helipads in case of disasters

#### 10.9.3.1.3 Sea Route

- Maintain access route to Port Sakaide as a location for commodity distribution under disaster
- Port Takamatsu will act as a maritime rescue location in order to transport emergency commodities and people, continue transportation of companies, and act the operation to distribute goods to disaster-struck facilities.
- Dispatch experts for distribution, as Disaster Distribution Coordinators (a tentative name), to other Disaster Management Operation Centres in other prefectures
- Execute a contract of cooperation among each prefecture in Shikoku, and trucking associations and storage associations from each prefecture (utilization of community facilities, borrowing appliances, dispatch of experts, and expenses)
- Clarify the responsibilities of business groups and government in phases based on the size of disaster
- Discuss packaging methods including transportation devices and security of commodities
- Train for enforcement of commodity transportation with coordination of routes by land, sea, and air

The following shows abstracts of guidelines only for the other four functions of Kagawa DCP.

#### **10.9.3.2 Critical Location Function**

Ensure alternative location as countermeasures in case the primary location is unable to be utilized as a base facility and in order to secure critical base functions immediately after disaster, study anti-disaster and recovery countermeasures in advance.

#### **10.9.3.3 Function of Sending and Receiving Rescue**

This category has an objective of maintaining the facility and system, and creating machinery with an assumption of sending and receiving rescue, standardizing business during the disaster, and conducting personnel distribution for rescue (24 h, three shifts), and the terminology and machinery.

#### **10.9.3.4 Headquarter Function Regarding Recovery and Reconstruction**

In addition to securing the functions of the Emergency Disaster Local Management Operation Centre, secure coordinating function (information and machinery) centered on capitol of the Kagawa prefecture as the liaison with the Government.

#### **10.9.3.5 Lifeline Functions**

Formulate pre-selected reconstruction plans prioritized by government and enterprisers. And implement functional continuity by management of infrastructure acquired through optimizing the technology, abilities of management and supply owned by large companies and deep knowledge of locality and ability of quick response owned by local companies in the area.

#### **10.9.3.6 Challenges in the Future for District Continuity Management**

The holding workshop with other prefectures is planned as for each of the five functions in order to formulate action plans, to divide the responsibilities, to enforce training, to continue publicizing Kagawa DCP, and to get Shikoku DCP started.

### **10.10 Conclusion**

In this article, with focusing on Kagawa DCP formulation, the guidelines and possible challenges in the future were discussed above. To realize DCP, it is needed to surely take action after formulating BCP and DCP under the supporting by laws or regulations. As a significant step for realization of steadfast DPC, development of laws was conducted under the following background.

According to survey performed by Cabinet Office in fiscal 2013, 53.6 % of large companies and 25.3 % of medium-sized companies have formulated their own BCP (Investigative Commission on Measures Promoting Business Continuity Plan 2014). The both of percentages have been inclined to increase since fiscal 2009 when the survey was performed for the first time. Also, the percentage of companies which did not have their plan to formulate BCP or just did not recognize BCP itself have been increasing slightly. This result indicates further promotion and dissemination of BCP is required. The largest reason for formulating BCP derives from “Necessity acquired through the experience of disaster or unexpected accidents (43.8 %)”. If this reason is compared to the other reason “Requirement of law or regulations (14.9 %), it can be considered that formulating BCP is a spontaneous tackling of company and simultaneously the level of requirements by law against formulating BCP is low, which has been a conventional problem. These results have a same tendency as the survey results conducted by authors against companies in

Kagawa prefecture in 2008 and 2012. Without supporting by law or regulations, BCP and DCP had been formulated and managed by each organization freely, so to speak “motivationally” in the past. Even if BCP and DCP were formulated, it was hard to take official supports against maintenance controlling and PDCA cycle in such circumstances.

However, through the Great East Japan Earthquake, the limit of Government-rescue and assistance was clarified in the case of serious damage in wide region and the importance of Neighbor-cooperation was revalued. Therefore a lot of regulations related to Neighbor-cooperation were incorporated into the revision of the law of Basic Act on Disaster Control Measures. Especially “Community Disaster Management Plan (CDMP)” was newly established and enforced on April 2014. The plan is a spontaneous bottom-up type and is related to disaster prevention performed by residents and entrepreneurs in the community (Mori et al. 2014). Worthy of attention here is that CDMP adopted bottom-up and Plan-Proposal type by residents in the field of disaster preventive legislation. It enables residents and entrepreneurs to propose their disaster preventive plans compatible with the local peculiarity to the municipal council (Inoue et al. 2014). In accordance with CDMP, if entrepreneurs propose their disaster preventive plans to the council, local administration can recognize their trials. And some of actions, at least about reviewing local disaster preventive plans, might be taken between entrepreneurs and local administration. It is supposed to be same as for Kagawa DCP promoted by Kagawa District Continuity Investigation Committee. When CDMP is applied to Kagawa DCP, it is expected that the fragile solidarity like the Gentleman’s Agreement between a voluntary organization and the local disaster preventive council would be changed into reinforced one and then be accelerated. Their official works of coordinators would be much smoother, too.

On the other hand, problems about CDMP still remain. For example, current CDMP is focused on just only one unit of the municipality by the council. Therefore if a river flooding disaster happens over several different municipalities, though sharing information about evacuation among municipalities or taking action for the rescue are required as a damaged unit, current CDMP can not deal with whole of damaged area.

To improve the problems, coordination among several CDMPs should be considered. In the present circumstances a neutral organization like Kagawa District Continuity Investigation Committee mentioned above would play a role to make the solidarity reinforced. Furthermore, to firmly make BCP and DCP effective, it will be necessary to advance research and development of DPC regarding associations with laws relating disaster prevention and ISO standard (ISO22320; Societal Security-Emergency Management- Requirements for incident response).

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# Chapter 11

## Cross-Sector Partnerships in Managing Disasters: Experiences from the United States

Fatih Demiroz and Naim Kapucu

**Abstract** Historically, emergency management has been a collaborative effort in the United States. Disasters were mostly handled locally by community organizations in the early years of twentieth century, however the picture began to change as the damage inflicted by disasters escalated. Focusing events triggered action in federal government, which ended up with numerous policy initiatives and creation of well-known organizations such as FEMA and DHS. Nevertheless, importance of nongovernmental actors has not declined. Today, about 85 % of critical infrastructure is owned and operated by the private sector. Also, FEMA embraces the ‘whole community’ approach in managing disasters. In this approach government agencies, individuals, families, households, businesses, nongovernmental organizations, academia and experts, and neighborhoods are integral parts of the community; and all of them have their own roles and responsibilities to a certain extend. Having so many stakeholders, building partnerships, and working together in a horizontal (nonhierarchical) setting is called collaborative emergency management. In collaborative emergency management all these stakeholders have certain responsibilities in managing emergencies. Emergency management organizations identify these roles and responsibilities and assign them to various partners. Resources, knowledge, and expertise of the partnering organizations are invaluable for emergency managers. For example, emergency management agencies rely on retail companies for timely distribution of certain resources to disaster stricken areas. The logistic capacity and speedy of delivery of such firms are unimaginable for the public sector. As the communities in the U.S. get more complex and threats such as climate change become more visible, emergency management system will likely to rely on collaborative ties with nongovernmental actors in the future.

**Keywords** Public private partnerships • Disaster management • Collaborations • Disaster governance • Collaborative emergency management

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## 11.1 Introduction

Emergency management is historically a multi-sector and collaborative effort in the United States. Emergency managers embrace the whole community approach in managing crises where individuals, households, businesses, and nongovernmental organizations are viewed as stakeholders. In fact, local, state, and federal level emergency management policy makers and professionals rely on private and nonprofit sectors' input for effectively preparing for, mitigating against, responding to, and recovering from disasters, to a considerable extent. For example nearly 85 % of the critical infrastructure in the U.S. is owned by the private sector (Government Accountability Office 2006) making public private collaboration an indispensable component of emergency management across the country. This chapter will provide a brief overview of the growing role of the private and nonprofit sectors in emergency management in the U.S. along with answers to the following questions: How did the public-private partnerships evolve over time in the U.S.? What kind of developments in the American public administration shaped the emergency management system in the country? and What direction does the U.S. emergency management system go to?

In order to present a comprehensive understanding of the relationship between public and private sectors in emergency management, the chapter will first present a brief historical overview of the development of the emergency management system in the U.S. The second section will provide the fundamentals and characteristics of the collaborative emergency management in theory and practice and the third section will present the roles and responsibilities of public and private sectors and the tools of government used for formulizing and carrying out cross-sector collaboration. The fourth section will explain the network perspective in collaborative emergency management followed by a final section discussing the future directions in public-private partnerships in the U.S. emergency management system.

## 11.2 Emergency and Crisis Management in the U.S.: A Brief Overview

Focusing events shape emergency management laws, practices, and political developments in the U.S. to a great extent. Focusing events are major disasters, which reveal gaps in the system and force major changes for improvement (Rubin 2012). Along with these disasters, political climates have major influences on the policy makers' perspective on emergency management. Focusing events and political developments led to three major time periods in the history of emergency management system in the U.S.<sup>1</sup> First period is the pre-1950 era. During this period, the disasters were seen as 'act of God' and they are mostly handled locally. Main

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<sup>1</sup>These three periods are determined arbitrarily. Depending on the perspective, one can identify many more periods. We preferred three time periods to keep this section of the chapter relatively brief.

national organization providing disaster relief in this period was the American Red Cross. Federal government involvement was very limited, ad hoc, and inconsistent. State and local governments, charities, and social institutions, like churches, have been the primary source of disaster assistance (Butler 2012). Private sector also had an important role in mitigation and recovery after disasters as well. For example, after the 1906 San Francisco Earthquake, the city was ravaged by fires erupted after the quake. Insurance companies played a major role in funding the reconstruction of the city after the disaster (Butler 2012). The Flood Control Act of 1934 gave authority to Army Corps of Engineers for carrying out and managing flood control projects signaling a move forward from “disasters as acts of God” mindset to “human can control nature” idea (Haddow et al. 2011). Nevertheless, they were very limited compared to contemporary role of federal government.

The Cold War caused a major shift in the approach to emergency management and started a new era. Civil defense became the main concern as the risk of nuclear fallout peaked beginning from the 1950s. Almost all local governments had civil defense departments operating in a command and control fashion under significant influence of the militaristic nature of the period. Mostly retired military officials on pensions were hired in civil defense departments so that there would be minimal expense for local governments (Phillips et al. 2012). Similar to earlier decades, during the Cold War, most of the federal emergency management legislations were on an ad hoc basis. In 1950, a major flood hit northern Midwest; as a result, Congress passed Disaster Relief Act, which allowed Federal government to become involved in disaster relief without Congressional approval (Phillips et al. 2012). The Office of Civil Defense and Mobilization and the Office of Emergency Preparedness were created in 1958 followed by the National Flood Insurance Act enacted in 1968, which created the National Flood Insurance Program (NFIP). Later on, flood insurance became mandatory for federally backed home mortgages in order to create incentives for the participation in the NFIP. As the federal government initiated various policies and programs in response to numerous disasters, a fragmented emergency management system developed over time with agencies and programs becoming consolidated under a Federal Emergency Management Agency (FEMA) due to the Executive order 12127 of March 31, 1979.

After the establishment of FEMA, emergency management in the U.S. entered into a new period. The agency consolidated emergency management activities; nonetheless, 22 separate agencies remained involved in management of emergencies and crises. These organizations had their own mission statements and were not primarily concerned about disasters. Throughout 1989–1991, a series of major disasters revealed the weaknesses of the system (1989: Hurricane Hugo, Loma Prieta Earthquake; 1990: Malibu, Ca, Fires; 1991: Oakland Hills, Ca Fires). As a result, a Federal Response Plan (FRP) was enacted in 1992 for the purpose of organizing federal response to disasters. The system was tested throughout the 1990s with Hurricane Andrew, which hit Florida in 1992 and was the first major disaster to test the new system and marked as failure in conjunction with Mississippi Floods in 1993. From 1993 to 2001, the system showed better results in response to disasters such as 1994 Northridge, Ca earthquake and 1995 Oklahoma City Bombings. These situations generated adjustments made to FRP (especially in 1999) as part of lessons

learned, also known as the James Lee Witt period in FEMA, arguably the brightest years of the organization. FEMA was deemed relatively successful in implementing federal emergency management policies, especially under Witt administration, between 1993 and 2001.

Then, an unprecedented event occurred with the terrorist attacks on September 11, 2001 causing major consequences in the emergency management system of the country. The attacks exposed the weaknesses of the system and, as a result, the Bush Administration made the biggest restructuring in the federal government in its history. The Department of Homeland Security (DHS) was created in 2002 by the Homeland Security Act and moved 22 different federal agencies (including FEMA) and 179,000 federal employees under its jurisdiction. Following the attacks, FRP was revised and offered a hierarchical structure for response in which tasks for each agency and jurisdictions are defined and support functions are shared, but remained largely the same as 1992 and 1999 plans (Kapucu 2009). In 2004, FRP turned into a National Response Plan (NRP) becoming a document for the national level emergency response efforts rather than being limited with federal scope. By the introduction of NRP, the number of support functions and organizations involved in response increased; however, the interorganizational structure still remained hierarchical. Also, National Incident Management System (NIMS) was developed based on Incident Command System, which originated in Department of Agriculture's Forest Services for fighting forest fires and bushfires. NIMS served as the operational basis of the NRP (Robert et al. 2012). After the Hurricane Katrina failure, National Response Framework (NRF) took place of NRP as it was criticized for lacking flexibility, targeting a limited audience, and using too much technical terminology. NRF presents a more flexible and easy to understand framework and began to serve as the backbone of the national disaster response system. Along with NRF, several programs at the federal, state and local levels coordinate preparedness, mitigation, and recovery phases of emergency management.

This brief overview of the history of emergency management in the U.S. is intended to set the ground for the discussions on the relationship between public and private sectors. The following section explains the collaborative nature of emergency management and how it actually translates into action in policy making and implementation.

### **11.3 Collaborative Emergency Management**

The structure and modus operandi of the U.S. government has been going through a transformation in response to escalating complexity of the societal problems. The incremental changes in the administration led to three major approaches that shaped the public administration practice in the U.S. Initially, the hierarchical government based on Weber's ideal type bureaucracy is the most widely acknowledged and embraced organizational structure, not only in the U.S. but also across the world. Towards the end of the twentieth century, the reinvented government (Kamarck



2002), also known as the “New Public Management” (Osborne and Gaebler 1993), became a popular ‘trend’ in the government realm. This approach emerged in Australia and New Zealand, spread across continents, and was prevalent in the U.S. during 1990s. Reinvented government views public service as a field of business (Koliba et al. 2011); therefore, the government should run like a business. Finally, government by networks, which implies replacing bureaucracy by a wide variety of other kinds of institutions, views the policy-making process as a joint effort of public and private sectors, not public vs. private sector as NPM or privatization offers. In some cases, government by networks and governance are used interchangeably, although the latter term is much more comprehensive and includes several other tools in tandem with networks. In this chapter, we consider tools such as networks, public private partnerships (PPP), and outsourcing under the governance term (Salamon 2002).

Although governance refers to including nongovernmental actors in the policy implementation, it does not mean bureaucracy is completely disappeared. Instead, carrying out policies is not left solely on the shoulders of bureaucracy any more. Depending on the nature of the services being delivered, the relationships between organizations can be contractual based/outourced (principle-agent relationship), collaborative (equal partners), or lead by private actors (services provided by market). It is possible to see all types of relationships in the emergency management field; however, collaborative partnerships are very critical and widely used particularly at the local response to disasters.

Bardach (1998) defines collaboration as “any joint activity by two or more agencies that is intended to increase public value by their working together rather than separately” (p. 8). Relationships in collaborative networks function based on trust and commitment in a nonhierarchical (i.e. horizontal) structure (Mandell and Keast 2007). Collaborative networks can be formed in various settings between stakeholders and can be encouraged or mandated depending on the outcome goals and the type of service delivered. McGuire (2006) identifies four collaborative contexts in which networks are formed and function. First is the “*intermittent coordination*, which occurs when the policies and procedures of two or more organizations are mutually adjusted to accomplish an objective” (p. 35). Most of the disaster response activities are typical examples for this type of collaboration and they are likely to be mandated by a government body such as FEMA. Temporary tasks forces are the second type of collaborative context. These are established for accomplishing certain tasks and dissolve after the mission is completed. A third type is permanent or regular coordination and occurs when organizations come together as part of formal agreements to accomplish narrowly defined tasks which may not necessarily be their primary intended outcome. Emergency management planning, preparedness, and local mitigation strategies are typical examples. Finally, network structures or coalitions formed to deal with persisting problems are the last collaborative context McGuire (2006) mentions. Organizations participating in the network setting present a strong commitment to network level goals and share their resources extensively. Some of the disaster response and most of the recovery efforts can be considered within this context.

Emergency management system is also influenced by the abovementioned government approaches. During the Cold War, the priority was civil defense and the government agencies were organized in a hierarchical manner. As the political environment and the impact of disasters change, a relatively horizontal perspective gained impetus. Currently, collaboration with all sectors at all levels of government constitutes the backbone of the emergency management system. In fact, FEMA and DHS envision partnerships at all levels (Bourne 2007). In practice, emergency management networks are built from the bottom up, not imposed by authorities top down (Waugh 2003). However, this does not mean that federal policies mandating collaboration are ineffective; instead, they would not be successful unless there is a willingness to collaborate in the bottom, which can be possible as long as the non-governmental actors acknowledge their responsibilities in managing emergencies.

Successful emergency management networks rely on several criteria. First, the network must be inclusive of all stakeholders from public, private, and nonprofit sectors as well as the community. Including nongovernmental actors is vital because if people are not prepared, no one is prepared. This includes individuals, businesses, and other community organizations such as nonprofits and faith-based organizations. Second, it is vital that emergency managers ensure collaboration among participating organizations. Trust and positive reputation are necessary for building and maintaining collaborative ties with partnering organizations. Third, flexibility in the face of uncertainty of emergency situations is critical (Kapucu 2006). Partners in an emergency management network need a high level of cognition (i.e. situational awareness) in before, during, and after adjusting to changing (Kapucu 2008). Comfort (2007) uses practice of public managers and policy makers in New Orleans as an example for lack of cognition just before the Hurricane Katrina struck the city. People (including the administrators) were not able to acknowledge the scope of the upcoming hurricane and failed to take the necessary actions to avoid the disaster. Fourth, interoperability is indispensable for accomplishing certain tasks and communicating effectively with partners. Emergency management organizations as the leading actor in the network (network administrative organization) and partners need a reliable means of communication. Information communication technology (ICT) utilization plays a key role in facilitating communication among network participants. ICT utilization also contributes to increasing cognitive capacity of the network (Comfort 2008; Demiroz 2012).

FEMA integrates network based disaster response to its national response documents (formerly NRP and currently NRF) to a certain extent and emphasizes collaboration within and between sectors. State and local emergency management agencies follow the same approach and prepare their emergency management plans based on FEMA's provisions. The plans prepared by federal, state, and local emergency management organizations mandate collaboration even though, in some cases, there is no sanction if an organization does not fulfill the requirements of emergency management partnership. This implies a nonlinear and complex network characteristic. In hierarchical and linear governance settings the tasks are well defined and clear; therefore, one's failure to comply with his/her responsibility brings a negative consequence. On the other hand, networks are not hierarchical nor

are they linear especially in disaster settings. They bear certain level of complexity, which means organizations in the network may not have a complete understanding (i.e. cognition) of the situation, necessary information, or physical resources and rely on each other for accomplishing their tasks (Kapucu 2009). The operations of the network hinge on distributed cognition and interdependence among participants. An organization failing to fulfill the responsibilities of the network partnership may not necessarily be held accountable for their actions, or lack thereof, because of the nonbinding nature of the partnership.

## **11.4 Roles and Responsibilities of Private Organizations as Identified in Government Policies and Frameworks**

Private sector is involved in the disaster management in numerous ways such as PPPs, corporate social responsibility (CSR) projects, and business continuity planning (BCP). Although they are closely associated, each of these concepts refers different things. For example, PPPs are typical outcomes of collaboration between private and public organizations. The terms and conditions of PPPs depend on the type of relationship between partners. As mentioned above, requirements of disaster response are quite different than preparedness and mitigation; as a result the partnerships will differ from each other based on these requirements.

CSR and BCP also may lead to creation of PPPs; however their contributions depend on the size, scale, geographic region, sector, and businesses culture of organizations. Businesses may engage in CSR for disaster management for ethical or instrumental (e.g. increase company publicity, enhance customer loyalty, and branding) reasons. As a result of CSR businesses may respond to disasters in numerous ways such as direct cash donations, cash grants, employee cash donations, deployment of employees, customer cash donations, infrastructure modifications, financial investments in disaster stricken areas, and working with local emergency management organizations (Johnson et al. 2011). Very few of these actions relate to PPPs. Also, BCPs help private sector survive in disasters, however they are shaped based on several factors such as type of industry and scope of businesses. Smaller businesses likely to rely on their social capital for the resources necessary for continuing normal operations while bigger and critical industries such as banking, energy, and transportation need to have redundant resources. In either situation, public sector needs to work with businesses to minimize the disruption in communities caused by disasters. CSR and BCP can be understood much clearly in a much broader perspective such as community disaster resiliency. This chapter provides an overview of the relationship between public, private, and nonprofit sectors from the collaborative emergency management perspective. Therefore, cross-sector relationships are viewed through the public administration lens. For further discussions on community disaster resiliency, CSR, and BCP subjects, readers can review Kapucu et al. (2013), Comfort et al. (2010), Abou-Bakr (2013), Kuo and Means (2012), and Johnson et al. (2011).

FEMA pays special attention to its relations with the private sector. There is a dedicated division called Private Sector Division under Office of External Affairs for developing and managing collaboration with private sector in the agency. Private Sector Division “cultivates public-private collaboration and networking in support of the various roles the private sector plays in emergency management, including: impacted organization, response resource, partner in preparedness, and component of the economy” (Federal Emergency Management Agency 2013c). Various types of partnerships with private sectors at tribal, local, state, regional, federal, and international level are established and managed. For example, at the national level, programs and partnerships such as Business Emergency Operations Alliance (BEOA), Citizen Corps, Infragard (at the national level) are some of the noteworthy partnerships. BEOA is a partnership between corporations and the Department of Defense for business group advocacy, information sharing, establishing collaboration with public and nonprofit organizations, and supporting research for crisis management. Citizen Corps is a nationwide grassroots program backed by FEMA launched in 2002 to bring government and community leaders together to involve organizations and the public in all-hazards emergency planning, preparedness, mitigation, response, and recovery. The organization provides trainings to individuals to better prepare for and respond to disasters. Infragard is a PPP developed by FBI in 1996. It is an information sharing partnership between FBI and information technology industry against various terrorism, intelligence, and criminal threats (FEMA 2014c).

At the local level, metropolitan regions, like Miami-Dade and Dallas, also develop PPPs for helping businesses to develop capacity and support community resiliency. Miami-Dade County has a Business Recovery Program (BRP), which works to ensure disaster awareness and preparedness in the private sector. The program closely works with the Florida International University (FIU). FIU constantly develops tools such as Business Continuity Information Network (BCIN) to facilitate the program (FEMA 2014c).

Furthermore, FEMA promotes PPP in its plans/guidelines shaping federal action in all phases of emergency management while at the same time utilizing the documents as guidelines for local emergency managers. NRP, which was replaced by NRF, was criticized because of the language used being too technical and the plan not embracing a flexible approach in response. The NRF, on the other hand mentions private and nonprofit sectors, local and tribal governments, communities, and individuals in the response phase and broadly explains their roles and responsibilities.

In the NRF, FEMA (2013a) mentions “large, medium, and small businesses; commerce, private, cultural, and educational institutions, and industry; as well as the public/private partnerships that have been established specifically for emergency management purposes” (p. 10) in its definition of private sector. In general the primary role of the private organizations is the wellbeing of their employees and continuity of their operations. As the businesses move forward, their communities can return to normal much faster by continuing their daily lives keeping critical infrastructures in operation. Also, certain emergency response functions rely on collaboration among public organizations and some private companies. These

relationships are identified in NRF's emergency support function (ESF) annexes (FEMA 2014a). There are 15 ESFs incorporating responsibilities such as transportation, communications, and firefighting (see Appendix). State and local emergency management organizations use NRF as a model for making their own comprehensive emergency management plans (CEMPs) and build their own ESFs.

Emergency management plans (i.e. NRF and CEMPs) identify primary, supporting and coordinating organizations for each ESF. These organizations are chosen based on the nature of the tasks, such as Red Cross for sheltering and cell phone companies for communications. At the local level, emergency managers identify up more than 100 organizations from public, private, and nonprofit sectors. For example, Demiroz (2012) examined ESFs in 11 Central Florida Counties' CEMPs and found a total of 855 organizations were identified in 11 CEMPs making an average of nearly 78 organizations for each county's CEMP. These organizations are identified as either primary or support. The roster of 855 organizations consists of a mixture of public, private, and nonprofit organizations from various industries with settings inevitably requiring horizontal partnerships.

In times of major emergencies, local emergency managers activate their emergency operations center (EOC). When the EOC is activated, depending on the scope of an incident, the emergency manager invites partners identified in ESFs to the center for carrying out their responsibilities. EOCs are equipped with technological tools necessary for carrying out support functions. Figure 11.1 shows the decoration and organization of Orange County, FL, EOC. There are several stations in the EOC, consisting of tables and chair, which are designated for specific ESFs. When EOC is activated, public, private, and nonprofit organizations having primary roles in ESFs join the local emergency management team and manage incidents using technological tools (e.g. satellite phones, laptops, GIS maps, GPS devices etc.) presented on their desks as well around the EOC.

A graphical visualization of the relationships between ESFs and organizations identified for each function is presented in Fig. 11.2. The data for this graph comes from the Lake County, Florida's CEMP and visualized by using social network analysis software UCINET (Borgatti et al. 2002). The blue squares in the graph represent the ESFs and the red circles represent the organizations affiliated with each ESF. Each line represents a relationship between an organization and an ESF. Red lines show the connection between primary organizations and the corresponding ESFs while the black lines connect supporting organizations to the ESFs. As can be seen in the graph, an organization (i.e. a red circle) can be involved in more than one ESF. Figure 11.2 is also a representation of the emergency response network as it was proposed in the CEMP. For further details of emergency management networks, please see Demiroz et al. (2013), Kapucu and Demiroz (2011), and Kapucu (2008, 2009) (Fig. 11.2).

FEMA developed a framework for disaster recovery as well. National Disaster Recovery Framework (NDRF) is FEMA's guideline for recovery after a disaster. It defines "how Federal agencies will more effectively organize and operate to utilize existing resources to promote effective recovery and support States, Tribes, and other jurisdictions affected by a disaster" (FEMA 2011, p. 5). It is not a top-down





Fig. 11.1 Orange County, FL, Emergency Operations Center (Source: Authors)

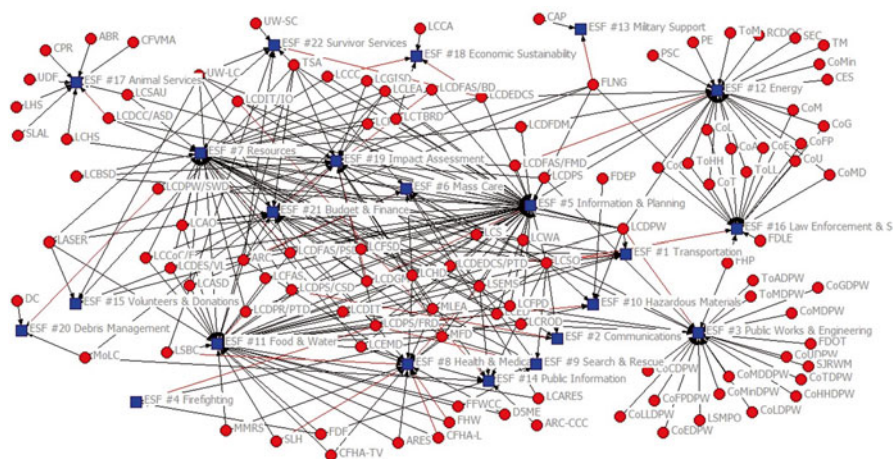


Fig. 11.2 ESFs and affiliated organizations, Lake County, Florida (Source: Authors)

plan telling other government agencies how to manage disaster recovery; instead, it is a “guide to promote effective recovery- a concept of operations and not intended to impose new, additional, or unfunded net resource requirements on Federal agencies” (p. 5). Similar to NRF, NDRF is structured through recovery support functions (RSFs). However, they are fewer than ESFs. NRF deals with immediate

relief operations and NDRF continues recovery and relief in the long term. The latter represents the continuation of the former. RSFs also closely related and coexist with ESFs, yet they have different missions, objectives, and partnership models. Organizations partnering in RSFs usually do not have roles and responsibilities in ESFs (i.e. disaster response) and have critical roles in recovery of communities like housing, financing, economic development, advocacy services, and psychological counseling (FEMA 2011). These partnerships start functioning as early as immediate aftermath of an incident and continue in the long term as long as decades depending on the impact of a disaster.

Minimizing the disruption of businesses in a community is vital in response and preparedness. FEMA director Craig Fugate uses this approach to assess severity of a disaster's damage to a community by utilizing an informal metric called Waffle House index. Waffle House is a chain restaurant in the U.S. running 24/7. Fugate was impressed with how well Waffle House is prepared for disasters and can serve even immediately after the incident. There are three levels in Fugate's index: green means Waffle House in the town is open and serving full menu with the damage being minimal. Yellow means the restaurant is open, but serving a limited menu. There might not be any power or generators are used for restaurants needs and there might be food shortage. Finally, red means the restaurant is closed, and that is the point where there is a significant disruption in the community.

FEMA (2013b) prepared a framework to guide nationwide mitigation efforts within a framework (NMF), which "establishes a common platform and forum for coordinating and addressing how the Nation manages risk through mitigation capabilities" (p. i). Whole community approach is the logic behind the mitigation efforts. Government agencies at all levels, individuals, families, and households, communities, businesses, nongovernmental organizations, academia and experts, and neighbors are integral parts of the community and are included in the mitigation efforts as partners for creating consciousness and a culture of preparedness and readiness. Private sector organizations are critical in strengthening resilience by "helping to sustain economic vitality and ensuring the continued delivery of goods and services in the aftermath of a disaster" (FEMA 2013b, p. 9). Nonprofits can support government efforts to provide services to socially vulnerable people.

## 11.5 Networks as Governance Tools in Managing Disasters and Crises

Collaborative emergency management provides various tools for building public private partnerships in emergency management (Salamon 2001). Depending on the goals of partnerships, government tools create a variety of outcomes. Insurance systems, nonprofit involvement in disaster relief and recovery, critical infrastructure protection, and utilization of retailers' supply chains are some of the important partnerships in emergency management.

Insurance systems are one of the fundamental tools for mitigating economic impacts of disasters. They are also one of the major PPPs in emergency management

field. For example, National Flood Insurance Program (NFIP) is the most notable policy initiative towards adoption of insurance against floods for households and businesses (Kunreuther 2001, 2006). Floods had been considered as a local issue up until the 1927 Great Mississippi Flood. In 1927, after heavy rains in the Mississippi drainage basin, most of the levee systems along the lower Mississippi failed causing flooding areas in Arkansas, Illinois, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee (Butler 2012). The flood damaged 200,000 homes and destroyed 20,000 square miles of land. Following the disaster, Federal government became involved in local flood management policies for the first time (other than levee management); however, these were mostly limited to an engineering aspect and ignored the increasing financial cost of disasters. Eventually, a broader approach was adopted in the following decades and the Congress created NFIP in 1968 for financial protection to property owners against flood damages. Participating communities were required to comply with FEMA's requirements to reduce the risk of flooding (FEMA 2014b). NFIP partners with FEMA and 90 private insurance companies to offer policies. Flood insurance is a typical example of PPP that is led by market.

Public sector benefits from infrastructure and experience of private companies in timely delivery of supplies to disaster stricken areas. Retail and logistics industries are significantly experienced and successful in cargo transportation and distribution of various types of goods to thousands of local stores across the country. The speed and effectiveness of private sector in delivery of goods is simply unimaginable for the public sector. Companies such as Wal-Mart, Walgreens, and Home Depot played significant roles in providing supplies to disaster victims in Hurricane Katrina in 2005 and Boston Marathon Bombings in 2013. For example, Walgreens is one of the largest retailers in the country with nearly 240,000 employees filling over 800 million prescriptions in 2012 and having 75 % of the population within 5 miles range of a Walgreens store (Martin and Williams 2014). Martin and Williams (2014) reports that Walgreens received significant demand from more than 200 counties in 15 states during Hurricane Irene. One year after, during Hurricane Sandy, the demand declined about 90 % as a result of FEMA's better organization of private sector resources including other participants in response activities. They also note that Illinois Emergency Management Agency signed an agreement with Walgreens for distributing potassium iodide tablets to residents living within 10 miles range of seven nuclear power plants in the state.

Another example showing how public, private, and nonprofits work together is the Boston Marathon Bombings. Two bombs were detonated around the finish line of Boston Marathon in the afternoon on April 15th. Three people lost their lives, 282 people were injured and several others were amputated. In the immediate aftermath of the explosions Boston's Office of Public Health Preparedness (OPHP) carried out its response operations in the medical intelligence center (MIC), which was formed in 2008 for the purpose of coordinating the response needs of the city of Boston. Boston Public Health Commission (BPHC) effectively coordinated resources that are in the hands of private sector through the MIC (Martin and Williams 2014). Officers in MIC contacted CVS and Walgreens to get information about the status of their stores. Managers of both companies confirmed around 60 % of their stores were open. This information was distributed to medical centers so



they could increase the amount of medications given to patients who were discharged (Martin and Williams 2014). Also, in order to assist victims' families, Seaport World Trade Center provided free space and lunch to staff for establishing family assistance center.

Private and nonprofit organizations played significant role in response to and recovery from four hurricanes, which hit the State of Florida in 2004, and Hurricane Katrina which devastated city of New Orleans in 2005. Content analysis of news reports, after action reports, and several other government documents of the 2004 hurricanes show that private sector organizations constitute about 27 % of the organizations participating in response activities. Also 7.7 % of the organizations in response actions are nonprofits. When combined, private and nonprofit organizations constitute one third of those who responded in 2004. In Hurricane Katrina, contributions of nongovernmental organizations were highly visible before, during, and after the disaster. For instance, Wal-Mart was aware of the upcoming storm and allocated its supplies accordingly. Similar to 2004 hurricanes, 30 % of the organizations that responded to Hurricane Katrina were private and nonprofit combined.

Nongovernmental organizations' role in recovery after Katrina was invaluable. American Red Cross led the efforts to organize more than 52 agencies from public and nonprofit sector to meet the needs of the displaced residents in New Orleans (Eikenberry et al. 2007). Also, there are coordinating organizations, such as the National Voluntary Organizations Active in Disaster (NVOAD), direction efforts of various VOADs in disaster response and recovery (Gazley 2013; Kapucu et al. 2011). Gazley's (2013) work explores the Community Organizations Active in Disasters (COAD), another nongovernmental actor contributing to disaster recovery efforts. COADs differ from VOADs as their roles and responsibilities are not clearly identified in government documents and their missions are not specific about disaster response or recovery, but are centered on broader "community-oriented missions of social and human service provision, economic development, volunteerism or other local services" (Gazley 2013, p. 84). Nonprofits contribute to post-disaster recovery via strengthening social community level social capital. Chamlee-Wright and Storr's (2009a, 2009b) research explains how local faith-based organizations contribute to recovery of Vietnamese community in New Orleans. According to their research, a Vietnamese community in New Orleans was organized around a church called Mary Queen of Vietnamese (MQVN) Catholic Church. The church served as a community center for political, social, cultural, religious, and commercial activities. In the aftermath of the hurricane Katrina, MQVN encouraged the displaced community members to come back (Chamlee-Wright and Storr 2009b).

## **11.6 Future Directions of Cross-Sector Partnerships in Emergency Management in the US**

There are two important forces that have been and will shape the future of emergency management in the U.S. These are changes in the modes of service delivery in the public sector and the impacts of major natural and manmade disasters. In fact,

these two forces are interrelated. Catastrophic disasters expose weaknesses of the current system and cause changes in it, while trends in business of government determine the direction of the change. The evolving nature of hazards along with social and environmental challenges give clues about the future of the discipline as well as how will the public and private sector relations be shaped.

A first and foremost challenge threatening every individual is the climate change. It is expected the climate change will trigger major disasters across the world. Risk of sea level increase threatens coastal communities and may cause millions of dollars of loss, displaced populations, and lost local economies. Similarly droughts and floods may lead to economic losses, mass emigration, and humanitarian crisis, which would create significant social vulnerabilities not only across the world but also in the U.S. Preparing for, mitigating against, responding to, and recovering from disasters in such complex social settings become much more challenging and costly. Simply expecting government organizations to handle such crisis is a sign of complacency and apathy.

Another challenge emergency managers have to take into consideration is increasing globalization. Millions of people enter the United States every year. Controlling such a human influx is a difficult task especially under constant threat of terrorism. However, protecting millions of visitors in case of disasters is even a bigger challenge. For example, more than 50 million people visit city of Orlando every year (Visit Orlando 2014). Orlando is located in Central Florida and subject to numerous hazards such as hurricanes, tornadoes, thunderstorms, floods, terrorism, exotic diseases, etc., and a major destination for people in case of evacuation from other regions of the state. Protecting millions of visitors who are not necessarily aware of the hazards and do not speak English or Spanish would require excessive collaboration with private sector as well as the international institutions such as embassies.

Increasing urbanization, exposure to hazards, and deepening social vulnerabilities create additional challenges to emergency managers. Social vulnerabilities stem from increasing diversity in population, economic inequalities, and socioeconomic status gap (education, political power) (Cutter et al. 2003). Increasing urbanization leads to more complex and expensive infrastructure needs (e.g. dams, highways, bridges, power plants, cyber infrastructure etc.). Building, maintaining, and protecting such infrastructures is costly and require significant sophistication. As the population grows people, especially less affluent families and individuals, may prefer to settle in more risky areas because of lower costs and become more exposed to hazards. Such location preferences are widespread in socially vulnerable populations (e.g. immigrants, farm workers, non-English speakers, special needs populations, etc.) because such locations are affordable.

Government organizations, especially at the local level, usually do not have resources to manage such complex problems. In order to overcome such challenges, they increasingly rely on private and nonprofit sectors. Given the complexity of social structures increases, exposure to hazards rises, and climate change continues, increasing number of stakeholders' input will be necessary. Managing dense relationships with various nongovernmental organizations are likely to take place in a

horizontal network setting. We do not claim public-private partnerships will completely replace government bureaucracy; however, they will be more necessary, visible, and prominent in the U.S. as these challenges persist.

## 11.7 Conclusion

Emergency management has been a multi-sector effort in the U.S. and it is becoming even more complex and collaborative as the problems become wicked. Three trends in government imply an evolution from hierarchical government perspective to horizontal, collaborative, and multi-stakeholder management perspective visible in the emergency management field. Partnerships with private and nonprofit organizations are not an option anymore, but they are a necessity. Whole community approach envisions emergency management as a responsibility of every individual and organization in a community, not just of public organizations. Put it in a simple way, if individuals are not prepared for disasters, nobody is prepared. Moreover, nongovernmental actors hold a wide variety of resources public managers will need in times of disasters.

Policy makers and public managers use governance tools, such as insurance systems, outsourcing, and collaborative public management, to better prepare for, mitigate against, respond to, and recover from disasters. We call utilization of such tools in the emergency management field collaborative emergency management.

Increasing complexity in our society and the damage inflicted by disasters make collaboration between public, private, and nonprofit sectors inevitable and indispensable. Challenges like climate change and social vulnerabilities are extremely difficult to handle and no government, let alone single organizations, can handle such complex problems. Public organizations cannot achieve their emergency management related goals without the input from private and nonprofit sectors. Private sector organizations cannot protect their assets and interests without participating in emergency management activities. They acknowledge dedicating their resources for emergency management purposes is a cost of doing business. Many nonprofits provide the most valuable services to their clients during and after disasters. These conditions project increasing level of cross-sector partnerships, yet future research needs to focus on how to build, maintain, and manage such partnerships in complex, unpredictable, and stressful incidents.

Successful disaster management takes a whole community approach. That includes sound policy making practices and input from private and nonprofit sectors. The motivation for nongovernmental actors to join emergency management practices might vary (e.g. corporate social responsibility, continuity of business planning, community outreach), and yet public safety without involvement of the public is almost impossible. In other words, regardless of the motivation, emergency management efforts would be incomplete without private and nonprofit sectors' participation. Collaborative networks and partnerships are primary government tools for ensuring cross-sector collaboration.

## Appendix

### Roles and responsibilities of the ESFs

ESF	Scope
ESF # 1 Transportation	Ability to sustain transportation services, mitigate adverse economic impacts, meet societal needs, and move relief personnel and goods
ESF # 2 Communications	Coordination with telecommunication and information technology industries, protection, restoration, and sustainment of national telecommunications, cyber and information technology resources
ESF # 3 Public Works and Engineering	Infrastructure protection, restoration, and emergency repair. Engineer services and construction repair
ESF # 4 Firefighting	Coordination of Federal firefighting activities. Support to wild land, rural, and urban firefighting operations
ESF # 5 Emergency Management	Coordination of incident management response efforts
ESF # 6 Mass Care, Emergency Assistance, Housing, and Human Services	Mass care, emergency assistance, disaster housing, human services
ESF # 7 Logistics Management and Resource Support	Comprehensive, national incident logistics planning, management, and sustainment capability. Resource support (facility space, office equipment and supplies, etc.)
ESF # 8 Public Health and Medical Services	Public health, medical and mental health services, mass fatality management
ESF # 9 Search and Rescue	Life-saving assistance, research and rescue
ESF # 10 Oil and Hazardous Materials Response	Oil and hazardous materials response, environmental short and long term cleanup
ESF # 11 Agriculture and Natural Resources	Nutrition assistance, animal and plant disease and pest response, food safety and security, safety and well being of household pets, natural and cultural resources and historic properties protection and restoration
ESF # 12 Energy	Energy infrastructure assessment, repair, and restoration, energy industry utilities coordination, and energy forecast
ESF # 13 Public Safety and Security	Facility and resource security, security planning and technical resource assistance, public safety and security support, support to access, traffic, and crowd control
ESF # 14 Long Term Community Recovery	Social and economic community impact assessment, long-term community recovery assistance to States, local governments, and the private sector, analysis and review of mitigation program implementation
ESF # 15 External Affairs	Emergency public information and protective action guidance, media and community relations, congressional and international affairs, tribal and insular affairs

Source: FEMA (2014a)

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# Chapter 12

## Public Private Partnership: Emerging Role of the Private Sector in Strengthening India's Disaster Resilience

Ranit Chatterjee and Rajib Shaw

**Abstract** The role of public and private sector in disaster risk reduction is emerging as an important area of attention in the post 2015 Hyogo Framework for Action agenda across the globe. In a rapidly urbanizing India, the public and private sectors have been the driving force behind socio-economic development. The present trend of sporadic engagement of the private and public sectors in post disaster relief and response highlights a need for a proactive approach among these entities to make the gains sustainable and build close partnership with the government in preparing and mitigating disaster risk. This chapter tries to look at Public Private Partnership (PPP) as a possible solution to better the disaster infrastructure in India. To develop a better understanding of the role of private sector, their engagement in the past disasters and initiatives are studied. Further, the chapter looks into the post disaster initiatives taken at various levels to make the society disaster resilient. The findings from the analysis of existing legislations and case studies help in evolving a set of recommendations to create a road map for engaging the private sector through PPP for disaster resilience in future.

**Keywords** Disaster • Private public partnership • Resilience • Legislation

### 12.1 Introduction

India is evolving as an emerging world economy and has seen a surge in private investments across various sectors. The country has the largest market share for Public Private Investment (PPI) among the developing world with 98 % share of the regional investment in Southeast Asia (Hans et al. 2009). Recognizing the need for adequate investment in the development of infrastructure for promoting higher growth in India. Economic reform, structural reforms and industrial policy were

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used to support this growth. The twelfth five-year plan (2012–2017) eyes a 2 % increase in investment in the infrastructure sector from eleventh five-year plan and relies heavily on the private sector for funds and expertise. The most favoured form of engagement would be through Private Public Partnership (PPP) and the private sector is expected to shoulder 50 % of the projected cost of this development.

However, such growth has its own liabilities. The Hyogo Frame Work for Action (HFA) input document express concerns on an increasing trend of accumulating intensive risk through PPP projects across Asia affecting the private houses, governments and community. This happens through increased investment in hazard-exposed regions in conjunction with other factors like inadequate urban planning, weak governance, poverty, limited resources and environmental degradation.

Stoker (1998) states that decision-making and implementation lies with the government in order to achieve coordinated action through various forms of partnership. On the other hand Rohdes (1996) argue that there is no clear demarcation of public and private sector roles and responsibilities in general. As a result of this, the role of the government gets extended to guarantee the safety of such investments and ensuring wellbeing of its citizen. Mayena (2006) states that disaster risk reduction is dependent on the capacity of the local the authority and wherever required the capacities needs to be build for better resilience. Quarantelli (1997) highlights that the government and private actors may have “different interests, tasks and goals”. On the other hand, Pomeroy et al. (2006) suggests the need for involving both the public and private sectors dynamically in socio-economic development. In the similar lines Nolte et al. (2012) finds that such coordination between these actors leads to efficient network coordination. At this point, one may argue that why private sector cannot handle the disaster management alone. It is true that the private sector has been engaged in managing their business risk with a high level of expertise. However, due to absence of detailed guidelines for risk allocation at national and state level, a ‘negotiated’ approach is taken up by the private sector. The focus of most agreements is on allocation of risk, rather than measurement through various qualitative and quantitative methods. Considering the complexities and dynamism of challenges posed by disasters, a multi- stakeholders approach is necessary. The challenges in the form of high requirement for resources, volunteers, information, expertise and decision making can only be meet when both sectors brings in commitment to collaboration and partnership. Limited capacities of the government coupled with growth of private sector support new institutions and partnerships to carryout vulnerability reduction and intervene in various phases of the disaster cycle (Pelling 2003). Harding et al. (2000) finds that there is a lacuna in holistic understanding arising from lack of studies linking urban governance with private sector and development of business models, which highlights business interests of both sectors as mutually beneficial.

The private sector has been an integral part of policy environment and urban governance in various forms like service delivery, business development and business leadership. Viewing a global perspective Ahrens and Rudolph (2006) states that private sector will need strong collaboration with the government in building a strong institutional support and decision-making process and also bridge the gap in



implementation and enforcement. The recently concluded Asian Ministerial Conference on DRR (AMCDRR) in Bangkok (2014) emphasized on the amplified role of private sector in enhancing the community resilience. The state's role should be focusing on policy making and supporting the private sector and the degree of involvement will directly relate to the risk involved. Having said this the fact still remains that PPP in DRR one of the least academically explored areas.

This chapter looks at the private sectors engagement in the past disasters to identify the predominant trend and support provided by various legislations to enhance such partnerships in future. Here the private sector necessarily refers to all for profit businesses that are not owned or operated by the government. The various legislations, which support DRR activities, are studied to analyze the overlaps and existing gaps in implementation. Further in the chapter good practices taken up by various states in India in the post disaster scenario is discussed to create a framework for engaging the private sector for DRR in India.

The various data sources to substantiate the author's arguments can be categorically put under three heads. The first source of data is publicly available documents on the policies that shape Indian infrastructure, and the experiences of projects in various sectors and State level legislations. Second sources of data relating to the disasters are mainly form the State level disaster memorandums and reports on reconstruction in post disaster scenario. Finally the author incorporates some of the insights that arose from a workshop attended by representatives of various public and private sector houses arranged in Mumbai by United Nations International Strategy for Disaster Reduction (UNISDR) on PPP in disaster management along with Hindustan Construction Company (HCC).

## **12.2 Private Sector as a Support System for the Indian Cities' Resilience**

The Global Assessment Report (GAR 13) predicts that cities will play the lead role in disaster risk reduction activities in the future. The 74th constitutional amendment act of 1992 make the urban local bodies responsible for bottom up planning, improving coordination and enhance community participation through formation of separate democratic municipal government and giving financial freedom. This was a major step in boosting self-sufficiency and also for sustainable local development. But findings by Savage and Dasgupta (2006) on urban services suggest that there is an existing gap in service delivery due to overlapping of policies and roles, lack of expertise, less inclusive and other administrative constraints. Considering the expectation that by 2039, 50 % of India's population would begin to live in urban areas (projections based on UN World Urbanization Prospects) and the corporations will be responsible for upgrading the services. The pressure exerted on the urban government due to this rapid urbanization will make the system more susceptible to fail in case of a disaster to provide public goods and services. Lack of autonomy of the

city authorities and limited resources makes it necessary, that the local governments be encouraged and enabled to draw resources from the market and the private sector for managing the ever-increasing disaster risk in urban India. In such cases, Virmani (2005) suggests alternate institutions like Public Private Partnership and other Non Governmental Organizations (NGOs) and commercial organizations can fill this void. The new legislations like disaster management policy 2009, Coastal Regulatory Zone (CRZ) notification of 2011 create window for engaging the private sector through PPP for in building a disaster resilient society.

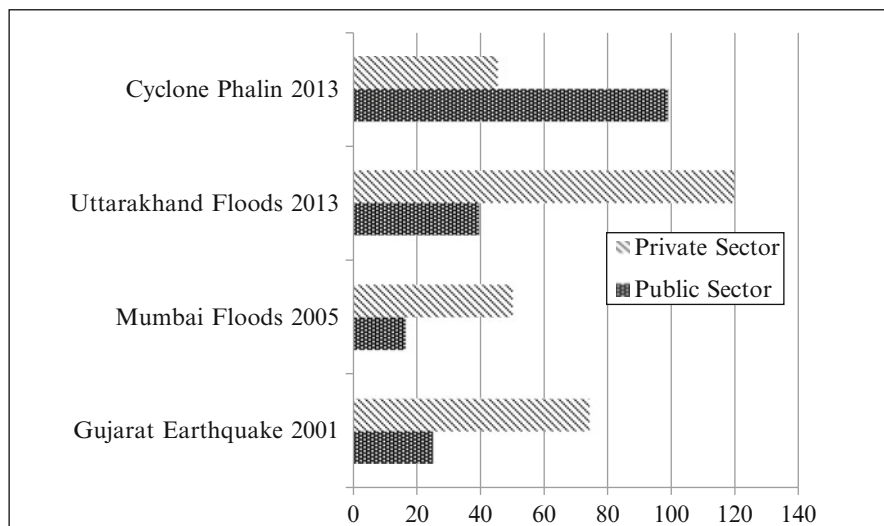
### ***12.2.1 Economic Impact of Disasters on Private and Public Sector in India***

The economic impact of a disaster is a summation of the direct cost, indirect cost and fiscal loss. The direct cost is linked to physical or human loss or damage. Where as, indirect cost is the loss in business due to commercial disruption and fiscal loss is the additional cost of rebuilding the infrastructure Kousky (2012), Memorandum of Government of Maharashtra for Flood (2005). But mostly what is considered is the direct loss factor to study the economic impact of any disaster. Considering the Gujarat Earthquake 2001, Mumbai floods 2005, Madhya Pradesh Floods in 2012 and Uttarakhand floods in 2013 it is realized that the private and public sector has incurred losses far beyond the capacity of the State government to compensate for such loss. The Table 12.1 below shows total loss put in the respective state memorandums for demanding assistance from the central government. Though in case of Gujarat earthquake and Mumbai floods the SDRF was non-existing but the current provision made in State Disaster Response Fund (SDRF) doesn't match up to loss incurred in the disasters and hence to close this gap it is essential that extra funding

**Table 12.1** Incurred losses in disasters and present SDRF and capacity building fund provision in affected States (all units in Rs. Million)

Disaster event	Total estimated loss incurred	Present state disaster response fund provision	Present capacity building fund provision
Gujarat earthquake 2001	23,0000.0	6,103.3	60.0
Mumbai (Maharashtra) floods 2005	6,5560.5	5,382.8	50.0
Madhya Pradesh floods 2013	49,398.1	4,773.9	50.0
Uttarakhand floods 2013	30,000.0	6,501.5	40.0
Cyclone Phailin 2013	143,734.7	4,759.8	50.0

Source: Respective State's disaster memorandums for central assistance, Ministry of Finance circular, SDRF guidelines by ministry of Home affairs; Memorandum of Government of Maharashtra for Flood (2005); Memorandum of Government of Madhya Pradesh; Memorandum of Government of Odisha on the very severe cyclone Phailin and the subsequent flood 2013



**Fig. 12.1** Comparative analysis of the losses incurred by public and private sector in recent disasters (Source: Respective State's disaster memorandums for central assistance, the loss in Uttarakhand floods 2013 is compiled from Press Information Bureau, Government of India's report of 08-July-2014 and PHD chamber of commerce and industry August 2013 report. (All units along X-axis in Rs. Billion); Memorandum of Government of Maharashtra for Flood 2005; Memorandum of Government of Madhya Pradesh; Memorandum of Government of Odisha on the very severe cyclone Phailin and the subsequent flood 2013)

source is identified for risk reduction measures. Comparing the losses of both the sectors mostly the private sector incurs more loss when compared to public sector as shown in Fig. 12.1.

### ***12.2.2 Past Engagement of the Private Sector in Disaster Management***

In order to develop a holistic understanding of the Public Private Partnership in Indian context, it is important to consider their earlier engagements in similar situations. Arora and Puranik (2004) state that business in Asia is based on the principles of social welfare, which is realized through corporate patronage. The involvement of the private sector can be traced back to early nineteenth century common among the Gujrati and Parsi merchant communities who made philanthropic contributions and provided funds for building schools, pilgrim rest houses, places of worship like temples, distributing relief items during disasters, and helping the poor (Mishra 2010). The functioning of local supply chain and critical infrastructure is essential for the local and national resilience. The Public and Private sector between them

controls majority of the services and commodities, which are critical for restoration of normalcy after a disaster event and hence PPP becomes essential to bring in coordination and collaboration among stakeholders. Public and Private Partnership is conventionally viewed as a contract or partnership between government and private sector and there is need to understand how these two sector will engage in various phases of disasters (Stewart et al. 2009). In Indian context the role of private sector has been usually supportive after a catastrophic event, where they have actively participated in humanitarian emergencies till the response and relief phase. This limits the private sector' overall potential for engaging in long term recovery and preparedness with a few exceptions. In the case of Indian Ocean Tsunami 2004, Régnier et al. (2008) observes that NGOs and donor agencies underestimated the need for long-term recovery process in face of immediate relief and response needs. In India, the President of the Confederation of Indian Industry (CII) invoked the Corporate Social Responsibility (CSR) and appealed for liberal contributions and support to the relief and rehabilitation efforts in the aftermath of the Tsunami tragedy (Ministry of Home Affairs and CII Handbook). This form of CSR has evolved mainly out of the modern or progressive paradigm, which considers business, as an integral part of the society and has responsibility towards all stakeholders (Steiner and Steiner 1997). Twigg (2001) identifies five different ways in which the private sectors engage through CSR activities in Disaster management in the past. These are namely philanthropic or charitable, contractual, collaborative, adversarial and unilateral. Though these have a significant impact on the community but such engagements are aid dependent and focus mainly on post disaster relief and rehabilitation and are mostly decided by the top management of the companies (Twigg 2001; Bhatt 2002).

Gujarat Earthquake of 2001 is one of the most widely documented disaster events in Indian context. An analysis of corporate sector engagement at various stages of the disaster gives an insight into the private sector engagement in case of emergencies. Patel and Alagh (2003), finds that majority of the corporate houses engaging in disaster response or recovery had a strong community connection or a business interest with the location of the disaster event. Figure 12.2 elaborates the engagement of the corporate sector in 2001 Gujarat earthquake. The international, national and state level corporate houses that have funds mainly under CSR engage in long-term recovery process. The international houses either engage through NGOs or foundations where as national and state level companies contribute to a common fund. The local level organizations are generally impacted by the disaster event would act as beneficiaries and have less funds to contribute thus engaging mainly as first responders.

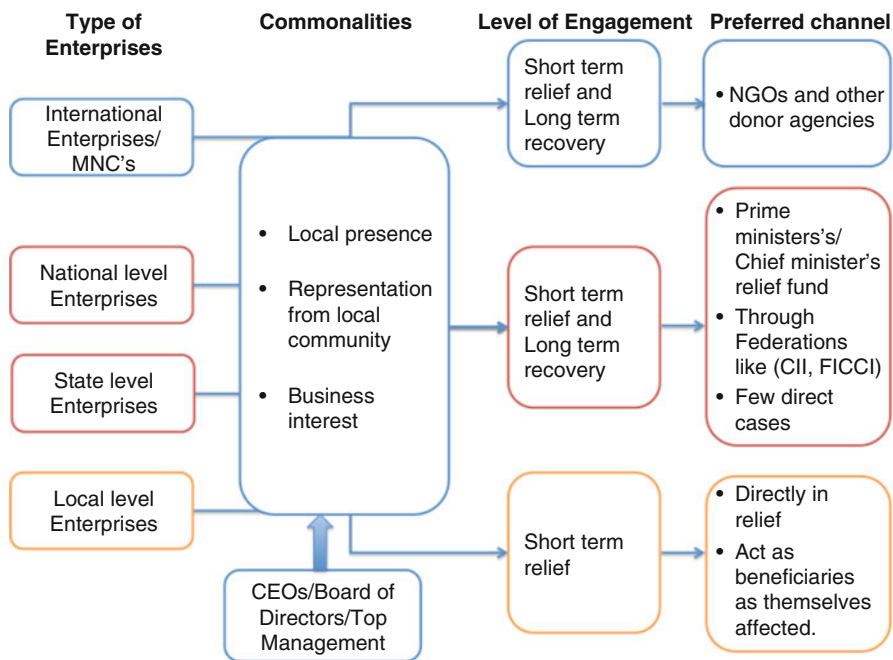


Fig. 12.2 Past trend of public private partnership in India

### 12.3 Legislations and Policy

Legislations and policy guidelines form the basis for long-term intervention in disaster management. Globally, a paradigm shift in disaster management approach, from relief and rehabilitation to prevention and mitigation was triggered by the United Nations' move to observe the 1990s as the International Decade for Natural disaster. Further the HFA 2005 shifted the focus to strengthening of national and local level legislation. In Indian context, the famine codes and relief manuals were developed during the nineteenth century and were one of the first manuals for disaster relief activities in till recently. It is commonly observed that legislations are often enacted in the backdrop of a disaster, political shifts, or as a result of participative communities. Bhopal gas tragedy was the backdrop for formulation of the Environment (Protection) Act, 1986 followed by several other Acts, rules and codes relating to the subjects of water, air, fire and chemicals accidents. The 1999 super cyclone, the 2001 Gujarat earthquake and the 2004 Indian Ocean tsunami proved to be turning point for bringing in the disaster management legislation in the country (Report of Task force, Ministry of Home Affairs 2013).

### ***12.3.1 Disaster Management Act and Policy***

The High Power Committee (HPC) has identified 31 different types of disasters categorized under five heads namely Climate and Weather related, geological, Chemical, Industrial and Nuclear, Biological and accident related disasters. Out of these, only ten are covered under the ambit of National Disaster Response Fund (NDRF) and provisions can be made for extra funding to the SDRF (Office memorandum No 32-3, Ministry of Home Affairs 2010). Chapter five of the disaster management act of 2005 under section 30 subsection xiii and xxvii encourages the district authorities to involve the private sector in disaster management work and engage them through community training, awareness programmes. The disaster management policy of 2009 in similar tone recognizes the need for the National and State authorities to leverage the corporate sectors expertise for disaster management. Further, it highlights the importance of Hazard Risk Vulnerability Assessment (HRVA) as part of Business Continuity Planning (BCP) for the corporate houses and involving the media in community awareness, early warning and disaster education. The various guidelines issued by National Disaster Management Authority has provided platform for involving the private sectors in disaster management activities. The disaster management plans and setting up of Common Services Center (CSC) Scheme are proposed on PPP mode for sharing of expertise and better management. Table 12.2 below list the type of activities listed in various NDMA guidelines in respect to different disasters. Miyaguchi and Shaw (2007) finding on the involvement of the corporate sector in Mumbai during various disasters reveal that about 56 % of the engagement of the private houses is in providing training and technical support. Most of these trainings are internal arrangement and hence such legislative provisions though significant but fail to institutionalize disaster management in private sector at all levels.

In order to operationlise and bring the various stakeholders onboard, a detailed implementation plan may be required to augment the laid down guidelines. In order to support the implementation of guidelines, disaster fund requirements will be high and hence PPP will frees valuable monetary space for the provision of public services. Further, the 12th planning commission report envisions an increase in private investment from 30–50 %, which will enhance the social sector and infrastructure development and also eliminate the constraints posed due to limited resources and expertise with government. A quick look at the number of PPP projects being implemented in India suggest that there has been an marginal increase in PPP projects in India from 1,263 in 2009 to 1,339 in 2014 both at Central and State level. Out of these, only two projects regarding construction of fire stations one each in Andhra Pradesh and Maharashtra relate to disaster management. This suggests a need for more PPP projects on disaster management considering the need for bettering the infrastructure and service delivery during disaster is high. The draft guidelines for Community Based Disaster Management (CBDM) suggests a variety of ways in which private sector can be involved in disaster management. The fire service of the industry/industrial zone can be utilized for local communities and include disaster

**Table 12.2** List of PPP activities as listed in NDMA's disaster guidelines

Disaster type	Suggested activities
Cyclone	PPP models for State Wide Area Networks (SWAN)
Earthquake	Retrofitting measures of lifeline buildings/critical public infrastructure (CIP)
Tsunami	Inter alia services of public health, energy, communication, relief supplies, search & rescue equipment, transport and logistics
	Technical services for restoration and reconstruction
	Setting up of Disaster resource network (DRN)
Floods	Campaign on prevailing urban flood risk and preparedness
	Media companies to launch/expand awareness generation programmes
Drought	Involvement of corporate houses whenever needed
Landslides and avalanches	Providing inter alia services of public health, energy and telecommunication, relief supplies, search & rescue equipment, transport and logistics for movement of relief supplies
	Supporting landslide risk management efforts as part of CSR
Chemical, radiological and nuclear	Using primary and tertiary health care sector for biological disaster management.
	Benchmarking quality standards for public health education, establish public health institutes, undertake research and advocate public policy
	Developing logistics of relief stocks
	Multi-sectoral coordination
	Managing livestock emergency
	Development of buffer zones and establishing Off-Site responding agencies
	Retrofitting measures of vulnerable storage sites and chemical industry buildings

Source: Adapted from NDMA guidelines on respective disasters

management related activities in CSR plans in consultation with local disaster management plans. The private sector should engage in reducing disaster risks to business activities and extend technical support and know-how to community and government and other stakeholders.

### ***12.3.2 Integration of Public Private Partnership Policy with Other Legislations***

Many sectoral policies of various government departments and ministries either overlap with disaster management policy or have disaster management as an integral component of the policy. Hence it is essential to identify the overlapping legislations and integrate them for a comprehensive implementation. Risk identification and risk transfer have been widely used in various policies but lacks detailing and

integration. Patra and Kantariya (2014) suggests that 4 C's that are collaboration, co-production, coherence and continuity are essential for strengthening a scientific approach to policy planning in Indian context. The terms of collaboration and co-production can be extended for various legislations and policies in India but are overlaps of various disaster management related concerns. However they fail to have a coordinated approach due the large number institutions and compartmentalization of the bureaucratic setup. As a result the desired outcomes are often lost in translation.

### 12.3.2.1 CSR Policy

CSR Policy as defined in the 2014 notification of Ministry of Corporate Affairs.

*“Relates to the activities to be undertaken by the company as specified in Schedule VII to the Act and the expenditure thereon, excluding activities undertaken in pursuance of normal course of business of a company”*. The Act here relates to the companies Act of 2013 that is used as the base for implementation. The schedule VI of the Act identifies nine areas of CSR activities namely Agriculture, transportation, Water management, telecommunication, Industrial, commercial and social development and maintenance, Power, Petroleum and natural gas, Housing and others miscellaneous activities. Disaster management, preservation of monuments and icons and emergency services are mentioned as sub areas under miscellaneous activities. Under schedule VII of the companies Act 2013, contributions can be made to the National or State Relief Fund and take up activities to ensure environmental sustainability.

### 12.3.2.2 Other Policies

The *draft PPP Policy* 2011 of Government of India makes an attempt to include disaster management as an integral part of the policy by ensuring optimal risk allocation for the project life, which will better the efficiency. The policy document states that risk associated with the ground condition, geology and other factors will be preferably passed on to the private entity. This will be done through the pre-feasibility analysis, which will identify underlying risk related to the various stages of the project. Considering that disaster risk are dynamic in nature, the point that no changes can be made in the contract against non-commercial risks related to force majeure (natural disasters) might raise a few concerns as the return periods of most natural disasters can be predicted with scientific precision.

The *Costal Regulatory Zone (CRZ) management notification* of 2011 is one such policy, which tries to integrate disaster management through hazard mapping, allowing retrofitting and boost weather forecasting for the early warning. The PPP is foreseen as an important component of project implementation to ensure redevelopment of dilapidated, cessed and unsafe buildings along the coast of Mumbai.



Similarly, the Reserve Bank of India had issued guidelines in 2005 to all major nationalized and private banks on “Management of Operational Risk” and had highlighted the importance of integrating it with ORM framework. Sabharwal and Swarup (2012) finds that though majority of the banks have an onsite disaster management plan in place but only a few operationlise them, which raise a big question on how to operationlise, such policy and plans to maintain continuity. Further the RBI issued guidelines to all banks to extend loan for fishermen to repair boats provided the boats are comprehensively insured against all risks including natural calamities as far as possible. This act as an effective strategy in reducing financial risk of the banks and double up as a non-structural mitigation strategy for the boat owner. Similarly, Bombay Stock Exchange (BSE) had issued notices to the top 100 companies through SEBI to follow Business Responsibility Reports (BRR) on how to mitigate risk for long-term profitability.

*The New Industrial Policy* for the states of Uttarakhand and Himachal Pradesh. This policy provided tax exemptions and capital subsidies for new and existing firms starting in 2003. The integration of small and medium-sized enterprises and companies, local NGO and local academic groups should be encouraged as they play a key role in building local livelihoods and thus contribute to disaster resilience of local communities. These companies and organisations should be supported in efforts to build disaster resilience.

Fifteen States in India have set up their PPP cell and States with a history of major disasters in the recent past (Tamil Nadu, Madhya Pradesh, Andhra Pradesh, Uttarakhand and Odisha) have come up with their respective PPP policies and States like Gujarat and Maharashtra are in process of revising the draft policy. It is seen across the States that the out of 15 identified risk to PPP, disaster risk is categorically put under the *force-majeure* risk (GOI-ADB PPP Initiative 2009). The definition limits the disasters cases to war, earthquake or flood characterized by unanticipated, unnatural or natural disaster, which will increase the project cost and loss of revenue. The Table 12.3 below shows the various ways of sharing the risk proposed by the respective State PPP policy and also the initiatives undertaken by them. This again highlights the need to integrate the overlapping issues of disaster management common with other ministries and department.

**Table 12.3** Actions not to be termed as public private partnership (PPP)

A simple outsourcing of functions where substantial financial, technical and operational risk is retained by the public institution	A privatization or divesture of state assets and/or liabilities	A commercialization of a public function by the creation of a state owned enterprise	A donation by a private party for a public good
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Source: Adapted from draft PPP policy 2011

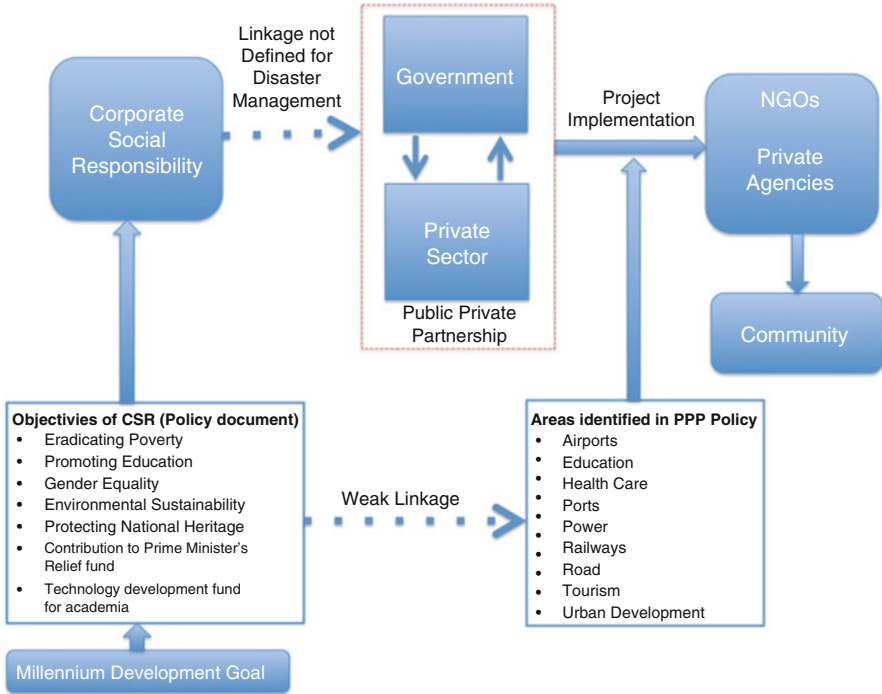
## 12.4 Looking Beyond Relief, Response and CSR

In India PPP and CSR has been used interchangeably especially when it comes to disaster management. Public Private Partnership as defined by the draft *PPP policy* “is a contract between the Government or statutory entity on one side and a private party on the other side, wherein the private party assumes substantial financial, technical and operational risk in the design, financing, building and operation and maintenance of a project”. On the other hand CSR is as defined by Kilcullen and Kooistra (1999) *the degree of moral obligation that may be ascribed to corporations beyond simple obedience to the laws of the state*.

PPP and CSR are two tools, which can be effectively used for engaging the private sector for developmental work (Hohfeld et al. 2008). Going by the definition of both it can be clearly seen that both are linked to the social welfare and confirm to poverty reduction and sustainable growth but are distinct when it comes to their management, implementation. CSR can act as funding source for PPP to work in disaster management. In PPP, the risk allocation and sharing is carried mainly by the private sector (revenue related risks) as a result the economic burden on government is shared. The PPP policy document categorically declare that actions as mentioned in Table 12.3 cannot be termed as PPP.

Considering the above points, most of the engagement of the private sector in disaster management as stated earlier in the chapter can be termed as donations by private party for public good and doesn't qualify to be termed as PPP but as Corporate Social Responsibility (CSR). The CSR is an effective funding source for implementing PPP. There has been a paradigm shift from the philanthropic approach to risk management and profit maximizing approach among the private sector. In Mumbai, many private sector water suppliers now recognize that there are few if any profits to be made in extending water services to urban slums and are actively seeking to reduce their exposure to financial risk (Gandy 2008). This is not a new phenomenon considering that two private companies have primarily handled Mumbai electricity services since the 1920s without any reliance on the Indian National Grid (Zerah 2005). Looking at the CSR spending of India's top 100 companies based on Net Sales for the Financial Year 2012 it is seen that out of Rs. 56.11 billion dedicated for CSR funds as per the government regulation the actual spending has been Rs. 17.65 billion which is 30 % of the total fund.

As per the new Company's Act of 2013, 5 % of the annual budget for CSR and Sustainability activities has to be earmarked for Emergency needs, which would include relief work undertaken during natural calamities/disasters, and contributions towards Prime Minister's/Chief Minister's Relief Funds. A survey in 2004 from a sample of 536 companies across India reveal that philanthropy is the most significant driver (64 %) of CSR, followed by image building (42 %), employee morale (30 %) and ethics (30 %) respectively (Partners in Change 2004). Studying the correlation of the corporate social responsibility and public private partnership from the policy documents it observed that there a weak linkage between the



**Fig. 12.3** Existing PPP and CSR linkages in India (Source: Companies Act 2013, draft PPP Policy 2011)

objectives set aside by the CSR policy and the areas of work in PPP. The overlap happens in the sectors like education, power to an extent promoting tourism through heritage. The sectors identified by PPP would require detailing to look into specific components under each identified PPP sector. The issue of disaster management is understood to be an integral part of it but the real impact would be only known through case studies. As illustrated in Fig. 12.3 the community though is the end beneficiary but has hardly any role in deciding the nature of the project or the sector based on their need. Considering that the welfare of the community is one of the main motives of CSR and PPP policies, it is desirable to involve the community to a greater extent in various phases of the PPP.

**12.4.1 Good Practices in Public Private Partnerships in India**

United Nation’s GAR 13 report categorically warns India about the risk of investing in public private partnership (PPP) for developing public infrastructure as the government has less control over its executing private partners and the latter has little

interest in long term safety of the projects. A study shows that 43 % percent of the industries experiencing a disaster never re-open and 29 % shut down within 2 years even if they mobilize resources to restart operations (National Disaster Management Division report 2006). Private sectors have slowly awakened up to the reality that in most of the disasters they face a huge challenge in reducing their economic loss and maintain their businesses. Slowly, disasters are becoming effective drivers of bringing in more private sector engagement and adding to the well being of the society. The engagement of the private sector in disaster management in the past has been not widely documented. Bhatt (2002) states that except news reports and other form of media coverage there was no documentation of the private sector involvement in the Gujarat Earthquake. Moreover as the private sectors directly do not involved in groundwork hence most of the credit is taken by the implementing agencies that become the face of recovery and reconstruction process. Hence it is essential that good practices by the private sectors in the past are increasingly documented and peer group networks be exploited to bring in active participation to manage risk in future. Here few such initiatives have been discussed in respect to 1999 Orissa super cyclone, 2001 Gujarat earthquake and 2013 Uttarakhand floods, the locations are shown in Fig. 12.4.

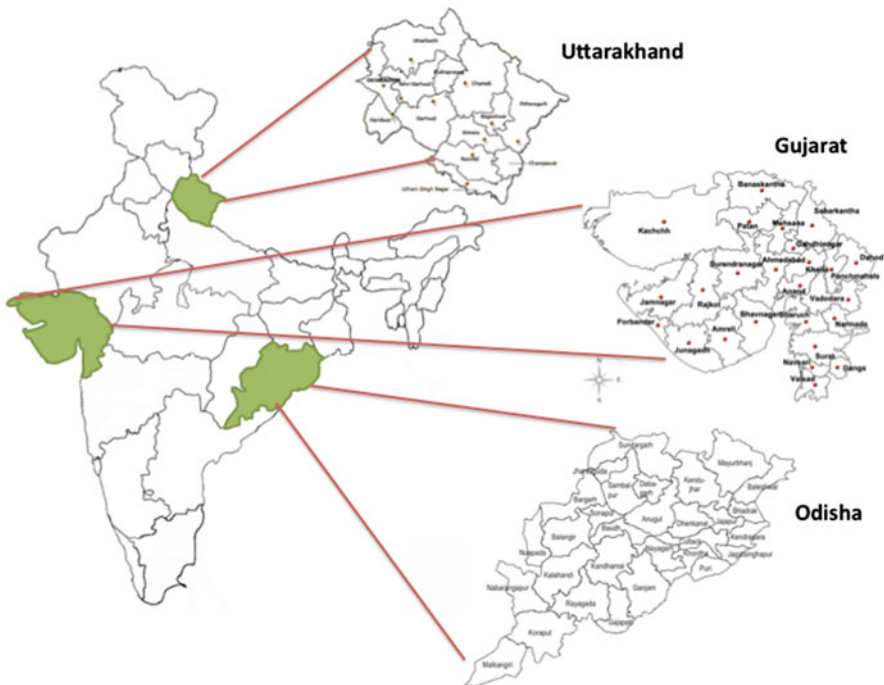


Fig. 12.4 Map of India indicating the case study location

### 12.4.1.1 Orissa Super Cyclone 1999

The 1999 super cyclone is one of the worst disasters in India taking more than 10,000 lives and causing property damages worth US \$1.35 billion (ADPC 2003). Odisha being primarily an agrarian state and more than 60 % of the population still depend on agriculture and allied sector for their sustenance. Balasore, Paradweep and Bhadrak are industrial belts and were badly impacted by the cyclone. Post 1999, disaster risk management and climate change adaptation become an important area of focus for the State government. However such initiatives that can become a source of knowledge and good practices remains scattered and least referred across various sectors. The role of private radio operators (HAM) was important immediately after the cyclone to establish links. The public and private sectors were engaged in rebuilding of schools, cyclone shelters etc. Prime Minister's National Relief Fund Scheme involved National Aluminium Company Limited (NALCO) in construction of 197 primary schools and cyclone shelters from the funds received from Prime Minister's Office (Rs. 63.7 million) and company's contribution (Rs. 13.1 million). Odsiha Public Private Partnership Policy (2007) was set with objective to achieve efficiencies, innovativeness and flexibility of the private sector to provide better infrastructure and service at an optimal cost. Statistical analysis of the storm surges data (1971–2000) along Odisha coast shows a trend of increased frequency or intensity of cyclones or storm surges induced by increase of population and infrastructure in the coastal areas (Chittibabu et al. 2004). Patra (2013) critics that due to inadequate understanding and partial inclusion of the prevailing natural hazard in the planning process. The new investments have increased business risk along with disaster risk through multiple layers (socio-economic, political and environmental) in the fragile coastline. The recent cyclone Phailin was a litmus test for the post super cyclone achievement of the State. The Odisha Phailin Response Forum (OPRF), a coalition of civil society organizations, which supports DRR solution exchange and advocacy at various levels, was effective in coordinating disaster relief and response work. Considering that human life loss was minimal but the economic loss was to the tune of Rs. 143.73 billion, stress the need to invest more in disaster risk reduction activities in future to keep the benefit of development gains.

### 12.4.1.2 Gujarat Earthquake 2001

Gujarat is a multi hazard prone state having a history of natural hazards like cyclones, floods, droughts, and earthquakes. Among these, Gujarat earthquake is one of the worst disasters in Indian context to have impacted the socio-economic condition and caused an economic loss of Rs. 230.00 billion. Gujarat is industrial hub and has major investment in the multi-national and national ventures. The government considering the magnitude the disaster loss made efforts to involve the corporate sector in the various phases of the disaster work. The corporate sector was involved in relief, response and recovery process. A study by Sayegh (2004) reveals

that the government scheme supporting corporate adoption of villages in Gujarat was considered as a failure as the corporate houses failed to meet the expectations of the community. Nevertheless, the corporates went beyond the role of donor to engage the community leveraging and provisioning of resources. The highlight of the corporate sector engagement in Gujarat was that the corporate houses focused on the core competencies and by doing that the companies were able to offer their skills and not just engage as donors and also bring in additional resources through their affiliates, subsidiaries, partners, and international counterparts. A 20 % of the total houses damaged in the earthquake employed PPP to reconstruct which involved 80 NGOs with 50 % cost sharing from the government. Price and Bhatt (2009) criticises that the top down approach of the government and slow decision making process lead to less involvement of the local actors in the recovery.

Gujarat is the first state in the country to enact a legal framework for PPP in infrastructure sector by setting up of the Gujarat Infrastructure Development Board (GIDB). Post 2001 Earthquake, setting up of Gujarat State Disaster Management Authority (GSDMA) has helped in fostering partnership for disaster mitigation and risk reduction works with the corporate sector. The state envisions supporting knowledge based industries and increase technical man power in the field of disaster management by setting up of educational institutes. The Chemical Disaster Response Plan of Gujarat suggests setting up of five regional Emergency Response Centers (ERCs) and four mini ERCs modeled on the DPMC Ankleshwar as a PPP. Further it explores the possibilities of expanding mutual aid between large industries, medical services airports, railways, ports and also supporting road accidents through on PPP model.

The setting of emergency ambulance service in collaboration with Emergency Management and Research Institute (EMRI) is one such initiative focusing on the medical sector. It is developed on a Public Private not for Profit Partnership based on Service Delivery Model. The government bears the operational cost, GVK (a corporate house) funds leadership, innovation (infrastructure, process), collaborations, research and training knowledge transfer and quality assurance and Mahindra Satyam partners for technology transfer. The Integrated Emergency Response Services (IERS) for medical, Police and fire departments with a single universal toll-free number '108' (GVK presentation for NDMA). The IERS has ambulances to respond to medical emergencies. The model has been replicated for other Indian States (Andhra Pradesh, Gujarat, Uttarakhand, Goa, Tamil Nadu, Karnataka, Assam, Meghalaya, Madhya Pradesh, Himachal Pradesh, Chhattisgarh, Uttar Pradesh, Rajasthan, Kerala and two Union Territories Dadra & Nagar Haveli and Daman & Diu).

The mason training and certification module supported by cement industries in numerous villages is a mitigation-oriented recovery program. The target was to enhance the skill of masons for building earthquake resilient buildings. Other than the cement companies it involved NGOs, contractors and government organization working in construction industry and training. The SEEDS Mason Association (SMA), an autonomous body is an outcome of this initiative, which has been part of reconstruction process in post Tsunami 2004 in Andaman & Nicobar Islands,

Kashmir earthquake 2005 and Kosi floods 2008. The government is certification for their skills under a Government of Gujarat programme and this will form the base for future implementation of buildings byelaws for earthquake resilient constructions in the state.

### **12.4.1.3 Uttarakhand Floods 2013**

The devastating floods of 2013 in the hill state of Uttarakhand impacted the tourism industry, which is the principal contributor to the State GDP. The private sector loss was to the tune of Rs. 118.84 billion against a Rs. 1.16 billion loss to the public sector. According to the Tourism officials, the floods in Uttarakhand have affected business to the tune of 20–30 % for the coming years. The big corporate houses came forward during relief and response phase contributed generously in cash and kinds. Amateur Radio operators were effective in setting up local communication networks for governmental and emergency officials, as well as non-commercial communication for the affected community. Google as a CSR drive developed Person Finder, an open source web application which provides a registry and message board for survivors, family, and loved ones affected by a natural disaster to post and search for information about each other's status and whereabouts. It was used to reach out to the victims and their families in gathering information.

The state of Uttarakhand enjoys special status to induce growth through industrialization after its formation in 2000. Recently, it is proposed that all new and existing enterprises would be eligible for central capital units at the rate of 15 % of their investment in plant and machinery from Jan 7, 2013 to March 31, 2017. This would boost PPP and foreign direct investment in Uttarakhand, which would support recovery. Agencies like Asian Development Bank and World Bank are jointly funding initiatives and supporting PPP for reconstruction of State infrastructure and aiding to rebuild the economy, which can start support the small, and medium enterprise livelihoods. Moreover, in order to involve private sector, the relief and rehabilitation projects undertaken in Uttarakhand during 2013–2014 by the CPSEs would be treated as the projects in the backward region and would also qualify for the purpose of MoU evaluation. Corporate institutions are engaging actively in various sectors other than infrastructure shows a well though approach to disaster risk reduction partnering with government. CII foundation along with SNF foundation supported by Anand (an NGO) started to recruit eligible candidates from disaster-affected communities, further partnered with Uttarakhand Skill Development Society (USDS) and training youth for skill development and placement. Corporate houses like HCC who had been engaged in Uttarakhand relief work had been extending their domain further by increasing its engagement with United Nation agencies to support disaster risk reduction. The corporate house is active member of UNISDR's Disaster Risk Reduction Private Sector Partnership (DRR-PSP) and had been supporting Disaster Resource Network (DRN) in the past for response, training and awareness generation (HCC 2014 annual report).

## 12.5 Discussion

In Indian context, Public Private Partnership is the key to the golden door that controls the private sector from engaging proactively in disaster risk reduction. The private sector interaction with the government has been mainly in the context of land, services, regulations and taxation but is very frugally documented. The governance for Hood (1991) is about contracting, franchising and new forms of regulations. This suggests active involvement of the private sector as an important stakeholder in governance but in reality there is a need for active dialogues and a common platform to link both the sectors.

Earlier in the chapter it is seen that disaster losses exceeds the financial provisions made by the States (SDRF and Capacity Building funds) to tackle any such unprecedented event and there is a dependency on the central funds. In most of the cases it has been seen that though a certain region has been affected but the economic impact reflected on the countries GDP. Hence PPP would become an alternate source of taking up of the reconstruction process and also preparedness measures, which could help the government in expanding the projects.

From the past instances of private sector engagement in post disaster relief and response to disaster-affected communities as a part of their Corporate Sector Responsibility (CSR), it is observed that majority of the engagement can be termed as corporate philanthropy, which is top driven and exist till the funding source is available. Looking into the various case studies it is seen that private sector involvement in Public Private Partnership had been limited due to constraints like complex decision-making process, political interference and loss of trust.

In case of post Gujarat earthquake reconstruction, the perception of the community regarding clarity in terms of overall benefit of the PPP and apprehension regarding the partnering agencies had cast shadows on PPP. Further with no assurance from the government's side on meeting their expectations and religious and political interference lead to final withdrawal of private sector companies who had earlier committed to join in the PPP schemes (Patel and Alagh 2003). This highlights the need to have the affected community as an important part of the designing and decision making process of the PPP. As seen in the Fig. 12.3, communities in the current system are the end user and get excluded from the various project conceptualization and planning stages which might lead to ownerships issues at a latter stage.

Legislation and policy frameworks form the spine to engage the private sector in long-term disaster risk reduction activities. The various Acts and policies in India though create scope for involving the private sector into various activities but require detailing to understand the scope and means to have cross-sectoral integration. The current draft PPP policy of Government of India identifies infrastructure sector as main area of development as identifies eight sub sectors. The CSR policy identifies seven key objectives to guide the CSR investments by the corporate houses. It can be seen that there is no synergy created between the two policies. The CSR funds, which as mandated by the policy, can become a source of funding for future disaster risk reduction activity.



Looking closely at the Companies Act of 2013 and the draft PPP policy of 2011 though has been detailed out separately, lacks synergy when one tries to look for a holistic strategy for implementation. The CSR objectives are closer to the goals set by Millennium Development Goals (MDGs) where as the PPP sectors are independent of any such global framework. One of the major aspects needs to define while employing PPP for disaster management is specifying which sub sectors PPPs can operate in and how to put it into action. The solution to effectively engage the private sector through PPP will need crosscutting legislation and the identification of cross-sectoral units that play a pivotal role in such partnership. Private sector, which has engaged in providing Electricity, Gas, Telecommunication and other basic services can be entrusted with duties to prioritize emergency response and be resistant against possible disasters as seen in case of Japan where the private sector is called the designated public organ (UNISDR 2007).

It is seen that in order to deepen the PPP penetration, engagement of the private sector with state and city authority is essential along with much desired community participation into the designing phase of the project. In the Fig. 12.3 above it is seen that the community is act as a beneficiary and is not involved in project designing or conceptual phase as a result the projects may not address the local concerns and reflect the private sector or political mandate. A local level committee linked to the Special Project Vehicle with participation from elected representatives, NGOs and local bodies would help in prioritizing projects as per the ground needs.

Looking at the earlier trend of involvement of the private sector in disaster management and also taking cognizance of the CSR policy, a multi-level PPP policy is required to define the role of the Private sector. The tax benefits and DRR index compliance can act as a catalyst to bring in active participation of the private sector. The regulatory bodies like Assocham, FICCI or CII can engage in active dialogue with the government to implement such measures. The government bodies along with the support of the regulatory bodies can partner to sensitize the top executives and board members to bring in more participation from the private sector in future.

The cases studies showcasing the initiatives in the post disaster scenario emphasize on the institutional strengthening by setting up of dedicated institutions as seen in the case of Gujarat. Such institutions can expedite PPP projects and act as encouragement for the private sector to collaborate. The setting up of educational institutes would further improve the skill set and create expertise to handle future disasters. The physical infrastructure like ambulance services fire services are crucial for disaster response and states has started on PPP mode, which can be taken up as a prototype for other states. The community based associations like HAM operators need to encourage fostering a long-term association. Further the NGOs and CBOs can be supported by PPP to take up training and awareness generation. These NGOs and CBOs will be effective in making the built environment safer by supporting amends to building byelaws and safe construction techniques. Moreover, the Micro Small and Medium Enterprises (MSMEs) can be supported to generate livelihood for the disaster-affected community to reduce the economic burden.

The Fig. 12.5 suggests a possible framework for involving Public Private Partnership for disaster risk reduction initiatives.

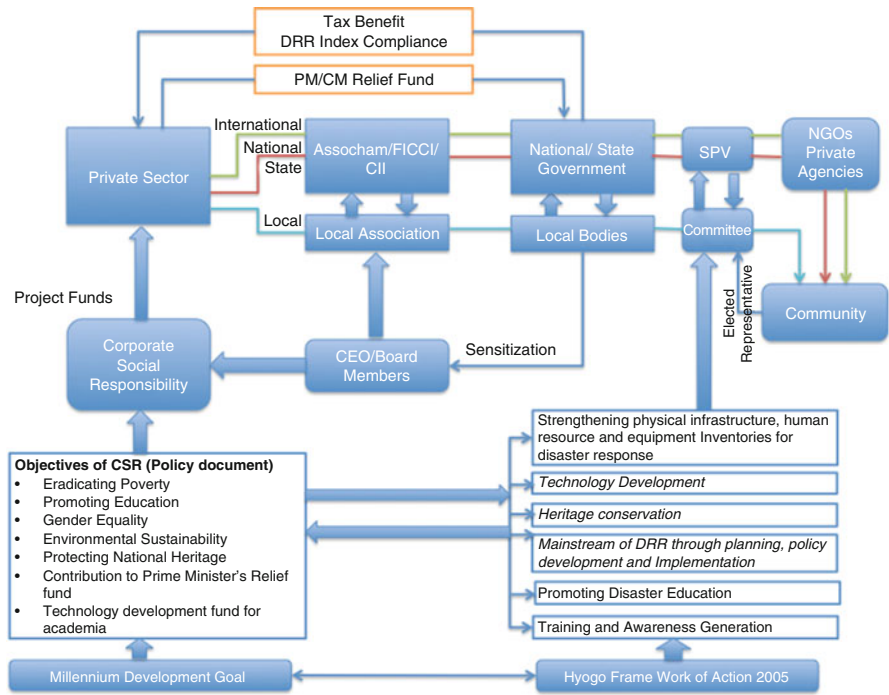


Fig. 12.5 Suggestive model linking CSR and PPP for DRR in India

## 12.6 The Road Ahead

The suggestions made by the working group on disaster management for 12th five year plan identifies various sectors where possible strengthening is required to better India’s disaster resilience. The sectors can be broadly categorized as infrastructure strengthening, technology development, education, mainstreaming of DRR, heritage conservation and awareness generation. These areas of development can be broadly linked to the HFA 2005–2015 and post HFA focus areas. Further these sectors link directly to the objectives under the CSR.

### 12.6.1 Infrastructure Strengthening, Human Resource and Equipment Inventories for Disaster Response

It is seen from various instances stated earlier in the chapter, providing quality public services to the growing urban population presents a major challenge in India. On hand the basic urban services like sanitation, solid waste removal, water, roads and

public transportation are poorly maintained leading to increase in vulnerability on the other hand there is a need to upgrade the critical lifeline services adequately to improve response. Guidelines on revamping of fire services by NDMA (2010) finds out the fire services on average in India the deficiency in fire stations is 97.54 %, Fire Fighting & Rescue Vehicles 80.04 % and Fire personnel 96.28 %. The fire brigade in India is a public sector managed by the State government or by the individual municipal corporation making it a publicly managed service. As seen from the list of current PPP projects only two cases of construction of the fire stations has been mentioned. There is a need to develop a holistic PPP model for the fire services across India where the private sector will be involved in funding and operating the services in the areas where present services are not operational in collaboration with the local authorities. The revamping of the fire services across India on PPP model would boost up the disaster response and preparedness. The individual states (mainly Department of Industrial Safety and Health and disaster management) through the local bodies along with the industrial regulatory bodies can form a committee to develop the infrastructure.

Emergency Response Centers (ERCs) as mandated by the Disaster Management Act (2005) forms the nerves center for responding to any disaster. In India though most of the States have setup ERCs at State and district level but are poor manned with limited expertise. The Private sector can provide cutting edge technology and trained manpower and support the local and State government in setting up of the control centers. The corporate houses mainly the construction industry and Major Accident Hazard (MAH) Units have equipment's and expertise in handling complex disaster responses and should be engaged actively by regional and local resource pool for both Natural and Human made disaster response.

School safety should be seen as major PPP initiatives as private schools in India form a major part of the education system. The current National School Safety Programme (NSSP) should try to integrate the PPP model as a part of the project to generate funds and reach out to maximum number of school in shorter span of time. NDMA along with SDMA's can be take the lead in bringing support from the various corporate houses working in the education sector to strengthen the school infrastructure.

### ***12.6.2 Technology Development***

The technology transfer forms the most important part of the coordination and effective early warning leading to overall damage control. The International Federation of Red Cross and Red Crescent Societies report (2013) on disaster report mentions technology helps the first responders who are mainly from the local community, set up initial communication channels and exchange of information from the ground zero to enable the decision makers in strategizing.

The development of various Communication Networks for coordination during disaster in the past has been managed by the private sector. From the disaster exam-

ples earlier in the chapter it is seen the HAM radio operators were successfully engaged to communicate from the disaster sites. The Hi-frequency Amateur (HAM) radio operators association can be regularized and its members can become members of the Incident Response System (IRS) at the local level. Engaging the various mobile service providers for setting up effective and coordinated communication and early warning network along with the nodal agencies like IMD, INCOIS etc. through the State and district authorities will help in connecting the last mile.

Knowledge networking and formation of a platform for sharing of expertise with various stakeholders in disaster management can be effective way of involving the private sector and the regulatory bodies like Federation of Indian Chambers of Commerce and Industry (FICCI), Confederation of Indian Industry (CII) The Associated Chambers of Commerce and Industry of India (Assocham) through PPP. The government role will be more in creation of the platform and supporting the private sector in maintaining it. Such a platform will help in implementation of regulations, policies and engage in active dialogue with the government. Its is important to involve nodal regulatory institutions sector wise for brining in heightened involvement.

### ***12.6.3 Heritage Conservation***

The conservation of heritage is slowly emerging as an important area of disaster risk reduction. Considering tourism is the third largest foreign exchange earner, heritage conservation directly creates economic benefit and livelihood opportunities for the tourism sector and local community. Indonesian Heritage Trust following the May 2006 earthquake near Yogyakarta and the New Zealand Historic Places Trust following 2010 and 2011 earthquake used PPP to conserve and restore heritage properties. As a proactive approach PPP could be used for identifying underlying risk and through suitable policy make it a public and private obligations to preserve that which has been identified of heritage worth and significance. As similar set up has been done under the Australian Capital Territory (ACT) by Government of Australia. The tourism department along with NDMA and SDMA through the local authority, Archaeological Survey of India (ASI) and the construction houses can engage meaningfully to protect and reduce the disaster risk to the heritage structures.

### ***12.6.4 Mainstream of DRR Through Planning, Policy Development and Implementation***

The disaster risk reduction should be mainstreamed into various development processes where the private sector is an important player. A private sector committed to disaster risk reduction can create public demand towards materials, systems and

technological solutions, which will be essential for making communities disaster resilient. Due to the reason that private sector plays an important role in policy implementation hence they should be also involved in policy making process. Lobbying for strong techno-legal regime for buildings codes, strengthening structural auditing and insurance are some of the fields where private sectors can create demand in the community. Risk coping through insurance and other hedging tools helps in distributing risks, thus lessening the variability of losses. The SDMA and local authorities disaster management committee should have representation from the private sector who can in turn influence others to handhold.

### ***12.6.5 Promoting Disaster Education***

Disaster education is an effective way to create a well informed future generation. The Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters, adopted at the World Conference on Disaster Reduction, highlights disaster education and knowledge creation as one of the five main priority areas for disaster risk reduction.

Considering the dearth of expertise, which is, acknowledge time and again by the government in the field of disaster management setting up of educational institutions in disaster management could be crucial. The institutions can be developed as joint ventures between the private education houses and government education system. These institutes can be funded to take up various disasters related researches, which would be important for developments in the field of disaster management.

### ***12.6.6 Training and Awareness Generation***

Training and awareness generation is central for increasing sale of various products like fire fighting equipment, earthmovers, communication equipment, which are generally imparted by the private sector by in-house trainers. These trainings also are important from disaster point of view and hence the private sectors would reach out to the community and as well as other government agencies and training the personnel. The trainer resource pool can give local availability of expertise for responding to complex disasters.

Media has a wide reach in India and can be used for effectively for early warning, awareness generation and disaster education. National Disaster Management Authority, State and local authorities have used the media houses for disaster management in the past but such engagements have been mostly uni-directional and need based. The media houses need to be proactively engaged in disaster management related activities. CSR can be funding tool for such initiatives.

Improving the resilience of India will require more investment in disaster management infrastructure and here it can be safely said that Public Private Partnerships

are a necessity and not just an option. The PPP may provide practical opportunities to involve the public and private sector and work on a realistic scale to mitigate and build capacities of the vulnerable communities. There is a need to have more academic research in the field of Disaster management and PPP. Integrating the CSR and PPP policies could prove beneficial in developing appropriate framework for financing and implementation of disaster management infrastructure development projects in the future. The success of such framework will depend on a multi-level, multi stakeholder approach backed by legislations to encourage the private sector to come forward and handhold. The regulatory bodies have to play a lead role in creating a common platform to start active dialogue between private sector and the government. Considering the high population density and heightened investment coupled with higher hazard exposure, the urban centers can be taken up for pilot projects to test effectiveness of such framework.

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# Chapter 13

## Disaster Risk Reduction Strategies of Japanese Private Sector in Danang City

Hung Nguyen The, Ranit Chatterjee, and Rajib Shaw

**Abstract** The increase in frequency and severity of natural disasters due to climate change is leading to huge economic loss across the globe. Considering that the private sector contributes 75–80 % of the total investment in infrastructure projects in Asia, involving them in Disaster management would be essential for economic resilience. Vietnam with its high rate of urbanization is exposed to the risk of various natural hazards. Danang city, in Vietnam has been a center of this urbanization with the national and local government supporting investment in geographically challenged regions from other countries in Medium and Small-scale Enterprises. The Japanese enterprises form a major chunk of these foreign investments in Danang. Considering various legislation and structured interviews with Japanese private sector in Danang, this study concludes that the Japanese Small and Medium Scale Enterprises need further work on the following areas; (1) Legislation for the private sector involvement in disaster risk reduction. (2) Training of private sector employees. (3) Capacity building of private sector.

**Keywords** Private sector • Danang • Disaster risk reduction • Small and Medium Scale Enterprises

### 13.1 Introduction

The countries in the Asia-Pacific region are the most disaster-prone in the world (UNISDR and UNESCAP report 2012). The economic loss in Asia due to natural disasters in the last decade has been 689.42 billion US Dollars (EM-DAT database). Among the various Asian nations, Vietnam is one of the most disaster prone countries to be impacted by Sea level rise, higher temperatures and extreme weather event like such typhoons, flooding and drought leading to devastating impact on the country's economy (World Bank, IPCC report 2007). An estimated 59 % of its total

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land area and 71 % of its population is exposed to the risk of cyclones and floods (GFDRR 2011). Further it reports that the country has lost 1 % of GDP per year between 1998 and 2008, due to natural disasters.

Vietnam has been experiencing rapid urbanization and fast pace of industrialization with government supporting foreign investment in geographically and socio-economically challenged regions. The community resilience rely mostly on the private sector to bounce back, re-establish production and continue to provide livelihood options to local workers in the post disaster scenario. According to a report by Asia Foundation (2012), Small and Medium scale Enterprises (SMEs) in Vietnam control more than 90 % of the country's businesses, employing 80 % of the population, and contributing over 40 % of national GDP. Most of these SMEs are often family-run and have limited coping capacity and hence at high risk being affected by disasters. Unlike other countries in Vietnam SMEs include the microenterprises, which is a deviation from the most common understanding of SMEs (UNESCAP report 2008).

The central Vietnam region is most prone to natural disasters due to its close proximity to the coastline (Phong and Tinh 2010). Danang city in the central Vietnam has emerged as an economic hub due to its strategic location at the same time is exposed to the risk of being impacted by these disasters. In Danang on an average, the private sector contributes about 9.8 % of total revenue including FDIs, while 8.98 % comes from state-owned enterprises (IDS report 2007). The Japanese SMEs with 75 units makes the bulk of the foreign SMEs in Danang. An OECD study (2010) suggest that FDIs are can be good trigger of knowledge transfer directly or indirectly which influences the local labour market, policies and networks. The Government of Vietnam foresees Danang to become an Internationally Competitive Environmental City beyond being Pollution-free, in which one of the factors is to safeguard community and investments against natural and man-made disasters (Hung 2013). Japan with its strong commitment to involve private sector in disaster management activities would benefit the local communities outside Japan through knowledge sharing and technology transfer. In light of this, it becomes important to study the present engagement of the private sector mainly the Japanese SMEs in Disaster Management in Danang.

This chapter considers the growth of SMEs in Vietnam as an important step towards supporting economic growth provided the investments are risk sensitive with due consideration to Vietnam's high disaster risk profile. An in-depth study of legislation is done to understand the legal and institutional support provided to involve the private sector in disaster management in Vietnam. Danang is taken up as the study due to its emerging role as an economic hub and its high disaster risk. Japanese SMEs in Danang are studied to understand their level of engagement in disaster management and also their role in strengthening the local community. The chapter further discusses the analysis of data collected through structured interviews lead to evolve a set of recommendations for enhancing the role of Japanese enterprises in disaster management in Vietnam.

## 13.2 Private Sector in Vietnam

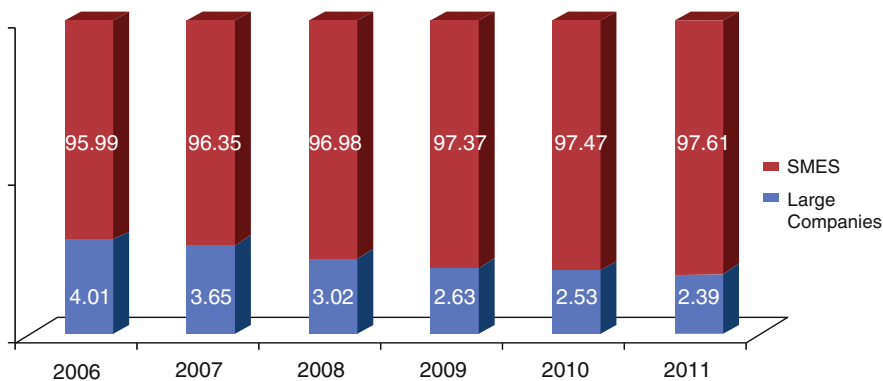
The private sectors include large enterprises and SME's. According to the Chamber of Commerce and Industry of Vietnam (VCCI 2011), Vietnam has 97 % of SME's as shown in Fig. 13.1. These SME's plays a very important role in the economic development of the whole country. SME's creating job for nearly 51 % of laborers, occupying 80 % of retail market and contributing 40 % of GDP. More specifically, according to General Statistics Office Vietnam (2011) at the time of 31st December 2011, there are 316,941 enterprises in total across the country.

Among them, there are 7,750 large enterprises, accounting for 2.4 %, 316,941 small and medium sized enterprises, accounting for 97.6 % (including 21,673 medium sized enterprises, accounting for 2.1 %, 93,356 small sized enterprises, accounting for 28.8 % and 216,732 microenterprises with the highest percentage of 66.8 %).

Through this, we can see the importance of SMEs in the prevention of natural disasters. Because of accounting for large proportion in the economic structure, so, if SMEs actively participate in disaster risk reduction, they will become the basis of the stable and sustainable development for nation and vice versa.

## 13.3 Hazard Profile of Vietnam

Vietnam is located in Southeastern Asia and has 331,112 km<sup>2</sup> of mainland and 1 million square kilometers of territorial sea (GoV 2005). The country can be divided into seven areas that have different geographical features, climatic features, natural resources, environmental and ecological features, economic development stages, and disaster specific conditions. These seven areas are (1) the mountainous and the midland areas of Northern Vietnam, (2) the Red River Delta, (3) the North of Central



**Fig. 13.1** The comparative investment of SMEs and other private houses in Vietnam during 2006–2011 shown as percentage (Source: General Statistics Office Vietnam 2011 data base)

Vietnam, (4) the South of Central Vietnam, (5) the Central highlands, (6) the East of Southern Vietnam, and (7) the Mekong River Delta (ADPC n.d.).

Owing to its diverse and complex topography, Viet Nam is prone to different types of natural hazards, both hydro-meteorological and geophysical, such as flood, storm, drought and heavy rainfall, landslides and earthquakes (Oanh et al. 2011). Figure 13.2 shows the hazard map of Vietnam.

Typhoon is one of the most frequent disasters, showing an increasing trend in the last few last years with 70 % of the population exposed to the risk of being affected (AIPA 2012). Typhoon causes storm surge, very strong wind and high waves. In 2006, Typhoon Xangsane caused more than 650 million USD of economic loss in central Vietnam (APEC 2013).

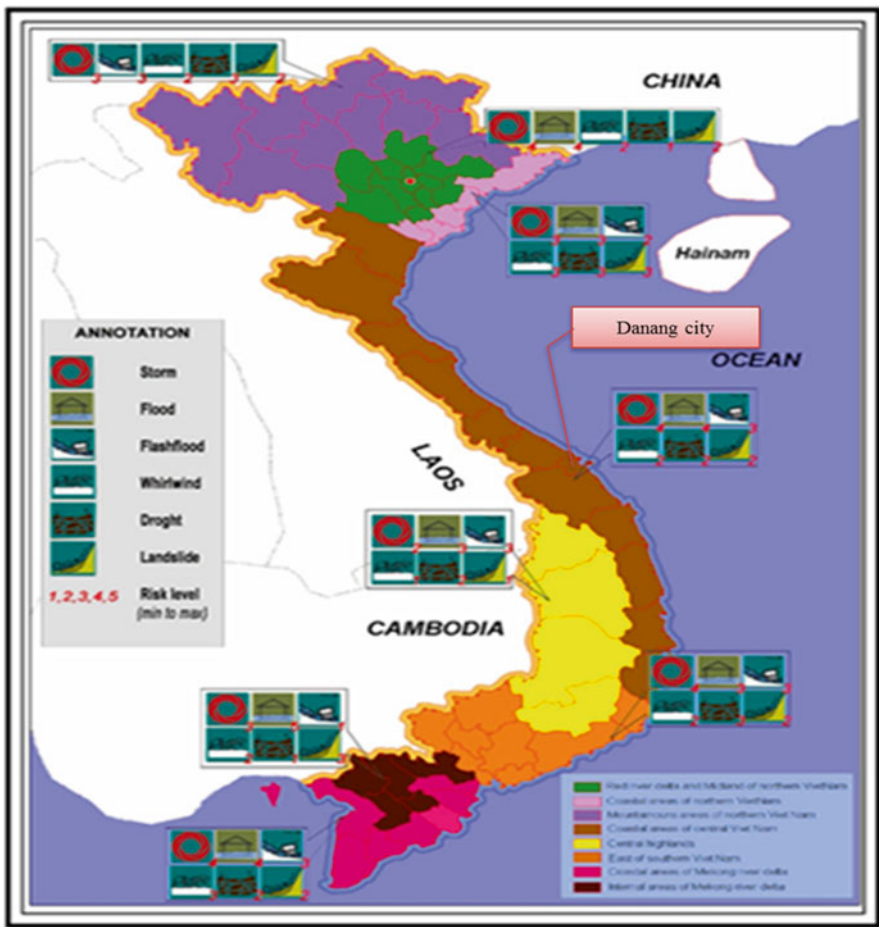


Fig. 13.2 Hazard map of Vietnam (Source: APEC Research Center for Typhoon and Society 2013)

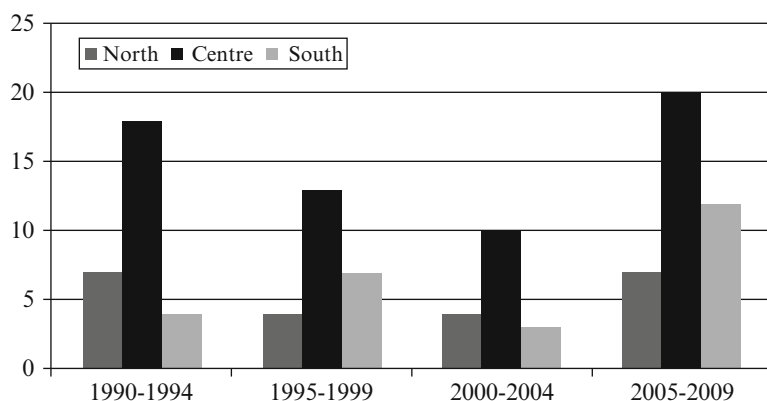
Due to climate change, the frequency of flash floods is increasing over the years with few places reporting chronic flash floods incidences. Add examples and economic loss. In addition to this water logging in the low laying areas during the rainy season is a constant concern affecting the socio-economic condition of Vietnam. Landslides along the slopes due to heavy rainfall cause disruption of transportation connectivity leading to logistical issues for the private sector.

Other than above-mentioned disasters, in the recent years, consecutive droughts have affected Vietnam, especially the Central Highlands and Ninh Thuan province. The drought reduces crop yields, food production, severely affecting animal husbandry. Considering the progress of private farms and companies is still in primary stage hence the chapter excludes drought and focuses mainly Typhoon and floods as disasters impacting private sector in Vietnam. Table 13.1 below shows major floods and typhoons in recent times and their respective economic impact (High to low) in Vietnam. Figure 13.3 show that the central Vietnam is more vulnerable to disaster.

**Table 13.1** Major flood and typhoons in Vietnam from 2004 to 2014

Type of disaster	Date	Economic loss in (Mil. US Dollar)	Area impacted
Storm – Ketsana	28/9/2009	785	Central of Vietnam
Storm – Xangsena	27/9/2006	624	Central of Vietnam
Flood	27/10/2008	479	North and North Central of Vietnam
Storm – Durian	30/11/2006	456	Southern Vietnam
Flood	10/11/2007	350	Central of Vietnam
Storm – Son Tinh	28/10/2012	336	Central of Vietnam

Source: APEC research Center for Typhoon and Society, Global Network of Civil Society Organizations for Disaster Reduction 2013



**Fig. 13.3** Frequency of disasters impacting various regions of Vietnam (Source: Trung 2013)

### **13.4 Exposure of Private Sector to Natural Hazard Risk**

When natural disaster occurs, private sectors not only damaged buildings of factory, manufacturing equipment or material facilities, but also caused disruption or completely stop production, causing great damage to the whole production line. Not to mention that the interruption of production will cause secondary effects such as skilled labors quit their job, the enterprises also lost market share to competitors, relationships with suppliers and key partners can be cut off and confidence as well as the image of them will be significantly reduced (GAR 2013).

On the other hand, while the large-sized enterprises across the globe can share risk by diversification of locations, scale, or injury indemnification by relying on insurance, SMEs with a small scale and limited budget cannot do that.

In recent year's efforts from the government, local authorities have also brought positive results in the perception and the capacity of the community in disaster risk reduction.

However, enterprises in general and SMEs in particular, are still relatively inactive, has not been paid adequate attention in disaster prevention.

According to a survey by The Asian Foundation and VCCI (2011) was made through survey questionnaire of 191 enterprises, it has 61 % (117) enterprises are damaged in the past 5 years.

Among the damaged enterprises, 5 % are heavily damaged, the risk of bankruptcy without assistance and take years to recover, 30 % of enterprises suffered heavy, strongly affected business activity, interrupted a considerable time after occurring natural disaster, 43 % of enterprises less damage and 22 % negligible damage.

Aspect in the level of preparedness and response for natural disasters, among 191 answered enterprises, 46 % of enterprises have no plans to prevent and manage disaster risk, 5 % of enterprises do not care to disaster or are not aware of the benefits of disaster prevention.

The main reason leading to this result is due to difficulties of the enterprises in terms of finance, human resources, knowledge and skills in risk management, but mainly comes from the subjective element of them.

### **13.5 Legislation in Vietnam on Disaster Management and Private Sector**

Legislation forms the backbone of private sector engagement in Disaster management activities in Vietnam. The government of Vietnam under resolution 51-2001-QH10 passed by Legislature of the National Assembly in December 2001 under chapter 5 section 1 article 29 encourages investment in areas with difficult socio-economic conditions with priority for sectors impacting on national defense and

security, social order and safety. Further the National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020 was approved in 2007. The legislation states that every organization and individual should be involved in disaster prevention, response and mitigation up to the community level (Vietnam Law on Investment 2005). It also encourages national regional and international organizations and individuals to fund such activities and engage in research work in disaster warning, forecast, in education, training, information and technology transfer, Further, Involvement of local organizations in disaster search and rescue will strengthen the existing disaster response infrastructure.

The Law on Disaster Prevention and Response approved by Vietnam's National Assembly in June 2013 creates favorable conditions for private sector to actively participate in DRR – CCA activities. In addition to this the National Strategy on Environment Protection to 2020 with visions to 2030 suggest to improve mechanisms and policies encouraging economic sectors to invest in Environment protection through public-private partnership (PPP) models. At present, ADPC, The Asia Foundation, and JICA, ASEAN have piloted initiatives on PPP in DRR-CCA in Vietnam through several small-scale projects focusing on SMEs.

## 13.6 Case Study

In this section Danang city has been selected for the study considering its role as an emerging economic hub in Vietnam and its vulnerability to various natural hazards. The Japanese SMEs are selected due their sheer number which is more than all other foreign investments made in Danang city.

### 13.6.1 Danang City Profile

City of Danang as shown in Fig. 13.4 is located in the central Vietnam province between Hanoi and Ho Chi Minh City bordering Thua Thien Hue Province to the North, Quang Nam Province to the Southwest and the East Sea in the East (ISET and NISTPASS 2009). The city plays an important role in the Greater Mekong sub-region with a 92 km long coastline and serving as one of the gateways to the Eastern Sea of the East-West economic Corridor linking Myanmar, Thailand, Laos and Vietnam (Tinh and Hung 2014). According to Danang Government, the city has a total land area of 1,283.42 km<sup>2</sup>, and divided into six urban districts and two rural districts. The population of Danang city is 992,800 people with population density of 772 persons/km<sup>2</sup> (GSO Vietnam 2013). Danang city has a varied terrain containing high mountains, low hills and coastal plains and is host to biodiversity, natural resources and fragile ecosystems.

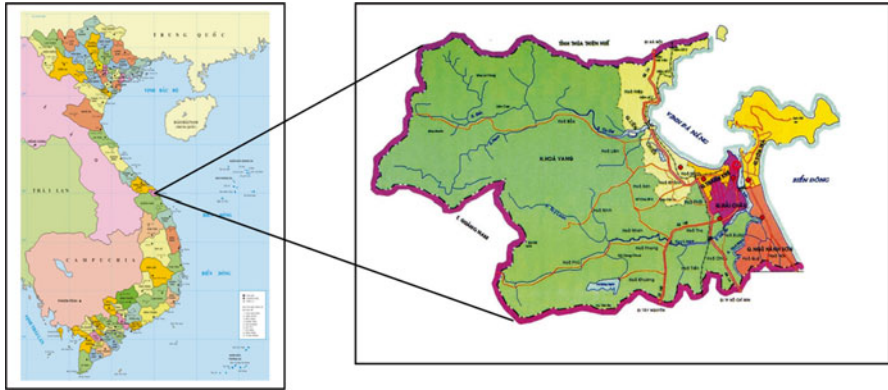


Fig. 13.4 Administrative map of Danang (Source: <http://danang.radiovietnam.vn/>)

### 13.6.2 Hazard Profile of Danang City

The Central Vietnam province has the highest frequency of the natural disasters as seen in Fig. 13.3 earlier in the chapter. The city of Danang is one of the most affected by natural disasters in Vietnam owing to its exposure to various natural hazards like typhoons, floods and drought to name a few. On average one to two typhoons and two to three floods measuring level 3 or higher directly affects the city (Tinh and Hung 2014).

#### 13.6.2.1 Typhoon

Due to the geographical characteristics is adjacent to South Sea, Danang always affected by typhoon. According to data of Standing office of Danang Steering Committee for response to Climate change and sea level rise (CCCO-Danang 2014a), from 1998 to 2013, there were total of 41 typhoon impacted or directly affected, caused 318.24 million US dollars in damage, made 265 people wounded, missing, and dead.

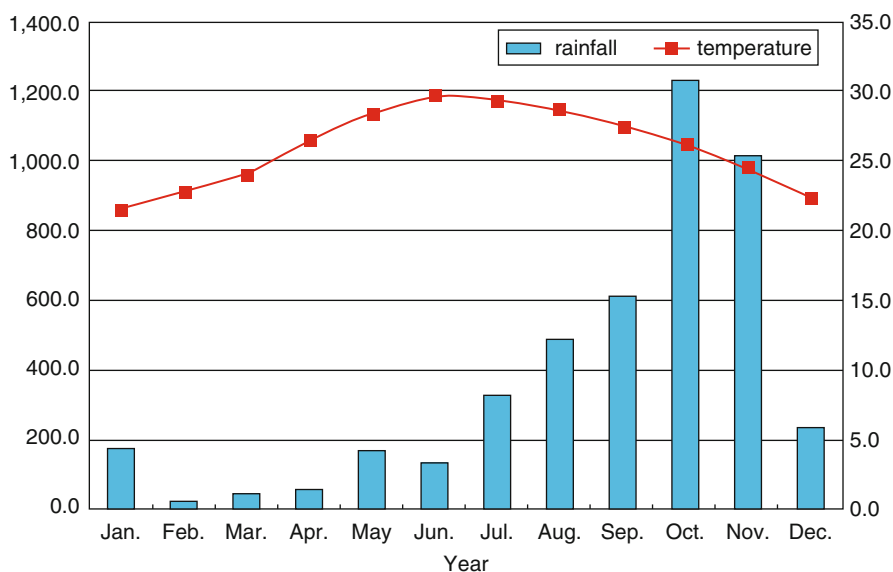
In 2006, typhoons caused huge damage with 104 people killed and 61 wounded, and total losses up to 249.8 million dollar. Of which, Typhoon Xangsane caused the maximum damage for city. Total losses amounted to 248.7 million dollar. In 2009, 23.3 million dollar, and in 2013, 41.75 million dollar damage was caused by Typhoon in Vietnam.



### 13.6.2.2 Flood

This is the second most frequent natural disaster impacting Danang city. Every year, in during the month of October, Danang has multiple incidences of heavy to intense rain, ranging from 1,000 to 2,000 mm (ISET and NISTPASS 2009). In addition to this, the low laying areas in Danang have poor storm water management system and hence during heavy rainfall these areas have flooding problems. Figure 13.5 shows the peak months for rainfall in Danang.

Moreover, according to ISET report (2012–2014), urbanization processes have changed the nature of flooding in the city. Much of the new and planned growth, as outlined in the city Master Plan, is in the low-lying floodplain to the south of the city center. In these areas, developers are infilling lands to protect new development from flooding, yet this infilling constricts drainage and eliminates floodwater retention zones, increasing the risk in adjoining areas. According to data from Standing office of Danang Steering Committee for response to Climate change and sea level rise (CCCO-Danang 2013), from 1998 to 2013, had three flood, such as 2007, 1999, and 1998. The respective losses were 71.7 million dollar, 31.6 million dollar, and 8.56 million dollars.



**Fig. 13.5** Monthly rainfalls and air temperature in Danang (Source: Policy Review for Low-Carbon Town Development Project in Danang, Viet Nam, Asia-Pacific Economic Cooperation 2014)

### 13.6.3 Economics Condition of Danang City

Danang is a dynamic city within the key economic zone of Central Vietnam. It is an important communication hub of the central region with its international airport, deep-water seaports and north-south roads and railways (Tinh and Hung 2014).

The current GDP growth of Danang city is 7.18 %, which is higher than the national average of 1.78 % percent. Interestingly in 2011, while the GDP growth rate of country decreased to 5.89 %, Danang still maintained GDP growth rate at 13 %. This thing reflects the dynamics of city’s sustainable. The economic development and restructuring of Danang city under the government Resolution No. 33-NQ/TW of the Politburo, suggest a shift from industrial-services-agricultural structure to a post-2010 service-industry-agriculture structure (CCCO-Danang 2014b) as shown in Fig. 13.6. This is evident from the fact that service industry’s share of services increased from 48 to 53.5 % between 2003 and 2013 where as industry sector and agriculture sector shares fell from 45.6 to 43.8 % and 6.4 to 2.7 % respectively (CCCO-Danang 2014b). The service sectors account for 70 % of total investment at present. There is a shift in internal trade, transport, communications, hospitality, finance that is adding value of the service industry resulting in increase of city’s GDP.

Due to these attractive policies for foreign investment, the number of foreign enterprises in Danang is increasing. Currently, there are 35 countries investing in various activities in Danang as shown in Fig. 13.2. Capital investment is mainly concentrated in areas such as industrial processing and manufacturing; real estate; information technology; textile. Till September 2013, Danang has attracted 269 FDI projects out of with the total registered capital over 3,128 billion USD. In particular, Korea is the country with the largest investment in Danang over 705 million USD, accounting for 22.55 % of the total registered capital in the city (Table 13.2).

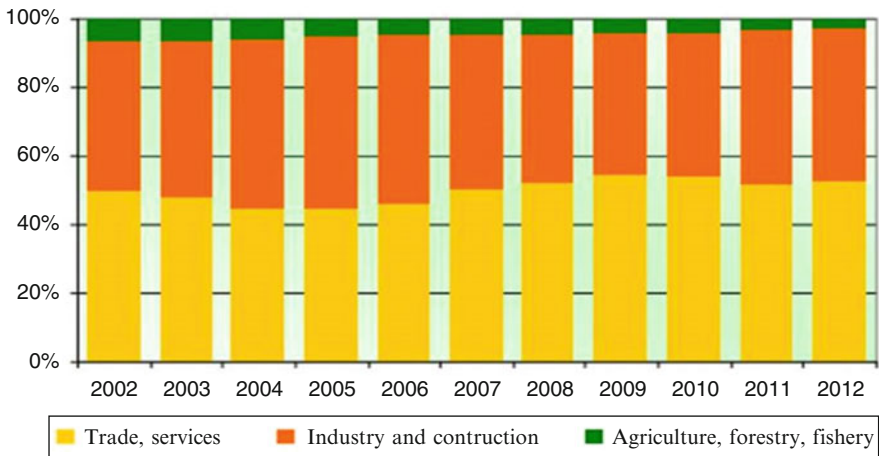


Fig. 13.6 Contribution to GDP of sectors from 2002 to 2012

**Table 13.2** Investment in Danang made by other countries

Sl. no	Name of country	Number of cases	Investment value (in million \$)	Percentage
1	Korea	34	705	21.26 %
2	British Virgin Islands	16	682	20.58 %
3	Singapore	12	588	17.73 %
4	Japan	70	358	10.81 %
5	US	12	346	10.43 %

Source: JETRO 2014

Japan enterprises account for the highest number in Danang city with 75 enterprises investing a total of around 358 US dollars (JETRO 2014). Of these 75 enterprises, 66 are SME's investing in services sector, industries sector and, two each in agriculture, forestry and fishery sector (IPC-Danang 2014).

Considering the increase in oversea enterprises investing in Danang, and its high exposure to natural disasters, Studies assessing the prevention capabilities of reducing disaster risks for businesses in general and foreign enterprises is important. The Japanese enterprises due to their sheer number and history of engaging in various disaster managements related activities in Japan can influence sharing of knowledge and good practices from Japan into the local culture. A field level survey has been conducted to understand the involvement of the private sector specially the Japanese private sectors role in disaster management in Danang city.

### 13.7 Case Study: Japanese Private Sector in Danang City

The main purpose of the study was to focus on the Japanese private sector in Danang city and understand their involvement in Disaster Risk Reduction. For this purpose in depth structured interviews were conducted with seven Japanese Small and Medium Scale Enterprises (SMEs). The medium of interview was Japanese and Vietnamese. To reduce the loss of data in translation material from transcribed interviews was cross-checked with notes made from the translated interviews. The interview questions were designed with the purpose to understand the reason for the companies to invest in Vietnam. What has been the impact of natural disasters on company in the past. How various policies did companies implement for disaster prevention and their future plans for disaster risk reduction. Out of the seven companies interviewed, two are graphic design firms and rest is manufacturing industries. The two of the manufacturing companies dealt in electronic components, one each in construction materials, sports gloves and wooden frames. It is important to mention here that although sample size is small and may not give a complete understanding, but it can be used to understand the general situation on the status of disaster risk management of private sector in Danang.

### 13.7.1 Results

This part presents the results of the interviews held with the Japanese SMEs. The reason for the Japanese enterprises to invest in Danang city though it is located in disaster prone region is due to “Cheap manpower in comparison to Hanoi and Ho Chi Minh City” as suggested by six out of seven companies interviewed. Moreover, the government policies to attract foreign enterprises in Danang and development of industrial zones, such as high-tech industrial park also influenced their decision. In Addition to this Danang is an important transport hubs with presence of Tien Sa port, Chan May port, Danang International Airport, Hai Van tunnel contribute to supply chain management.

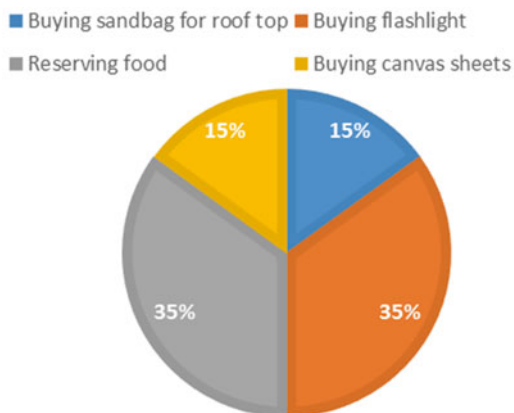
The Typhoon is the most impacting disaster in Danang city as suggested by all respondents and it causes damage to buildings, premises of the factory (fences, trees, etc.). The Second most impacting disaster is disaster is heavy rains which normally results in floods. The Design Companies and manufacturing companies reported damage of walls and ceilings, raw materials, equipment and production machinery (many computers were seriously damaged). Besides, flooding causes disruption of transports leading to high absentees of employees and problem in transportation of goods.

In general, Japanese enterprises agree to the fact that they are more or less affected by the natural disasters, but there are no reasonable investments or planning done for disaster risk reduction activities. Four respondents responded that they were affected directly but with minor damage such as broken glass windows, destroyed front doors, trees falling in the factory area and flooded streets in front. While two companies were severely affected (graphic design company) and one was very severely affected (manufacturers of electronic components). The Graphic Design Company was damaged when flood water damaged computer equipment production. However, the company had not done an estimate of the loss. The manufacturing company had components damaged severely when lightning knocked out the electrical system leading to stop of production with an estimated the damage of 0.2 million US Dollars to electrical equipment. In addition, it also causes indirect damage affecting the production line with losses up to 0.7–0.8 million US Dollars.

All the seven companies shared that though all of them were impacted by disasters but there have not had investment in disaster risk reduction measures. The enterprises just invest in short term measure spending approximately 500–2,000 USD to repair and reinforce the buildings. The most common measures are buying sandbags for keeping on rooftops, buying screws for reinforcement, reinforce the doorways and buy plastic sheets to cover manufacturing equipment, finished product or raw material manufacturing. In addition to this investment in rescue equipment are done (flashlight, foods, candles...) as shown in Fig. 13.7.

Regarding the investment policies of enterprises in disaster risk reduction activities all of the respondent’s enterprises have no any clearly plan or policy in disaster risk reduction. The reason for this is that there is no department or group for provid-

**Fig. 13.7** The types of equipment purchased by Japanese private sectors



ing information or directing the companies in the prevention of natural disasters. Further, the companies feel that raising awareness of the disaster risk reduction for staff in the company and discussing on the same is not done at present. Only one of the seven companies have conducted meeting to talk about disaster risk reduction with its staff but such meeting are not regular and are done before any impending disaster. All the seven companies have trained staff on fire prevention but have no training related to disaster risk reduction. All the interview companies shared that all of them do not have a specific response policy before, during and after a natural disaster occurs and depend mostly on the decision of the head of the company. All the seven companies have shared that they have no plans for planning and disaster response in the near future. Six companies are not aware of the importance of planning for disaster prevention and response, so they do not have any disaster response plans in the near future. Only one company is aware of the importance of planning for disaster prevention but has constraints like less funds, limited expertise and manpower.

### 13.8 Discussion

This section of chapter tries to analyses the findings from the various legislation in Vietnam and field level data to understand the involvement of SMEs in Disaster management in Danang. The role of the private sector in managing disaster risk is garnering more and more attention especially after floods in Thailand and the earthquake and tsunami in Japan in 2011. The damage is no longer limited to the local or national economy but has started impacting the world economy due to spurt in global supply chain. Considering that Vietnam is an emerging economy, it is dependent on investment from foreign enterprises for its development.

Critically analyzing the earlier mentioned legislation by Vietnamese Government for disaster management and private sector's role it is felt that there is absence of guidelines to encourage individuals and organizations volunteering and participating in various phases of natural disasters. More specifically in areas of appeal, collection, receipt and distribution of disaster relief in good and cash. Further there is need to channelize investment in the maintenance, management and utilization does not correspondent to the new construction investment being made in Vietnam (National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020). The private sector will play an important role in bringing funds, resources and expertise into the field of disaster management.

Based on the field study involving the Japanese SMEs the results suggest that the Japanese company although are impacted by natural disasters but they does not any Business continuity plans (BCP) to cope with natural disasters and future risks. Considering that loss to the tune of 0.2 million US dollars as high these businesses houses need to manage disaster risk reduction and strategize to minimize risks in the future. The various reasons given by the Japanese SMEs for not engaging in are due to financial constraints, top down approvals and lack of urgency as the companies has not faced any disasters in recent times. The Japanese SMEs are mainly subsidiaries located in Danang with the managing body in Japan and hence the staffs in Danang have no authority to take decisions on their own.

Further, the SMEs in Danang are part of a larger business chain who are based out of Japan and as a part of the BCP they have setup such smaller units in other regions and countries like Ho Chi Minh City or Hanoi, China, Malaysia so if one unit production stops other may contribute. This is the reason for limited involvement of the Japanese SMEs in disaster management in Vietnam. This also highlights that although in Japan, the Japanese company has extensive experience in the managing natural disasters such as earthquakes, tsunamis but the knowledge transfer is limited when such firms invest in other countries. The Japanese business houses those who invest in Danang are new the local hazards and as a result are not prepared for the future disaster risks and also unlike Japan where involvement of the private sector in disaster management is mandatory, Vietnam has no such legislation to engage the private sector.

### **13.9 Recommendations**

The recommendations are based on the analysis of the field interviews and secondary data to enhance the role of Small and Medium Scale Japanese private sector in particular in disaster management related activities in Danang and elsewhere in Vietnam.

### ***13.9.1 Legislative Frame Work to Include Private Sector in Disaster Risk Reduction***

#### **13.9.1.1 Legislation for Private Sector in Disaster Management**

As seen earlier in the chapter, Vietnam does not have specific legislation to engage the private sector in disaster management related work. Assigning roles and responsibilities to the private sector as a part of the policy will be crucial for engaging the private sector in disaster risk reduction activities. Further, the Government needs to come up with supporting legislation while directing investment in areas that are socio-economically difficult to make investment risk proof.

#### **13.9.1.2 Guidelines for Private Sector to Engage in Disaster Management Activities**

From the interaction with various private sector entities it has emerged that guidelines for private sector engagement in disaster management is needed as in most cases, the private sector is willing to participate in disaster management activities but most of them do not know how to do and whom to approach. The regional organization in Vietnam like ASEAN and APEC should help the government and chamber of commerce to come up with such guidelines.

#### **13.9.1.3 Business Continuity Planning to Be Mandatory**

The Japanese and other foreign business houses investing in Vietnam need to prepare Business Continuity plans and should share on a common platform with the government. This should be made mandatory through legislation.

### ***13.9.2 Enhancing Disaster Education and Awareness Generation***

#### **13.9.2.1 Need for a Common Platform to Share Information**

It is experienced that most of the SMEs act as single units during disasters. A common platform to interact, share and learn from various disaster management experiences from one another will help in creating awareness. Moreover, such platform can be used for early warning dissemination, resource inventory and technology transfers.

### **13.9.2.2 Training of Key Persons on Role of Private Sector in Disaster Risk Reduction**

Emphasis on training, raising awareness for policy makers, board of directors of corporate houses, member of chamber of commerce and industry (CCI) to bring in awareness of disaster management related activated and increase participation.

## ***13.9.3 Training and Capacity Building of Private Sector***

### **13.9.3.1 Training of Experts**

Training activities should be done with the private sector employee to create expertise and also raise their knowledge about local hazards. The trained man power can assist the search and rescue teams in disasters. There is a need to create technical expose in disaster management.

### **13.9.3.2 Involving Private Sector in Decision Making**

The private sector needs to be involved as part of decision-making and other disaster management activities. This will lead to peer learning among the private sector and create transparency and accountability among the government, private sector and humanitarian agencies.

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# Chapter 14

## Thailand Floods and Impact on Private Sector

Aslam Perwaiz

**Abstract** The unprecedented flooding in Thailand during May–Oct 2011 had a major impact on the private sector in general, and small and medium enterprises (SMEs) in particular with almost 90 % of the total damage and losses estimated for this mega disaster. Although the country has been hit by floods in the past, this time the damages is much more severe causing direct damage to the industrial sector than before, as many of the industrial estates in the central region were hit hard, with factories forced to halt operation for than a month. The floods not only had a major effect on local automotive production and supply chain disturbances but also caused short-term effect on regional and global supply of automotive parts and vehicle exports. The severe effect on auto parts makers caused a serious disruption in the supply chain structure. This situation had a cascading effect on automotive assembly and production in Thailand. No body will wish any further natural disaster affect Thailand as it did in year 2011. However, there is a likelihood of increase risks due to changing climate-affecting Thailand.

**Keywords** Private sector • Resilience • Floods • Resilient investment

### 14.1 Background

Traditionally, disasters in Thailand are associated with water. The most common disasters are floods, droughts and landslides due to the geographic and climatic characteristic of the country. With a vast mountainous areas in the north from where the main rivers (i.e. Ping, Wang, Yom, Nan and Chao Phraya) are originated, large volume of water flows down to the mouth of the ocean in Bangkok passing through many provinces.<sup>1</sup>This phenomenon takes places every year during the rainy season, influenced by the southwest monsoon weather, which arrives annually between

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<sup>1</sup> 3rd AIPA CAUCUS Report (2011).

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mid-June and October. In recent years, the amount of water has exceeded the capacities of either rivers or reservoirs and subsequently causes flooding. Between 2002 and 2010 flood killed more than 1,000 people and brought damage and loss in economic terms more than 40 billions Baht. It outnumbers the damage caused by all other disasters combined during the period.<sup>2</sup>

The floods in 2011 are termed as the worst floods in five decades killing more than 800 people affecting at least 65 provinces. Although the country has been hit by floods in the past, analysts argue this time the damages is much more severe causing direct damage to the industrial sector than before, as many of the industrial estates in the central region have been hit hard, with factories reportedly having to halt operation for than a month in a row disrupting the supply chain regionally and globally. The flooding inundated about six million hectares of land, over 300,000 ha of which is farmland, from Chiang Mai in the North to parts of the capital city of Bangkok near the mouth of the Chao Phraya. This also had a sever impact on agricultural production.

With the total damages and losses of approximately THB 1.43 trillion (USD 46.5 billion),<sup>3</sup> the devastating Thailand flood in 2011 is ranked fourth for the costliest disasters after the Great Earthquake and Tsunami in Japan (2011), the Kobe Earthquake (1995) and the Hurricane Katrina in the United States (2005). Starting from July 2011, the flood hit the northern of Thailand first before expanding to central and northeastern regions. In total, 65 out of 77 provinces in Thailand were inundated. 884 people lost their lives and around millions of Thais were homeless. Private sector was severely affected from the unprecedented flooding, which accounted for more than 90 % of the total losses. The flood also marked a history as seven industrial estates in Ayutthaya and Pathumthani provinces were inundated for the first time. This resulted in a decrease in GDP growth forecast from 2.6 to 1 % as estimated by the Bank of Thailand.

## 14.2 Impact of Thailand Floods on Private Sectors

The unprecedented flooding in Thailand during May–Oct 2011 had a major impact on the private sector in general, and small and medium enterprises (SMEs) in particular with almost 90 % of the total damage and losses estimated for this mega disaster. Although the country has been hit by floods in the past, this time the damages is much more severe causing direct damage to the industrial sector than before, as many of the industrial estates in the central region were hit hard, with factories forced to halt operation for than a month. SMEs, despite rarely being addressed as a target group, were hardly hit most. According to the Office of Small and Medium Enterprises Promotion (OSMEP), business operations of approximately 557,637

<sup>2</sup>Thai Meteorological Department (2011).

<sup>3</sup>World Bank (2012); Thai Floods 2011: Rapid Assessment for Resilient Recovery and Reconstruction Planning.

SMEs were disrupted, which amounted to THB 71,156.42 million per month. As well, OSMEP further reported that the unprecedented flood brought unemployment to around 2,325,644 workers. The hardest hit sector is the Trade and Repairs sector with 264,572 SME entrepreneurs affected, followed by the service sector where 163,976 businesses were disrupted. At the same time, there are a total of 102,892 flood-affected SMEs in the manufacturing sector. The food and beverage industry suffered from losses the most, followed by those in textile and garment industries. Estimated by geographic areas, the Central Region and Bangkok experienced the severest losses and damages with 177,776 and 132,973 SMEs undergoing disruption in Bangkok and in the Central Region, respectively. Ayutthaya and Pathumthani were the most affected provinces in the Central Region (Office of Small and Medium Enterprises Promotion (OSMEP)).

As per the study conducted by the National Economic and Social Development Board (NESDB), Thailand, the flood damages in agricultural, manufacturing and service sectors affected in the reduction of 328,154 million baht of Thailand's GDP (at constant price) and contributed to 3.7 % decrease in economic growth (Bank of Thailand 2012b). Therefore, Thailand's overall economic growth in 2011 recorded merely 0.1 %, which was lower than the initial estimated growth of 3.8 %. The flooding had impact on Thailand's overall gross domestic product (GDP) growth, which decreased to 0.1 % – a considerable shrink compared to the increase of 7.8 % the previous year. The GDP value of small and medium enterprises (SMEs) in 2011 was 3,859,587.6 million baht or 36.6 % of the country's GDP whereby the GDP value of SMEs expanded 0.6 % per annum, a decrease from the 7.9 % rise in the previous year. When considering the GDP value according to the size of the enterprise, it was found that small enterprises (SEs) contributed more to the GDP than medium enterprises (MEs) with the value of SEs in 2011 standing at 2,583,873.4 million baht, an expansion rate decreasing from the previous year by 1.7 %, equivalent to 24.5 % of the total GDP.

Employment was hurt when factories flooded and workers were laid off or fired. Not all factories are expected to reopen causing significant long-term job loss in Central Thailand. Thailand accounts for about 30 % of global trade in rice and 25 % of the main crop is not expected to survive being flooded. Within Thailand, where rice farmers do not typically have much reserve capital, effects on farmers will be felt the greatest since they lost both their investment in the current crop and must wait to earn money when flood waters recede before planting a new one.

### **14.3 Recovering from Natural Disasters: Small and Medium Enterprises (SMEs) in Thailand After the 2011 Flooding**

While it is difficult to estimate the overall recovery of the SMEs from this disaster, the overall business started recovering within the first 6 month with various confidences building measure by the Government. Businesses, which were affected

indirectly through supply chain disruptions, resumed their productions gradually in response to continued favorable demand. It was possible through certain specific measures taken by the various departments/agencies of the Government. To boost the investors confidence and needs of the SMEs, the government provides incentives in the area of tax, finance, legal and labor. By 2013, the SMEs are in better position to recover and building back its operation. The various incentives are further analyzed below (Perwaiz 2012).

### ***14.3.1 Tax Incentives***

Tax measures for private sector affected by flood operated by the **Thai Customs Department, under the Ministry of Finance**. Income tax for compensation was exempted among flood-affected entrepreneurs. As for income tax for indemnity that flood-affected firms received from the insurance, only the part of such damage, that surpassed the capital value of remaining assets after the wear and tear as well as depreciation expense were deducted, would be compensated. Entrepreneurs, who registered for VAT and donated commodities to flood victims, also received value added tax exemption from the Department. In addition, entrepreneurs in the flood-hit areas were allowed to submit tax form and tax payments later without any fine, surcharge and penalty fees.

**The Revenue Department**, under the Ministry of Finance, also launched tax incentives to support SMEs who not only were affected by the severe flooding, but also suffered from an increased minimum wage to 300 baht per day. Key measures include (1) mitigation, (2) increasing competitiveness and (3) increasing productivity. First, in order to mitigate flood effects on SMEs, the Revenue Department allows flood-affected SMEs to deduct 1.5 times of expenses, which companies need to pay additionally from the 300-baht minimum wage, before they pay tax. The duration of this measure started from January 2013 and will end in December 2013. Second, in order to increase competitiveness, the Revenue Department exempts corporate income tax for SMEs on their first 300,000 baht-net profits. Last but not least, in order to increase productivity, corporate income tax for machinery adjustments is exempted among flood-affected SMEs. Moreover, the Revenue Department provides 100 % machinery depreciation for the new machine purchased during 1 January to 31 December 2013.

**The Board of Investment (BOI)** allows SME entrepreneurs to be exempted from corporate income tax for 8 years (subject to 150 and 100 % cap on new investment and remaining unused cap for SMEs that remain at original province and for those relocating to other provinces respectively). Likewise, the BOI further exempts taxes for importation of machinery and raw materials for BOI promoted companies to reduce their tax burdens. Approximately 55 industrial projects are supported by BOI for flood recovery. The former phase covers 30 projects in Ayutthaya and Pathum Thani. The latter phase was announced by the BOI in June 2013 that 13,000

million baht would be granted under tax measures to additional 25 industrial projects in the same provinces in order to maintain entrepreneur confidence in these areas.

### ***14.3.2 Financial Incentives (Credit Measures)***

The Small and Medium Enterprise Development Bank of Thailand (SME Bank) is one of the core supporters of SMEs by providing clean loan and low interest rate loans. Once the unprecedented flood occurred, a two billion baht loan was authorized for flood-affected SMEs with 6-year term loan and 8 % interest rate per year (the government compensates the interest rates for 2 % per year). Moreover, SMEs are exempted from principal payment for the first 2 years. Likewise, flood-affected companies do not need to provide collateral or to submit financial inspection reports to the Bank. In addition, the SME Bank also implemented a 'Factoring' clean loan to facilitate the liquidity of extensive production. Similarly, low interest rate at MLR -0.5 % per year is provided, while MLR is normally at 7.5 % per year. SMEs can borrow from 500,000 baht, but must not exceed 100 million baht according to the Bank's policy. Besides, the SME Bank further launched a Productivity Improvement Loan Project in April 2012. This loan project is divided into two phases namely (1) Machine and Automation Loan and (2) Productivity Improvement Loan. The former has 7-year term loan, while the latter has 5-year term loan. Both have maximum borrowing amount of 5 million baht. Interest rates are available on the second year of term loan at MLR -3 % and at MLR in the following years.

The **Government Savings Bank** provides low interest loans at 3 % for three consecutive years. In collaboration with other commercial banks, the Government Savings Bank also offers soft loans at the proportion of 50/50 to flood-affected SMEs. A total amount of 20,000 million baht will be deposited by the Government Savings Bank at commercial banks for 3 years with 0.01 % interest rates. This measure is to increase the financial capability of commercial banks in offering credit to SMEs in flood-hit areas.

**Thai Credit Guarantee Corporation (TCG)** launched credit for SME entrepreneurs through **Collateral Mechanism of Portfolio Guarantee Scheme**. The total loan guarantee limit of this mechanism is 100,000 million baht with collateral period of 7 years limiting at 10 million baht per enterprise per institution. The government allows TCG to compensate at the maximum amount of 23,000 million baht comprising of (1) compensation of collateral fee at 1.75 % for 3 years which accounts for 5,250 million baht and (2) compensation of difference of actual compensation insurance with a limit of 17,750 million baht.

**The Bank of Thailand** provided the total limit of 300,000 million baht financial assistance to SMEs through the Export-Import bank of Thailand (EXIM Bank), the Bank for Agriculture and Agricultural Co-operatives, SME Bank, the Government Savings Bank, the Government Housing Bank and the Islamic Bank of Thailand. The credit offered to each SME was within 30 million baht. The Bank of Thailand charged

the interest rate of 0.01 % from financial institutions, and financial institutions charged SMEs less than 3 % per year (Bank of Thailand 2012a).

### **14.3.3 Legal Measures**

The **Office of Insurance Committee (OIC)** stimulated insurance companies to pay compensation to insured SMEs in flood-hit areas as soon as possible. The insurance is comprised of (1) Fire Insurance; (2) Industrial All Risks Insurance (IAR), which covers damaged assets caused by floods and (3) Business Interruption Insurance, which covers opportunity costs when firms are [temporarily] shut down due to floods.

**The Catastrophe Insurance Policy** was established by the government as the 50-billion baht National Catastrophe Insurance Fund. The fund had an immediate effect as a legal entity after being enacted by a royal decree in 2012. The Catastrophe Insurance Policy covers three types of natural disaster including floods, earthquake and windstorm. Insurance premium rate for SMEs is 1 % per the year of coverage, and SMEs will be entitled to purchase catastrophe's protection with a sublimit of 30 % of the sum insured, which must not exceed 50 million baht. The coverage of the Catastrophe Insurance Policy will be active when (1) The Cabinet escalated the level of the event to 'Catastrophe' or (2) The claim for the damages exceed 5 billion baht in total per event within 60 days or (3) At least 7-richter scale earthquake occurs or (4) Windstorm with a minimum speed of 120 km per hour occurs. The claim can be made according to the actual damaged sustained but not exceeding the limit after the insurance company conducts a survey and make the assessment. The catastrophe insurance can be purchased from any participating insurance companies.

### **14.3.4 Labor Measures**

The **Department of Labor Protection and Welfare, under the Ministry of Labor**, implemented the Layoff Prevention and Mitigation Project. The project aims to strengthen financial capability of SME entrepreneurs as well as preventing unemployment. As per the scheme, the government decided to pay 2,000 baht per employee per month to registered SMEs to help them continue hiring their employees despite being severely affected by floods. SME entrepreneurs also need to pay additional amount of money to their employees no less than 75 % of their salaries. However, the government did not pay registered SMEs for more than three consecutive months and stopped funding those SMEs once they are able to conduct their business activities as usual.

The **Friend to Friend Project** is established to assist employees in flood-affected SMEs to work in other enterprises in a short term. Based on data on 19 November 2011, there have been 568 enterprises from 45 provinces joining the project and they require 69,236 temporary employees to work for them. Data further suggests



that 10,556 employees have already worked in 68 enterprises that were registered in the project. Moreover, Department of Skill Development also arranges Labor Skill Development courses to improve skills of labor according to the demand of employers. Approximately 15,000 employees are targeted to participate in this project and will be paid 120 baht per day within 10 days.

The **Reduction of Social Security Contribution** is specified by the Ministerial Regulation Prescribing the Rate of Contributions to the Social Security Fund B.E. 2555 (2012). The regulation, which came into force from 1 January 2012, states that the contribution rate for insured employers and employees is decreased from 5 % of wage to 3 % from January to June 2012 and to 4 % from July to December 2012.

### ***14.3.5 Other Measures***

The Government of Thailand also undertook various other soft incentives/measure to help private sectors in recovering from the floods. The **Office of Small and Medium Enterprises Promotion (OSMEP)** provided numerous measures to assist SMEs to operate their full functions as quickly as possible. OSMEP's assistance includes establishing a **Disaster Relief Command Call Center (1301)** to respond and to find solutions for flood-affected SME entrepreneurs; and preparing an SME Flood Manual to gather all information relating to relief assistance from various government agencies and commercial banks. According to OSMEP (2011), there were more than 100 SME entrepreneurs calling to the OSMEP's relief center. Approximately 60 % of these entrepreneurs required financial assistance, whereas 30 % needed liaison help from OSMEP. Some of the important initiatives are presented below;

#### **14.3.5.1 Daruma Project**

This project is implemented by Department of International Trade Promotion (DITP), the Ministry of Commerce Thailand and the Japan External Trade Organization (JETRO) as a result of the meeting between Mr. Yukio Edano, [former] Minister of Economy, Trade and Industry (METI) and Mr. Kittiratt Na-Ranong, Deputy Prime Minister of Thailand in January, 2012 after the flood crisis in Thailand. The word "Daruma" originally means a rocking doll and aimed to encourage Thai SMEs to continue their business despite natural disasters. The objective of the project is in (1) creating value and improving productivity of Thai and Japanese products; (2) boosting exports among Thai and Japanese SMEs as equal partners through international trade shows and business matching events; and (3) expanding exports to European markets. So far, Duruma project has attracted over 100 flood-affect SMEs from 22 provinces within food industry, lifestyle industry and service industry. Based on a survey by JETRO, 39 % of participating Thai SMEs need support in terms of design, while 35 % and 54 % need support in the area of production and marketing respectively.

### **14.3.5.2 The Otagai Project**

The Otagai project is the other project that reflects close cooperation between Thailand and Japan on safeguarding SMEs from natural disasters. The project was initially proposed by the Japanese government after Mr. Veeraphol Ramangkura, chairman of the Strategic Committee for Reconstruction and Future Development (SCRF) and Mr. Kittiratt Na-Ranong, Deputy Prime Minister of Thailand visited Japan in November 2011. Later in December, Japan's METI with the collaboration of Japan International Cooperation Agency (JICA) organized "Seminar on Government Support Measures for SMEs – Recovery from Flood Disaster", where a comprehensive policy package including Otagai Business Continuity was recommended by the Japanese government. Until now, the project was assigned to Department of Industrial Promotion, Ministry of Industry Thailand and National Economic and Social Development Board of Thailand (NESDB).

Otagai means 'each other' or 'together' in Japanese. Therefore, the Otagai Business Continuity refers to "a plan to help each other while facing trouble." The objective of this project is to strategically promote cooperation between two countries under the "sister cluster" concept as a business continuity plan (BCP) to strengthen their business activities during the normal situation, to be each other's suppliers during unprecedented situation including floods and thus to increase customers' confidence in both Thai and Japanese companies. The target groups of Otagai Project are flood-affected industrial parks that cluster in Ayutthaya, Pathum Thani, Bangkok and Samut Prakan. Main strategies of the project include (1) Japan-Thailand Sister Cluster Network Creation, which operates in three phases, namely match-making phase, platform creation phase and financial support phase; (2) Cluster Sustainability Standard Setting: THAICOBAN, which is similar to hotel's star rating and will be given to potential Thai and Japanese enterprises; and (3) Financial Support : Business Fusion Fund for Innovation, which is a form of Thailand-Japan Joint Investment supported by their local banks, and then Thai companies will support the Japanese Industrial Cluster, while Japanese enterprises will do the same to Thai Industrial Cluster.

At present, 15 Japanese industrial estates are interested in connecting with Thai companies under the concept of Otagai Business Continuity. However, the cooperation between two countries does have several limitations such as language and culture, the entrepreneur's trust and price gap based on quality. Besides, the Japanese industrial estates are more diffused in comparison with Thai's; thus, will receive less impact from natural disasters in the wide area.

### **14.3.5.3 The Industrial Clinic Project**

The Industrial Clinic Project was implemented by Ministry of Industry, Thailand to assist flood-affected SMEs, community enterprises and manufacturing sector to continue their manufacturing system and operation at an early date. The financial amount of this project is 500,000 million baht covering 22 provinces and 5,000 flood-affected entrepreneurs.

#### **14.3.5.4 Flood Prevention and Protection Scheme**

Flood Prevention and Protection scheme was prepared by the Industrial Estate Authority of Thailand (IEAT) to guarantee investors that industrial areas will be safe from floods and that production and businesses will be able to resume as usual. For instance, there was the construction of dam at joint industrial estates in Ayutthaya namely Bangpa-in industrial estate, Hi-Tech industrial estate and Saharattana Nakorn industrial estate. Moreover, flood dikes constructed in six industrial estates including Bangchan, Lad Krabang, Bang Poo, Bang Plee, Samutsakorn and Pichit with the financial assistance of the Government Savings Bank's soft loan packages.

#### **14.3.5.5 Water Management and Flood Prevention Plan**

Water Management and Flood Prevention Plan is designed by the government with approximately 350 billion baht to construct the infrastructure and 17 river basins along the Chao Phraya River Basin. In addition, the government is also planning to build floodways and flood diversion channels worth 120 billion baht (Department of Disaster Prevention and Mitigation 2011). These floodways and flood diversion channels are expected to allow water to flow up to 1.5 billion cubic meters per second.

In addition, the government undertook various mediums to long-term plans and policies to prevent future flooding in key economic and agricultural areas. Some of them are;

#### **14.3.5.6 National Catastrophe Insurance Fund (NCIF)**

The Royal Decree on National Catastrophe Insurance Fund has been effective on 27 Jan 2012 with total amount of 50,000 million baht. The insurance rates range from 0.5 to 1.25 % and re-insurance rates are down to 3 % for private housing, SMEs, and industrial sector to be insured under NCIF scheme.

The NCIF launched to public on 28 Mar 2012 and 54 insurance companies have already joined the scheme. The NCIF has been under supervision of the NCIF board, chaired by the representative from private sector.

#### **14.3.5.7 Soft Loan for Improving Flood Prevention System in Effected Industrial Estates**

The government has agreed to subsidize the cost for developing flood prevention systems in seven effected industrial estates in the proportion of 2/3 upon total cost with a credit amount of 15,000 million baht. The Loan period has been extended from 7 years to 15 years with grace period of 5 years and the Government has agreed to subsidize the Government Saving Bank for the difference between soft loan interest rate (0.01 %) against MLR (4.22 %) for the next 15 years. Under this

scheme, the constructions of flood dykes in the seven effected industrial estates as well as installation of early warning system in the industrial estates is initiated.

#### **14.4 Thailand's Logistic Sector and Business Continuity Planning for Future Disasters**

Thailand has a strong presence of local and international logistics service operators who provide a broad range of services such as transporting, warehousing, custom clearance processing, and providing logistics and supply chain solutions. In 2011, the logistics industry comprised over 20,000 registered players with an increasing annual rate of 5 % and contribution of approximately THB 11.6 billion in economic value-added each year (Asia Pacific Economic Cooperation 2011; NESDB 2011).

The Transport sector contributes about 7 % to Thailand's GDP. More broadly, logistics-related services make up almost 20 % of GDP. The country's transport sector consists of: (i) roads, about 51,000 km of national and provincial highways, 44,000 km of rural roads, and 84,000 km of local roads; (ii) rail, about 4,100 km of generally single track line; (iii) air, 6 international and 29 domestic airports; and (iv) waterways, about 2,700 km of coastal shipping routes and 1,850 km of inland waterways. Road accounts for about 94 % of domestic freight transport, with rail and inland water transport providing for 2 % and 4% respectively. For passenger transport, road is also by far the dominant mode.

During the 2011 floods, the total damage and losses for the transport sector, for the 26 provinces included in the damage assessment, are estimated at THB 23.6 billion and THB 6.9 billion respectively.<sup>4</sup> According to the Federation of Thai Industries (FTI), the damages of logistics sub sector cost approximately 20,000 million baht. The income of the sector decreases 20–25 % from total income of 300,000 million baht per year. The massive losses of the sector result from the fact that most of the factories were flooded. Moreover, affected-entrepreneurs need to pay additional repair costs for trucks that are used to transfer goods during the flood period. Moreover, warehouse businesses are directly and indirectly affected from the unprecedented flood, which result in the reduction of their sales to 40–50 %. Similarly, the retail business is also affected due to the fact that SMEs own smaller trucks and the transport routes are so flooded that commodities cannot be distributed to retail shops. According to the Development of Thai Capital Retailers Association, approximately 20,000 out of 600,000 retail businesses had already been closed down (Department of Provincial Administration 2012; Flood Prevention Measures of Industrial Estates 2012).

Learning from the flooding, the Department of Primary Industries and Mines under the Ministry of Industry (MOI) has developed a Manufacturing Logistics Development Master Plan (2012–2016) focusing on (1) lowering logistics costs of the country as percent of GDP; (2) improving regional transport and logistics corridor;

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<sup>4</sup>Thailand Flood 2011: Rapid Assessment for Resilient Recovery and Reconstruction Planning, World Bank 2012.

(3) connecting farmers and SMEs to regional supply chain; (4) improving the effectiveness of SME entrepreneurs in logistics management; (5) supporting SME entrepreneurs to employ outsourcing services; and so on. Apart from the MOI, other government agencies that support SMEs in logistics sector include EXIM Bank, SMEs Bank, OSMEP and the Office of Trade Logistics, Department of International Trade Promotion. For example, the SME Bank provided 3,000 million-baht loans to improve liquidity of logistics entrepreneurs in 2010. In a meantime, the Office of Trade Logistics mainly focuses in helping exporters to improve their businesses (e.g. reduce the cost of logistics) by providing the list of Thailand's Logistics Service Provider (LSP), the One Stop Export Service Center (OSEC) as well as organizing training activities for enterprises including SMEs.

The Thai Transportation and Logistics Association (TTLA) is a non-government agency working closely with the Ministry of Transport and the Ministry of Commerce to support logistics-related enterprises. Its goal is to become an information center as well as giving advice and providing solutions to logistics-related enterprises.

After the floods, the SME Bank provided loans to flood-affected SMEs in logistics sectors including transportation for international trade, water transportation, air transportation, ground transportation and logistics agents with financial amount from 50,000 to 5,000,000 baht. The term loan is 5 years with 1-year grace period. The interest rate for the first 2 years is at MLR-3% year and will increase to MLR for the third year onwards. Collateral is required and the entrepreneur must be a member of one of the 12 logistics associations specified by the Ministry of Commerce.

In addition, there was short-term assistance by the Port Authority of Thailand, which decided to provide a 10-Rai space near the Inspection Terminal gate on the western side of the dam in the industrial estate in Ayutthaya. The area became a temporary distribution center built to mitigate the shortage of commodities.

Currently, the Ministry of Transport is building the 400-km elevated roads along Chao Phraya and Ta Chin rivers including those around the industrial estates to facilitate logistics services. The overall budget of this project is 17,000 million baht and the construction would be done in 1–2 years.

There have been some concerns on BCM and BCP for SMEs in logistics sector in certain related-agencies including the Ministry of Commerce and the Federation of Thai Industries. However, BCP is less prioritized in the policy recommendation comparing to supporting SMEs investment in neighboring countries and encouraging them to apply ICT or software in logistics management. According to the report of a seminar on 'Opportunity, Impacts and Measures on the Logistics Sector from FTA' provided by the FTI (2012), the necessity to implement BCP is ranked last in overall 15 policy recommendations despite the fact natural disasters can cause supply chains disruption. Likewise, despite the fact that natural disasters are said to be as one of rationales of the Manufacturing Logistics Development Master Plan (2012–2016); yet, no BCP or any disaster risk reduction-related issues are mentioned as the main strategies as the plan tends to relatively focus on how to effectively increase supply chain competitiveness of the Thai logistics sector (Asia-Pacific Research and Training Network on Trade 2012).

## 14.5 Lesson Learnt and Way Ahead

Although, the government had set up a 25-billion baht fund to rehabilitate flood-affected industrial estates – plus a long-term flood prevention plan – in an effort to reassure local and foreign investors for the long term, one lesson from this year flooding for SMEs is the importance of not just having a business continuity plan but also conducting regular risk assessments that cover all possible scenarios; from market risk to operational risk to economic risk. Producers should also consider how they could limit their exposure to a single geographic location. Additionally, the rebuilding effort presented an opportunity to review manufacturing processes, so as to maximize flexibility, speed of adaptation and resilience in the future. Most of the damaged suppliers are specialized and highly skilled medium-sized businesses that have become an indispensable part of the global economy. This means the large international companies that rely on them will give them the support they need to recover quickly. This disaster has demonstrated how successful Thailand producers have been in filling key global supply chain niches. They will have to turn this crisis into an opportunity (UNDP 2013; UNESCAP 2012).

There were examples of good recovery in the retail sector, as big chains such as Big C, Tesco Lotus and 7-Eleven ran out of essential stock after the floods in Ayutthaya and Pathum Thani inundated factories and warehouses. This led to loss of stock, then panic buying, and for a few days many shelves lay empty. The retailers recovered after they quickly opened up new supply chains, including imports of water, noodles, canned fish, eggs and UHT milk from Malaysia. They also set up new warehouses and distribution centres that helped them to restock their shelves.

For manufacturers, unfortunately, it was not so easy to mend their broken supply chains. Many of the flooded factories were producers of electronic, automobile, computer and optics parts that were essential to the global supply chain. Manufacturers around the world were therefore forced to cut production, as were factories in unaffected parts of Thailand such as Rayong. This disruption of supplies has led to much discussion about the current trend for supply chains to be both within (with only small stockpiles) and global.

Within the strong legal and institutional setup for disaster risk reduction in the Country, the role of business sector is still seen as auxiliary and to an extent a contributor during disaster response. Government seeks donation (in terms of relief items) from business sector whenever there is a disaster. Global climate change will continue to escalate the risk of extreme events such as heavy rainfall, droughts, high sea levels, and possibly cyclones, with direct implications for disaster risk. Businesses, particularly the SME has not fully recognized their role in natural disaster risk reduction in the changing environment. In order to mobilize business engagement in building the resilience of highly vulnerable communities in developing countries the link between disaster risk reduction and climate change needs to be demonstrated.

## **14.6 Recommendations for Future Actions for SMEs**

No body will wish any further natural disaster affect Thailand as it did this year. However, there is a likelihood of increase risks due to changing climate-affecting Thailand. To reduce the negative impacts from future disasters to SMEs, strengthening partnerships for the following is required (UNISDR 2007, 2010, 2011, 2013).

### ***14.6.1 Link to the Climate Change Adaptation Agenda***

With the ongoing global debate on climate change adaptation, businesses are putting more attention on climate change adaptation and thus on climate change risks and vulnerabilities. This provides a unique opportunity to involve businesses including SMEs in DRR if a way is found to align corporate climate change adaptation.

### ***14.6.2 Raise Awareness and Advocacy***

Most SMEs think of DRR and CCA as a moral issue but the impact from climate change is a Business issue. It is crucial to further build understanding of the climate change adaptation and disaster risk reduction concept among companies and to show them ways of getting engaged. The business case for PPPs for DRR needs to be disseminated. This would also help organizations and institutions already working with the SMEs on community investment or disaster relief to expand their partnership. It is also required to increase the understanding of decision makers and the general public regarding the importance of SMEs involvement in CCA and DRR.

### ***14.6.3 Leverage Ongoing Processes for Setting Up a Multi-stakeholder Framework***

A number of processes have started in Thailand in order to set up a legislative and institutional framework for disaster risk management based on a multi stakeholder approach. Those with a good potential to be utilized in promoting PPPs for DRR and CCA include National Adaptation Platforms (NPs), the DDPM provincial action plan for DRR and the Strategic National Action Plans (SNAPs) of Thailand. To date the local action plans and SNAPs do not exhibit any good practice examples of SMEs engagement in risk reduction initiative.

#### ***14.6.4 Set Up Efficient Institutions for Mobilizing Collaborative Private Sector Engagement***

The benefits and opportunities provided by collective or collaborative private sector initiatives need to be recognized and a dedicated institutional setup within OSMEP is crucial in this regard as it provides leaderships, focus and continuity to collaborative efforts between the public and private sector.

#### ***14.6.5 Channel Private Sector Views and Expertise into DRR Processes at All Levels***

Business expertise and views need to be channeled into national and local disaster risk reduction frameworks and strategies as well as into regional DRR interventions such as ASEAN Agreement on Disaster Management and Emergency Response (ADMER). On side of the SMEs it is needed to set up an institution to gather and distribute DRR input, e.g. in form of a SMEs advisory group. On side of the government it is required to assist the OSMEP to liaise with companies on disaster risks reduction issues.

#### ***14.6.6 Business Continuity Plan Within Disaster Risk Reduction Plans***

The national and local DRR & CCA action plan must include the SMEs as partner than local donor. The action plans must include business continuity plans for SMES in event of disasters (UNISDR and PwC 2013). On site and Off Site plans of SMES need to be prepared in view of business disruption.

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# Chapter 15

## Experience of Bangladesh: Focus on Innovative Models of Private Sector Engagement in Risk Reduction

Takako Izumi, Rajib Shaw, and Saroj Dash

**Abstract** Not only in Bangladesh, but also in many countries, disasters have ever caused tremendous damage and impacts on various aspects. To tackle these challenges, full commitment and involvement of all actors including the private sector is strongly required. Private sector involvement can be also seen in Bangladesh, but its extent in DRR is extremely limited.

A rainwater harvesting project implemented by Concern Worldwide and Gazi Tank Company in Bangladesh is a successful DRR business model that can contribute to strengthening community resilience to natural disasters and to business investment. This project worked effectively to develop disaster resilience in rural communities by providing a cyclone-resistant house, safe and clean water as well as livelihood through vegetable cultivation. Precisely, these results and achievements contributed to the capacity development in the fields of DRR (cyclone risk reduction), health (reducing risks of diarrhea by clean water), safety and security (avoiding for women to go for a long walk for getting drawing water), food security (harvesting vegetable) and sustainable livelihood (obtaining cash income by selling vegetable). At the same time, the investment made by GTC can be returned in 3 years based on the cash income generated from vegetable cultivation. From this model, three key messages can be highlighted: (1) the collaboration with NGOs, governments and the private sector can develop an innovative project to contribute to community resilience as well as business investment, (2) it is possible for a DRR project to be able to make returns for both NGOs in creating community resilience and the private sector in increasing their branding and market, (3) the involvement

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of local offices of the private sector is crucial to identify actual problems and challenges on the ground level and to suggest effective model and tools for development. In addition, a disaster can be a window of opportunity for the private sector to expand their business opportunity and market.

**Keywords** Bangladesh • Private sector • NGO • Community resilience • Business model

## 15.1 Introduction

Bangladesh's geographical location and land characteristics make it one of most hazard-prone countries in the world. Bangladesh primarily consists of low and flat land with some hilly areas in the northeast and southeast and is one of the most climate vulnerable countries in the world. The country has been frequented by a range of natural hazards throughout its history, including cyclones, floods, droughts, tornadoes, river bank erosion, earthquakes, tsunamis, high arsenic contents in ground water, water logging and salinity, etc (World Bank 2009).

In addition, Bangladesh has lost on average 3.02 % of its GDP every year during the last 10 years by disasters and holds the highest disaster mortality rate in the world (SDC 2010). Disasters are a serious concern to Bangladesh and they affect Bangladesh's economic growth immensely as well as human lives, assets and infrastructure.

Not only in Bangladesh, but also in many countries, disasters have ever caused tremendous damage and impacts on various aspects. How does a disaster affect especially the private sector and its business? First, businesses will be interrupted by damage of infrastructure and urban systems. Damage to transport and energy networks, ports and airports or to neighborhoods where employees live interrupts business and imposes additional costs. In addition, even businesses in safe locations may be affected by disasters that hit suppliers and partners on the other side of the globe. When business is interrupted, skilled workers may leave, market share may be lost to competitors, relationships with key suppliers and partners may be severed and confidence and reputation may be eroded. These include increased prices, supply chain or distribution network interruption, changing market demand or reputational issues. Once business is lost, it may never come back and its influence can be wider than expected (UNISDR 2013). Considering that the magnitude of impact from natural disasters on the private sector has drastically increased and that more multinational corporations now invest and operate in hazard-prone developing countries, the relationship between natural disasters and the private sector cannot be separated (Miyaguchi and Shaw 2005).

The private sector can be affected by a disaster and at the same time, it can affect others by disaster risks they may create. In fact, business investments in the region have further aggravated the disaster risk exposure of businesses, their supply chains and the communities in which they operate (CSR Asia 2013). Therefore, the private

sector has strong responsibility to contribute to reducing the disaster risks by improving their way of business, management as well as their skills and technology not to generate further disaster risks.

The Hyogo Framework for Action (HFA) adopted by 168 UN member states in 2005 emphasized the need for multi-stakeholders' involvement in disaster management and called for "the full commitment and involvement of all actors concerned such as governments, regional and international organizations, civil society including volunteers, the private sector and the scientific community" (UNISDR 2005). The private sector is considered to be a major player in a new context of collaboration and partnership in humanitarian action (King's College 2012).

To date, it is believed that the main involvement of the private sector in disaster management has focused on disaster response and relief. There is a great need to extend the scope of private sector involvement to include disaster risk reduction (DRR) (UNISDR 2009). Private sector involvement can be also seen in Bangladesh, but its extent in DRR is extremely limited (Ferdous 2006). A potential for the Bangladesh private sector to strengthen its engagement in DRR is to raise general awareness about natural disasters and DRR by improving the safety and security in workplaces which normally implies fire and building safety. For example, the Rana Plaza building collapse occurred in April 2013 was a tragic accident that caused the loss of more than 1,100 garment workers' lives. After the incident, the Bangladesh ACCORD Foundation (ACCORD) conducted risk identification and inspection in 1,500 factories in 18 months, thereafter, safety training for factory employees and managers to follow up results from the inspections. It is still problematic to combine two concepts – disaster safety issues and day-to-day safety measures – because it remains challenging only to ensure the day-to-day safety in factories. However, it is possible that this initiative raises awareness on a culture of safety among workers and managers in the future, followed by an expansion that includes safety toward natural disasters as a next step.

Another potential will be, as Davies (2011) stressed, to explore business opportunities that contributes to developing community resilience to natural disasters in collaboration with other stakeholders such as governments and NGOs and promote such success model among the private sector. This chapter aims to highlight a successful case study of DRR business model based on rainwater harvesting and vegetable cultivation by Concern Worldwide. It proved that an investment in a DRR project can both generate returns and contribute to building community resilience to natural disasters and climate change.

## 15.2 Stakeholder Analysis

The recent increase of scale, frequency, and complexity of disasters can only be addressed by utilizing a wide range of knowledge, skills, methods, and resources (Twigg 2009). It is a key to bring various stakeholders on board in DRR planning and implementation and strengthening their collaboration and partnership to tackle

such multi-dimensional issues, reduce vulnerability and risks to disasters and develop resilient communities (UNISDR 2005).

In Bangladesh, the government, international agencies and NGOs are considered as primary actors in disaster management although the responsibility for providing a framework of legal and institutional structures still remains the government. Over the years, especially the roles of NGOs and donor communities have increased significantly. In addition, private sector involvement has a potential for undertaking activities that would combine business interests and broader social concerns and needs (Matin and Taher 2001). In this section, the roles and activities of each stakeholder are examined on how they have been involved in disaster management and what are their major contributions.

### ***15.2.1 Government***

Bangladesh has a fairly well-developed institutional mechanism at the national and field levels for managing particularly the consequences of natural disasters (Khan and Rahman 2007). The Ministry of Food and Disaster Management (MoFDM) is the entity responsible for coordinating natural disaster management interventions across all of the government agencies in Bangladesh (WRI 2011). At the national level there are three high-profile bodies for multi-sectoral coordination: the National Disaster Management Council (NDMC), the Inter-Ministerial Disaster Management Coordination Committee (IMDMCC), and the National Disaster Management Advisory Committee (NDMAC). The mission of these bodies is to provide policy and management guidance as well as coordination of activities related particularly to relief and rehabilitation (Khan and Rahman 2007).

The disaster management and strategy are regulated in the National Disaster Management Act, the National Disaster Management Policy, and the Standing Order on Disaster and the National Plan for Disaster Management (Shaw et al. 2013). To implement the documents in ground works, Bangladesh has Disaster Management and Relief Division, Disaster Management Bureau (DMB), and Comprehensive Disaster Management Program (CDMP) under the Ministry of Food and Disaster Management (NPDM 2010). The Government of Bangladesh has launched CDMP in partnership with DFID and UNDP in 2004. It went beyond relief, recovery and rehabilitation by looking at pre-disaster from the perspective of “risk reduction” and preparedness. It brought a stronger focus on building coping mechanisms of the communities to manage disasters at the local level (Habiba et al. 2013). The phase one (CDMP I) ended in 2009 with the successes in establishing a national disaster management legislative framework, conducting disaster management trainings, contributing to community empowerment, and establishing a national disaster management information centre. The phase two (CDMP II) covers the period of 2010–2014 and aims to reduce the country’s vulnerability to adverse natural and anthropogenic events and especially to improve linkages with and synergies between DRR and adaptation to climate change (UNDP 2010).

At the field level, the District Disaster Management Committee (DDMC) covers all 64 districts of Bangladesh. The members of the committee include departmental officers and women, NGOs the Bangladesh Red Crescent Society and the Cyclone Preparedness Program (CPP) representatives. Below the district level, there are Upazila, Union, Pourashava, and City Corporation tiers of disaster management committees (Shaw et al. 2013; Khan and Rahman 2007).

The government has acknowledged the importance of and need for collaboration with the private sector in disaster management in Bangladesh. It provides the facilities and basic needs such as water and electricity to communities as subsidies. Although this support began as government subsidies, during the early stages, demand from the communities was generated. This strong need in the market is where the private sector could easily become involved. Once various types of utilities are available, people's lives are free from different type so frisks, and they can quickly recover from a disaster.

### ***15.2.2 International Organizations (Donor Agencies, the International Federation of Red Cross and Red Crescent and UN Agencies)***

Donors are an extremely important stakeholder in development management in Bangladesh, particularly in the disaster management sector, both at the national and the local levels (Khan and Rahman 2007). After Cyclone Sidr in 2008, World Bank (WB) strongly supported the institutional capacity building in the area of disaster management and strengthening disaster preparedness under the Emergency Cyclone Recovery and Rehabilitation Project (ECRRP). The actual interventions included: (a) capacity building of the Disaster Management Bureau (DMB), (b) support toward a Detailed National-level Multi-Hazards Risk and Vulnerability Assessment, Modeling an Mapping, (c) strengthening and enhancing emergency preparedness in 12 severely cyclone affected districts (World Bank 2009).

Assistance from the International Federation of Red Cross and Red Crescent Societies (IFRC) has helped sustain the Cyclone Preparedness Program (CPP) and the dissemination of cyclone warnings (Khan and Rahman 2007). In addition, IFRC has been involved in preparedness activities at community level through the Bangladesh Red Crescent Society which is responsible for a network of more than 40,000 volunteers in the coastal zone disseminating cyclone warnings to the population at risk in Bangladesh (SDC 2010). IFRC has been also collaborating with the private sector closely in disaster management efforts especially in disaster response. IFRC received the in-kind support from the private sector and distributed them to the affected population in case of cold wave. There has been discussion with a communication company to provide the early warning especially for cyclones through a radio station. A construction company has been providing the assistance and orientation to the Bangladesh Red Crescent Society regarding the building code for safe hospital construction.

World Food Program (WFP) is also active in the improvement of the early warning system by strengthening the disaster management information systems (DMIC) (SDC 2010). UN Development Program (UNDP) in Bangladesh has been providing the government with the support the CDMP program such as policy advisory services and capacity development of the Government of Bangladesh in risk mitigation and effective humanitarian response (SDC 2010). In addition, it has been working with the private sector for effective disaster response and recovery. UNDP developed a list of suppliers that can immediately provide relief items in collaboration with UNDP in case of emergencies. In addition, it has a list of contractors that have enough skills and services when necessary in a recovery process. In this way, UNDP can ensure a prompt and efficient response effort and develop a recovery plan in a timely manner.

### ***15.2.3 Non-governmental Organizations (NGOs)***

Bangladesh has one of the largest NGO communities in the world (SDC) and about a quarter of all foreign assistance to Bangladesh is channeled through the NGOs (Khan and Rahman 2007). NGOs are absolutely imperative to form well-ordered society in Bangladesh (Parvin and Shaw 2014). 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 2001).

In the 1970s, all NGOs were observed as relief organizations due to devastating disaster experience in Bangladesh. However, in the 1980s, many of them consciously avoided relief activities in Bangladesh and deliberately targeted to break away from relief, operation as their core activity to more development work in communities (Parvin and Shaw 2014; Matin and Taher 2001). Relief work did not only cause disruption to their normal development projects, but also it threw the beneficiary groups back to relief dependency. Therefore, NGOs tried to work combining “disaster” and “development” activities and realized that more attention needs to be paid to disaster preparedness to reduce vulnerability in the communities. The need for a pragmatic combination of short-term relief and long-term preparedness support is now largely understood and accepted by the NGOs in Bangladesh (Matin and Taher 2001). NGOs in Bangladesh has been actively involved in disaster management, micro-finance, advocacy, public education, and community preparedness that includes local-level disaster mitigation, awareness raising as well as construction of cyclone and flood shelters.

Concern Worldwide, for example, is an international NGO and has been working in Bangladesh for many years in various areas such as climate change, health, livelihood, education as well as emergency response. It has been also collaborating with the private sector in project planning and implementation processes. A rainwater harvesting project managed by Concern Worldwide is introduced in the next section as a business model of private sector partnership. In Bangladesh, the roles and activities of national and local NGOs are also crucial especially in rural areas to strengthen

advocacy, public education campaigns and training programs for personnel involved in disaster management from the national down to the union or community level.

In addition, NGOs in Bangladesh are also expected to be credible, legitimate, transparent as well as accountable, to participate in a policy making process and to address the voices from grassroots level, not only to limited to service delivery and the mobilization of community groups (Khan and Rahman 2007).

#### ***15.2.4 The Private Sector***

The private sector in formal and informal ways contributes to relief works during and after any national level disaster. The extent of private sector involvement in DRR activities in Bangladesh is extremely small while it is largely observed in response to emergencies in the form of relief distribution (Ferdous 2006). When the private sector get involved in relief assistance, their major involvement is mostly limited in provision of their selling goods and items. It will contribute to branding and advertisement of their goods, therefore it may lead to expand their markets in the future. However, the influence to communities will be still one-off and once the disaster response phase is over, their support will not go beyond the response stage.

To provide a longer-term assistance and make an influence, the private sector needs to get involved in DRR effort. Davies (2011) stressed that their interest is shifting from addressing risk to exploring business opportunities and from philanthropy to innovative core business models. APEC (2013) identified the specific roles of the privates sector in DRR as follows:

- Collaborative efforts to enhance business resilience: establishing a good partnership with Governments to share the responsibility of ensuring business resilience and business continuity as business resilience is a public interest.
- Partnerships for improved community resilience: physical assets, technology, and expertise, creating business benefits such as greater brand visibility or employee satisfaction;

As indicated in the first approach and role – enhancing business resilience, the involvement of the private sector in business contingency planning and continuity initiatives has been often observed in particular in multi-national companies which has skills, capacity and knowledge to develop such plan and initiatives. The growth in business contingency planning and continuity activity in recent years indicated that businesses are beginning to recognize the importance of this issue (Twigg 2001). In Bangladesh, based on the experience of the Rana Plaza factory collapse, especially among garment factories, the attentions to safety and security issues, work environment, as well as contingency planning and business continuity management has increased.

In addition, the second approach – improving community resilience by physical assets, technology, expertise as well as creating business benefits - is extremely important in Bangladesh which still requires substantial assistance in both



development and DRR. The business sector has potential to develop new and innovative products and services targeted at building resilience (PWC 2013). The case study reviewed in the following section is a business model in DRR in Bangladesh, and succeeded in creating both a business opportunity and community resilience in collaboration with an international NGO and the private sector.

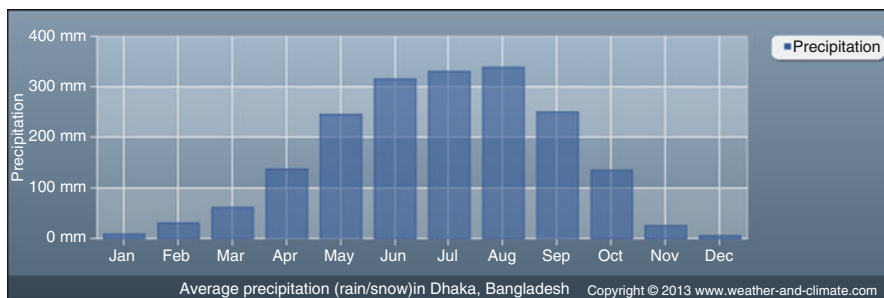
### **15.3 Business Model in DRR: Promoting Rainwater Harvesting for Community Resilience**

In addition to frequent occurrence of natural disasters, climate change is a major concern for various countries. The impacts of climate change are observed in different aspects in Bangladesh, starting from temperature, precipitation change, sea level change, and changes in cyclone or tornado intensity, time and path (Nishat and Mukerjee 2014). For Bangladesh, intensified and frequent natural disasters and climate variability are the key impact of climate change. Hence, reducing disaster risk is the most effective strategy for climate change adaptation. As a result, it strongly affects agriculture, food production systems and water sources especially due to rising sea level and salinity in soil and water. The scarcity of fresh water availability and saline inundation in coastal areas have severely impacted the primary source of livelihood and supplementary income of rural household such as homestead gardening, poultry and animal husbandry.

Concern Worldwide initiated a rain water harvesting project in collaboration with a private company – the Gazi Tank Company (GTC) to reduce risks to natural disasters and climate change as well as provide vulnerable households with a storm-resilient house, a rainwater harvesting system as well as vegetable cultivation to maintain livelihood and their won food security.

#### ***15.3.1 Rainwater Harvesting Project***

Concern Worldwide facilitated a pilot study of rainwater harvesting for drinking and vegetable cultivation in the southwest coastal zone of Bangladesh. The rainwater harvesting model has been identified as a potential and effective mode of water supply for drinking and homestead vegetable gardening based on the meteorological data in the areas. Most rainfall occurs during June–August (Fig. 15.1). Rainwater availability in the months of April, May, September and October are also sufficient for cultivation and other needs. Farmers are in need of water for cultivation for the months of November to March. Soil moisture in November is sufficient for cultivation; hence require less water. Water requirement for vegetable cultivation in December and January are high and the model has been designed to store the water for the crisis period and promote a crop cycle.



**Fig. 15.1** Monthly average rain and snow in Dhaka, Bangladesh (<http://www.weather-and-climate.com/average-monthly-Rainfall-Temperature-unshine,Dhaka,Bangladesh>)



**Fig. 15.2** Water tank to collect rainwater

This project consists of three key components:

1. Rainwater harvesting system (Fig. 15.2) supports the family to store water for the dry season and promote drip irrigation for homestead vegetable cultivation (Fig. 15.3);
2. Improved access to safe drinking water and enhanced nutritional security especially for women and children;
3. Salt tolerant vegetable cultivation on poly-bed with moisture retention capacity provides with higher yield.



**Fig. 15.3** Vegetable cultivation using rainwater

### ***15.3.2 Cost-Benefit Assessment and Analysis of the Business Model***

Concern Worldwide started this project from negotiation with a private polymer tank company on the supply deal of polymer tank with accessories at community level. The company agreed to supply a minimum of 2,000 tanks at 30 % subsidized rate inclusive of transportation with soft-term repayment mechanism at community level. The user set up the integrated “Rainwater Harvesting System (RWHS) for safe water & improved agriculture” models with technical support from Concern Worldwide and other partners. The user would adopt home consumptions and marketing strategy to ensure “food and income security”. The ‘income’ was targeted to enable for the investment of private sector to be recovered within a maximum time period of 3 years. The company was allowed to advertising their CSR compliances and also explore opportunities to get involved in for developing a “resilient community”.

The assessment depicts that the “RWHS for safe water & improved agriculture” requires an initial investment of Tk. 21,000 of which system installation (polymer tank-2,000 l, accessories, brick platform and setting) cost is Tk. 18,280 (Table 15.1) and agricultural input & labour (polythene, seeds, fertilizer and labour) cost is Tk. 2,720 (Table 15.2). GTC has agreed to cover the system installation cost (Tk. 18,280), while Concern is providing the agricultural input & labour cost (Tk. 2,720).

**Table 15.1** Cost analysis for the pilot models/unit

Description of items	Units	Unit cost (Tk)	Total cost (Tk)
Water tank with accessories	2000 lit.	7.5	14980
Plat form: Brick, Cement, Sand, brick-chips and labour	-	Lump sum	2000
Engineer and carpenter-for installation/ Fitting.	2	300	600
Labor cost for Ditch and earthen water reservoir prep.	4	200	700
Sub-total			18280

**Table 15.2** Yearly production cost

Description of items	Units	Unit cost (Tk)	Total cost (Tk)
Polythene	6 kg	120	720
Labour cost for Polythene setting and land preparation	6 person	200	1000
Vegetable seeds and fertilizer (compost/cow dung)	-	Lump sum	1000
Sub-total			2720

**Investment/capital cost (CC) + Yearly Production Cost: Tk. 18,280 + Tk. 2,720 = Tk. 21,000**

The above cost-benefit analysis depicts that at the end of each year a household can gain benefit from the model in three ways:

1. “Cash income” from vegetable marketing which is obviously the most and it has multiplying effect on overall family livelihoods and adaptation choices,
2. Safe water, nutrition and food security which has high significance in maintaining health concerns as well as increasing human asset;
3. Provision of seed storage that helps the family to mitigate crisis during lean periods.

The pre-research and analysis conducted before this project started presented that each household can meet their annual consumption needs with additional income TK 5,000–6,000 out of TK 9,500 total cash income from vegetable sale (Table 15.3). The additional income, therefore, used to pay for the investment cost by GTC. Hence, the total time requires to complete repayment is estimated to be around 3 years.

**Table 15.3** Average income (yearly)/unit

Source	Net income (Tk.)	Supply
Vegetable marketing (sale)	9,500	Cash income from overall livelihood
Family consumption	5,396	Safe water, nutrition & FS impacting on health
Seed storage	1,227	Storage
Total	16,123	

## 15.4 Promoting Integrated Business Model with Private Sector Partnership

Concern Worldwide with support from European Union and partnering with local NGOs has demonstrated practical ways of addressing water scarcity, food and nutrition in the coastal areas south western Bangladesh. The technology has already gained communities' ownership. Now, it is time to make the communities' sustainably adaptive – creating a community based long-term financing provisions or alternatively, engaging with private sector actors for a viable business kit.

The program has gone through an assessment process with a collaborative approach making the interventions – appropriate technical and material supports as much as economically adaptive for the users. While procuring and installing the RWHS at ground, a number of private enterprises have been consulted, particularly for the supply of water tanks and accessories. Ultimate focus was to assess potentiality of engaging the private companies directly in the frame work of resilience model to create a business model where both the communities and the private sector actors would jointly play an incremental role. GTC has shown their commitments even with a CSR approach after nearly over 2 years of action research. The model has significantly complied with problem of food production due to salinity and salt water intrusion addressing the following barriers:

- The lack of cost-appropriate technologies for use in low-resource settings;
- Insufficient user-centred design in technology development;
- High up-front investment costs for the extreme poor households for sustainable adaptation
- Insufficient information and training to users regarding available technologies/innovations

The overall 'investment and return' mechanism is viable and has community friendly provisions. As a result, this project was unique and outstanding in the following six key factors/elements:

**Effectiveness:** The pilot model has given scope to ensure sweet drinking water and sometimes serves the neighbours too. The community claimed relatively lower stomach problems due to availability of safe water. The model ensures food availability and nutrition security even during the lean period (3–4 months/year). Appropriate management practices in vegetable cultivation have guided to higher yield and lower crop loss even during high saline condition.

**Sustainability:** The model serves relatively high sustainability in terms of management practices and stakeholder participation. The multi-dimensional approach of the model partially secures drinking water needs and fully stabilizes the production system and hence, has greater scope of sustainability.

**Gender equity:** Women travel at least for 3 h daily to collect drinking water. If these work hours are converted into wage terms, the return period may go down far below than 2 years. Hence, the model provides healthy time for the women.

**Addressing vulnerability:** The model prevents the house from saline surges, floods and storms – the possible impacts of climate change and disaster. Besides, the crop management practices also address the soil and water salinity.

**Scope of private sector involvement:** This model includes various apparatus like polymer tank, PVC pipes, irrigation equipment that would be supplied from private sector actors. Besides, saline tolerant seed requirement may provide scope for agri-business sectors. Besides, the model initiative has also potential for R & D units of both govt. and private investors.

**Marketability:** The complete model provides opportunity for polymer, agriculture, horticulture, soil treatment and water engineering sectors. There is greater need for materials, knowledge & skill and on-site maintenance services.

## 15.5 Discussions and Conclusions

The rainwater harvesting project worked effectively to develop disaster resilience in rural communities by providing a cyclone-resistant house, safe and clean water as well as livelihood through vegetable cultivation. Precisely, these results and achievements contributed to the capacity development in the fields of DRR (cyclone risk reduction), health (reducing risks of diarrhea by clean water), safety and security (avoiding for women to go for a long walk for getting drawing water), food security (harvesting vegetable) and sustainable livelihood (obtaining cash income by selling vegetable). According to a beneficiary of this project, they earned more than Tk. 3,000 cash income in 2012 and it was even increased in 2013.

This is a successful model both in creating business opportunity for the private sector and in contributing to establishing community resilience. The project demonstrated that the investment made by GTC for this project can be returned in 3 years, however, GTC still needed to compromise the subsidies given through a reduced price when they sold a tank to NGOs and communities. GTC sells a tank normally with Tk. 9.5 per liter as a regular price. However, if it sells a tank to NGOs, the price is reduced to Tk 7.2 per liter. In case for communities, the price becomes Tk 6.0 per liter. Two major reasons that GTC accepted such compromise were observed:

1. Strong intention and aspiration to contribute to changing local situation and improving living standard of local and vulnerable citizens.

Especially the GTC employees of the local offices recognized the challenges that the local communities have been facing every day and for many years. One

of the issues was an access to safe drinking water. Sixty-one districts out of 64 districts currently have been affected by arsenic contamination and up to 77 million people in Bangladesh have been exposed to toxic levels of arsenic from drinking water (Abedin and Shaw 2013). The GTC employees of the local offices also recognized their major product which is a water tank with RWHS can contribute to reducing health risks and providing safe drinking water to the local communities. Therefore, they took an action to address the need for water tanks and make a request for their headquarters to sell tanks with an affordable price, and their request was accepted by the headquarters. This bottom-up approach succeeded in creating a strong concept of social responsibility in the company and initiating a new contribution to DRR and community resilience.

2. Increasing a publicity and visibility of the name and brand “GTC” and its contribution.

Concern Worldwide considers the private sector as an important partner of its project planning and implementation and the private sector should also gain benefits by participating in its project. As such, Concern Worldwide offered GTC to put its name on all the tanks to increase its visibility and promote its name and contribution. GTC has already 75 % of the domestic market share of water tanks and 100 % of the NGOs market share. The name of GTC has been already well-known and maintained a large market while its major market was still in urban areas, not in rural areas. The collaboration and project with NGOs for rural communities expanded the GTC’s market further beyond urban communities.

A major challenge to future development of private sector involvement is that it requires support and guidance from different stakeholders, especially experienced NGOs, UN agencies as well as international and regional organizations and it can be initiated and managed under a collaborative mechanism. This RWHS project was initiated by a NGO, and the private company was approached to make the contribution and be a part of the project by making a contribution of their product. It appeared that without guidance and approach by the NGO, the involvement of such private company had not happened. The model in this chapter demonstrated that private sector involvement in DRR in Bangladesh still needs to be initiated and guided by NGOs or governments or international organizations that have strong experiences and knowledge on disaster management. At this stage, it is still extremely important for the private sector to work with different stakeholders such as governments, NGOs, and academia and to be guided by them if it hopes to strengthen its engagement in disaster management. At the same time, governments, NGOs and other stakeholders need to understand potential capacity of the private sector in disaster management not only as a donor but rather as a solution provider, and provide the private sector with a responsible and clear role as formal partner. In this project, a private company – GTC utilized its own products, as such the product supply can be sustainable as long as it continues their business in this area. It is a strength gained from private sector involvement while the activities and assistance by NGOs, donor agencies, and governments are all subject to funding availability. This kind of mutual trust and understanding can increase a synergy for both sides, and both side must understand the effectiveness of private sector engagement.

As a future step, how can be such project initiatives drawn from the private sector itself and can the private sector itself lead such project without any assistance from

other entities? First, knowledge sharing on the DRR initiatives and capacity development of the private sector in DRR are extremely crucial for the private sector to take an initiative of DRR activities and projects without guidance from other stakeholders. To increase the awareness and knowledge on DRR, it is very necessary to establish a platform of multi-stakeholders especially to raise awareness of the DRR concept. This is the foundation of the remaining suggested activities for strengthening the private sector involvement and disaster management in Bangladesh.

Secondly, actual disaster experience can be a window of opportunity for the private sector to initiate a new business model or expand their market. Cyclone Aila that hit the west Bengal coast in 2009 made a positive impact on its business by creating larger market. After the cyclone, GTC made 50 % up of the profit from selling tanks to the affected family. The disaster made an impact on the people's needs and buying inclination of water tanks to save their lives from water shortage and getting clean water in case of emergencies. Before 2009, its market was mainly urban areas, but after that, the market was expanded to rural areas as well since the people in rural areas learned through the recovery process how important it was to save water to supply drinking water and use it for cultivation which can support their livelihood.

Thirdly, as being observed in the RWHS project by GTC and Concern Worldwide, the role of the GTC local office was eminent by bringing up the local challenges and living conditions to the headquarters and trying to make a direct contribution to changing the situation by selling their projects with an affordable price. The local employees have capacity to understand serious challenges to local people and come up with ideas on what need to be done and how they can contribute to improving the situation. Moreover, they may be able to make most powerful effect and influence to convince senior managers in private companies.

The RWHS project indicated key messages toward future development of private sector engagement in disaster management as follows:

1. Collaboration with governments, NGO, the private sector and academia can create an innovative project. Under the current circumstance, the private sector in Bangladesh needs support and guidance from other stakeholders to understand its roles and possible contribution to disaster management.
2. Both the private sector and communities can benefit from developing a project together to establish community resilience. The private sector can return the investment in a certain period of time and gain further benefit such as publicity and visibility through the project. The GTC's market was much expanded and created new customers and business opportunity. At the same time, the living condition of the beneficiaries can be changed and improved by such joint project. This case study should be disseminated among the private sector as a successful model of business opportunity in disaster management for its future reference.
3. New ideas and proposals to enhance community resilience and DRR capacity often stem from local offices. The local offices and employees are familiar with daily challenges of the local communities, and such experience can lead to taking actions and initiatives to substantiate the concept of social responsibility. It is indispensable to include the local stakeholders such as local offices and communities to identify real issues and best solutions that can fit their local contexts and capacity.



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# Chapter 16

## Malaysian Experiences: The Private Sector and NGO Collaboration in Risk Reduction

Anisha Mathan and Takako Izumi

**Abstract** Although Malaysia is a country that is not prone towards major disasters as compared to other Southeast-Asian countries, its national government and NGOs in Malaysia have been making efforts, with its declarations, mitigation efforts, short-term community based programme etc. In addition, the private sector has been also involved in DRR activities working together with NGOs. This chapter aims to review two case studies of private sector involvement in DRR in Malaysia – Animasia studio SDN BHD (Animasia) and PricewaterhouseCoopers (PwC) and to discuss the benefits, challenges and opportunities for both the private sector and NGOs. Through this partnership, both the private sector and a NGO gain benefits including reaching out wider target beneficiaries, awareness raising of their own employees, branding as well as fundraising. To increase the DRR awareness among the private sector and make the collaboration sustainable and long-term are future tasks. It is required to establish a platform for information, knowledge and experience sharing among various stakeholders.

**Keywords** The private sector • NGOs • Disaster Risk Reduction (DRR) • Partnership

### 16.1 Introduction

Malaysia is very rarely threatened by major hazards such as earthquakes, volcanic eruptions and typhoons (Hashim 2010). However, parts of Malaysia suffer from small-scale but frequent or recurrent hazards such as monsoon flooding, flash floods and landslides which have worsened with climate change and unplanned

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development that has made the hazards more complex and unpredictable. Landslides and floods are two major natural disasters that have impacted the country in terms of injury to loss of life, property damage, disruption and destruction of services, public inconvenience and economic as well as financial losses (Komoo et al. 2009).

The shifting of tectonic plates on the other hand, has made other hazards such as earthquake and tsunami more reachable and possible which was; something most Malaysians never imagined could ever happen. The Indian Ocean Tsunami in 2004 impacted the northwest coast of Peninsular Malaysia, claiming more than 60 lives (MERCY Malaysia 2008a) and the most recent occurrence of a moderate earthquake (at the Magnitude: 5.3 on Richter scale) in Sabah on 28 September 2014 although claiming no lives and no losses is a great surprise to most Malaysian with the perception of it being a earthquake free country. There has also been an increase in extreme weather and climatic events in the country, for instance freak thunderstorms and unforeseen or prolonged monsoonal floods that have brought to disasters and subsequently much infrastructural damage and other losses in the country (MERCY Malaysia 2013). The South of Peninsular Malaysia, Johor experience severe flash floods in December 2006, January 2007 and February 2011 as well as the East coast of Peninsular Malaysia also experience severe monsoon floods in December 2013. These disaster experiences became a window of opportunity for Malaysia to initiate a Disaster Risk Reduction (DRR) measure in the country.

The increase of natural hazards in Malaysia accelerated the enhancement of disaster risk reduction (DRR) strategy and efforts at national level. The national government showed great effort in the hosting the 3rd Asian Ministerial Conference on DRR in 2008, acknowledging the importance in the involvement of private sectors in DRR, its declarations and pledges towards a resilient country, its coordination process as well as its involvement and commitments at the international level. It also particularly focused on public private partnerships for DRR and community-based DRR activities (UNISDR and ADPC 2010). At the AMCDRR, 48 countries from the Asia and Pacific adopted the Kuala Lumpur (KL) declaration on DRR, which calls on the Governments and national and regional stakeholders to accelerate the implementation of the Hyogo Framework for Action (HFA) in Asia. In the Declaration, corporate social responsibility and business continuity plans as well as the development of catastrophe risk insurance markets that provide financial incentives for DRR were promoted. In addition, the establishment of multi-stakeholder mechanisms for the promotion of private sector involvement was encouraged (MERCY Malaysia 2008a; UNISDR and ADPC 2010).

Not only by the government, but also the DRR efforts by other stakeholders such as the private sector itself were also developed in Malaysia in close collaboration with NGOs. This chapter aims to highlight the case studies of the private sector involvement in DRR in Malaysia and to discuss the challenges and opportunities for future enhancement of its engagement in DRR.

## 16.2 DRR Progress in Malaysia

### 16.2.1 Government Initiatives

In Malaysia, the National Security Council (NSC) under the Prime Minister's Department is the focal point to the whole disaster management cycle. The NSC has a Crisis and Disaster Management Unit that coordinates all disaster management efforts in the country. Based at the national level, the NSC has branches in each state and has personnel seconded from all major emergency response agencies (army, police, fire and rescue etc). The NSC has established a relatively strong policy framework and mechanism for disaster management which is inclusive of DRR (MERCY Malaysia 2013).

The Highland Towers' collapse that occurred on 11 December 1993 played a central role in the establishment of the National Security Council Directive No. 20 (NSC No. 20), the Policy and Mechanism for National Disaster and Relief Management and Relief Management 18 and the formation of the Special Malaysia Disaster Assistance and Rescue Team (SMART) under the NSC (ADRC 2011a). The NSC Directive 20 gives clear guidelines for disaster management and response coordination at all levels for all types of disaster and contextualized at district level and contains Standard Operating Procedures (SOP) for disaster management including for DRR. NSC works and coordinates with other government agencies that are in charge of monitoring hazards. Responsibilities of agency, department, statutory body, NGO and private sector representative who participate in the country's disaster management must perform their respective responsibilities and functions according to the NSC No. 20 in an integrated manner in order to ensure efficient and effective delivery of tasks (MERCY Malaysia 2013). The directive works in preventing duplication, confusion and wastage of resources in disaster management.

Legislations efforts exist to support DRR efforts in the country such as the Town, Land Conservation Act, Environmental Protection Act, Town and Country Planning Act, Irrigation and Drainage Act and Uniform Building by Law as development tends to be one of the main causes of disasters. Government agencies also have, and continue to carry out various efforts including installing monitoring systems (floods, tsunami warnings etc), flood mitigation (river management, installing drainage systems), and install surge breaks / erosion shields in coastal areas, landslide mitigation and other activities. One of the most prominent mitigation efforts undertaken was the construction of the SMART Tunnel in Kuala Lumpur, which has effectively reduced urban flash floods as well as traffic jams in the city.

In addition to hosting AMCDRR in 2008, the government demonstrated that Malaysia has been committed to DRR and working very closely with an international community. The nomination of Kuala Lumpur City, Melaka and Putrajaya as the Role Models was announced with regard to the country participation in the "Resilient Cities: My City is Getting Ready" in 2011. The government pledged the

safety of 10,000 schools and 3,231 hospitals, including clinics (UNISDR 2011). As of this declarations the “Melaka Declaration on DRR in Malaysia 2011” was adopted during the Disaster Awareness Day 2011 which called upon national, state and local stakeholders to advocate lead and champion actions on national mechanism for disaster management, role of local authorities for DRR, mainstreaming of DRR in education and keeping schools and hospitals safe from disasters (NSC 2011). Moreover, the integration of climate change adaptation was also highlighted in a comprehensive legal framework for disaster management in Malaysia to address changing nature of disaster risk brought about by climate variability and change (SEDPRI-UKM 2013).

Although no long term community based programme that are implemented, the NSC with the support from Asian Disaster Risk Centre (ADRC) initiated a Community-Based Disaster Management (CBDM) project entitled Community Based Disaster Management that requires all State Security Councils (SSC) to carry out DRR activities such as vulnerability and capacity assessments, hazard mapping and making evacuation plans with at-risk communities (MERCY Malaysia 2013).

### ***16.2.2 NGOs’ Initiatives***

Not many NGOs that have been involved in DRR activities are found in Malaysia while there are more NGOs active in relief efforts. MERCY Malaysia, a NGO based in Malaysia, has been conducting DRR activities since 2007. The School Preparedness Programme (SPP) aims to promote a culture of disaster preparedness among school children and to increase capacity of schools and students to respond to disasters. The program consists of two major activities: School Watching Workshop and School Response Preparedness training. The team of the trainers and facilitators for these activities are also established with support of their volunteers. SPP teaches simple, hands-on activities to school children to prepare them to take responsibility for their safety in the event of an emergency (MERCY Malaysia 2008b). The School Watching Workshop includes an exercise of “school watching” that gives an opportunity for the participants to identify existing risks to hazards as well as capacities with their own school. The students will later put in their findings on a school map and school map and develop an action plan on how to solve the problems identified (MERCY Malaysia 2009).

Another major initiative by the NGO is a community-based preparedness program conducted in Johor. The program aims to build a culture of disaster preparedness and resilient in the target communities and o strengthen multi-stakeholder partnerships between local government agencies and local communities. The first phase of the program was a sensitization and advocacy seminar on DRR for government officials to introduce DRR concepts and to emphasize the key role of the local government in the DRR process (MERCY Malaysia 2009). The second phase is to have a series of follow-up meetings with the targeted villages to identify potential DRR activities for the communities. The district offices also played an

important role to motivate and encourage the representative from each village, to ensure they understand the importance of DRR efforts for their communities. Then, the communities planned their own activities such as posters and sign boards development with DRR messages, village “Gotong-Royong” with disaster awareness campaign, a community first aid training session, brochure development that includes local knowledge and disaster preparedness (MERCY Malaysia 2010).

In addition, an organization called Slopewatch is also conducting a community program run by residents who monitor slopes in their neighborhood for signs of landslides and conduct simple maintenance of slopes, such as clearing of overgrowth in drains. By participating as SlopeWatchers, residents become the “eyes and ears” for the local authorities. Because residents are familiar with their surroundings, they are the best observers of any changes in the slopes around their homes. By working together with federal slope agencies and local and state authorities, communities can take a risk-reduction approach to hillside living. Public awareness and education sessions help residents become more knowledgeable on safeguarding their communities.

In the next section, two case studies of private sector involvement in DRR are highlighted as good examples of partnership with the private sector and NGOs.

## **16.3 Case Studies: The Private Sector and NGO Collaboration**

### ***16.3.1 Animasia Studio SDN BHD***

Animasia is a major animation service provider in Malaysia. “Bola Kampung” a.k.a. “Football Kidz” is one of the company’s most popular television series for children. Mixing football and traditional village lifestyle, the story illustrates the transformation of a group of characters from different backgrounds. Animasia established a partnership with MERCY Malaysia for increasing the capacity of primary and secondary school to respond to disaster through the SPP program. Characters of a popular cartoon series are used to convey disaster preparedness messages (APEC 2013).

In this partnership, Animasia Studio incorporates “Disaster Awareness” messages into Bola Kampung television episodes. Animasia Studio also contributes creative ideas and artwork design to MERCY Malaysia while developing and sourcing advertising and promotion collaterals such as greeting cards, website and Bola Kampung “Disaster Awareness” clips and flash games. In addition, the education materials to be used at the SPP program such as a video, posters, workbooks, flashcard games and board games (Figs. 16.1 and 16.2) were developed to help build understanding of disaster preparedness. Animasia also designed and sponsored ‘Bola Kampung’ SPP t-shirts, as well as provided other merchandise such as DVDs, bags and stationeries for the use of the programme (MERCY Malaysia 2008b;



Fig. 16.1 Materials designed by Animasia



Fig. 16.2 Grab-bag exercise cards

APEC 2013). Due to the popularity of the ‘Bola Kampung’ characters, the newly designed materials do not only leave a greater impression with students but also help the program reach a wider audience (APEC 2013). Materials developed enables the messages from of the workshop appear more attractive and relatable to the target audience.



This collaboration was initiated by the NGO. The NGO approached Animasia to seek their support and involvement in their disaster education program for elementary school students. Animasia was convinced based on the discussion with the NGO that the program would be meaningful, especially in line with their CSR direction and they could gain more exposure for their animation character. It had been already very active in CSR programs and was also very keen to support societies, practicing “gain from the society and contribute back to the society” in their CSR programs. Due to their longer-term commitment, experience and contributions to CSR programs, Animasia had no hesitation to work with the NGO for strengthening disaster preparedness capacity for students/children and building disaster resilience among them. According to them, this program and partnership also helped the Animasia’s employees gain more knowledge about CSR and disaster preparedness, and increase their design skill. In addition, the collaboration with the NGO contributed to building a health image for their animation character and a healthy brand building, and gaining good exposure for their brand. Eventually, the program built good corporate image and brought them more opportunities in business development by working with a popular NGO.

Through this project, Animasia’s cartoon characters reached an audience in a more interactive way beyond the TV series (APEC 2013) as well as gained further visibility and publicity. These characters had been already popular among children before the collaboration with MERCY Malaysia and contributed to disaster preparedness capacity development among children and creating student’s disaster resilience. The private sector often considers that they need to make additional efforts and put additional funds and resources to initiate and be involved in a project that they have never participated in, however, it is not always necessary. They can explore the way to make the best use of their existing products and expertise, and for that purpose, the support and approach by NGOs and other stakeholders are crucial to gain advices and guidance as the private sector often does not realize how their products can make contribution to DRR. This case study demonstrated that strong partnership with NGOs or other organizations help the private sector understand their role and what they can do and contribute to DRR efforts. At the same time, the NGO had also realized the effectiveness and potential of the collaboration with the private sector and how it would be beneficial for both sides, which is a reason why they approached the company to work with. Even for NGOs, it is crucial to understand the value of working with the private sector and to actively reach out the private sector as potential partners.

### ***16.3.2 Pricewaterhouse Coopers (PwC)***

PricewaterhouseCoopers (PwC) is a multinational professional services network. PwC works with many global companies, public sector entities, growing businesses and up-and-coming entrepreneurs providing solutions to their complex business issues as well as provide industry-focused assurance, tax, consulting and deals

services for public and private clients in areas such as Corporate accountability, Risk management, Structuring and M&A and Performance and process improvement. Under its Cooperate Social Responsibility, PwC has been actively involved in giving back to communities through programmes such as Community Outreach Programme (COP) focusing on education for the less fortunate, measuring and tracking our carbon footprint of the Kuala Lumpur office etc.

PwC has been also providing consultancy services to the private sector for BCP/BCM development. According to Sarmiento et al. (2013), a few private companies have incorporated business continuity plans into their daily operations to protect assets, production of goods and services, and supply chains from possible hazards. A survey conducted by the Asian Disaster Reduction Center (ADRC) in 2011 among 18 economies found that only 15.9 % of the Small and Medium Enterprise (SME) respondents have a written BCP while that figure is 52.0 % for large-scale respondents. Furthermore, although BCP/BCM is the most relevant DRR tool for the private sector, 46.9 % of SME respondents and 16.5 % of large-scale respondents do not know about BCP. It demonstrated that DRR concept itself has not been recognized especially among SMEs (ADRC 2011b).

In order to increase the involvement of the private sector in DRR, PwC and UNISDR fostered joint public-private approaches for DRR and have been supporting the private sector in developing improved disaster risk management capacities. PwC has conducted various studies on DRR and disaster resilience, and published the reports to share these research findings internationally. At the same time, it helps organizations develop and implement tools and methods to mitigate disaster risk. Their assistance includes helping companies map and quantify global asset and supply-chain risks, develop continuity plans and improve resilience strategies associated with virtualization and globalization (PwC 2013). The report “Working together to reduce disaster risk” was launched at the Global Platform on DRR in 2013 held in Geneva by PwC together with UNISDR to share the experiences of private sector involvement in DRR and contributed to the advocacy of the need for private sector engagement in DRR.

In Malaysia, PwC also made an effort to raise awareness on DRR among the private sector and provided them with the opportunity of their disaster preparedness capacity development in collaboration with a NGO. In 2009, PwC jointly organized with MERCY Malaysia a 1-day Business Continuity Conference entitled “Tomorrow Happened Yesterday” that targeted the private sector focusing on providing an overview of disaster preparedness, disaster and emergency response and crisis management within the framework of business continuity (MERCY Malaysia 2009). The conference shared hands-on experience in disaster preparedness planning, practical examples on disaster preparedness and crisis management both at a corporate and personal level. The conference also included an exercise that aimed to help participants identify and minimize the risks in their offices, as well as developing an effective emergency response plan and an awareness-raising session on how to be prepared for different types of disasters. At the same time, the funds for DRR

programmes were raised through the event to return back to MERCY Malaysia for the implementation of local projects. After this event, several participated companies became much interested in their disaster preparedness capacity and risk management for the office, and requested the NGO to conduct a seminar for the company employees.

This partnership created a valuable opportunity for both the private sector and the NGO as well as the participants. First, PwC managed to provide the participated companies who could be their future clients with the information on BCP/BCM, and eventually this opportunity might lead to a future business opportunity. Second, the event supported the NGO in reaching out new beneficiaries and potential partners – the private sector to share the DRR concepts and increase its awareness. The NGOs' common targets and beneficiaries are generally communities, most vulnerable people including children, women and people with disabilities, and they negotiate and discuss with governments, international/regional organizations and other NGOs. Therefore, the private sector can be hardly their targeted beneficiaries and it is not easy to initiate collaboration and partnership with the private sector as their goals and objectives are often different. Third, the participated companies also gained the learning opportunity and the knowledge on BCP/BCM, disaster preparedness and risk management through the event. A practical exercise was also conducted by the NGO during the event to learn the office preparedness. Fourth, this opportunity became a fundraising opportunity for both the private sector (as a contributor) and the NGO (as a receiver). Fifth, the company gained the opportunity to be involved in a program beyond their core business area – education. The company had already strong knowledge on DRR and need for the plan, and recognized education and awareness raising opportunity is indispensable for disaster preparedness among all the stakeholders especially, governments, the private sector, communities, and students/children. The collaboration with the NGO made the company possible to contribute to a key and effective area in DRR which is education, believing it strongly contributes to social/community disaster resilience. This will be also a new idea and area of convincing the private sector – by supporting and working with NGOs, they also can contribute to activities that they believe most important although it is not their core business and expertise.

To further strengthen private sector engagement in DRR in Malaysia, it was recommended at the interview with PwC that the establishment of a DRR platform for various stakeholders is necessary for awareness raising and information exchange and it has to be participated by a representative of each industry – banks, communications, constructions etc. In this way, it can be possible to disseminate the information shared at the meetings and discussions from different stakeholders among companies within the same industry systematically and effectively. It is also important to think about the coordination and effective mechanism to share the information and gain the feedback from as many as companies possible.

## 16.4 Benefits, Challenges and Opportunities from the Collaboration Between the Private Sector and NGOs

Both the private sector and the NGO made achievements through their collaborative activities as shown in Table 16.1. Major areas include awareness and interest raising of employees and beneficiaries, reaching out wider beneficiaries, branding, as well as fundraising.

Through this study, it was observed that the collaboration between the private sector and NGOs could be beneficial for both sides creating a win-win strategy, which could be observed as below:

### The Private Sector

- Awareness raising and sharing of expertise and knowledge: The private sector and NGOs have different expertise and resources that could contribute towards awareness raising and sharing of DRR knowledge to wider audience and beneficiaries, hence such partnership provides sustainability and effectiveness in the use of resources. The private sector itself can also increase their knowledge and interests in DRR through the collaboration with NGOs.

**Table 16.1** Major achievements by the private sector from the joint activities with NGO

Organization	Activities	Focus	Major achievements
Animasia Studios	School Preparedness Programme	Material development and fundraising	The staff of Animasia involved in the partnership gained knowledge and interest on DRR issues
			An opportunity for the Studio’s staff to polish their designing skill through developing of challenging designs for the programme
			Provided Animasia with an access to target branding audience
			More interest and attentions by students and children on the materials and DRR
Pricewaterhouse Coopers (PwC)	Business continuity conference	Conference, consultation and fundraising	Reached out a wider targeted audience (awareness raising for the private sector in DRR)
			Contributed to awareness raising of the private sector in BCM
			Created fundraising opportunity for both the private sector (as a contributor) and a NGO (as a receiver) for DRR projects
			Contribution to education which is not their core business area, but believed extremely important to establish disaster resilience.

- Possible to access wider beneficiaries and potential markets for branding: As DRR is a broader topic, the private sector can leverage its contribution through the partnership in a way that would enable them access to the target audience of their business and brand – i.e., Animasia with children and students and PwC with its business clients. As NGOs have the knowledge and expertise in DRR as well as working with different types of stakeholders (school children, community members, governments etc.), there is further possibility for the private sector to expand the collaboration with, and reach out to other stakeholders, potential clients and business markets.

## NGOs

- Sharing of knowledge and expertise: Partnership with the private sector also benefits NGOs in reaching out non-traditional target beneficiaries for NGOs which is the private sector. The private sector, can be hardly major program target for NGOs, as NGOs' programs' normally target most vulnerable groups. However, considering expertise, resources, financial availability, business tools etc. that the private sector may be able to contribute to, the collaboration and partnership with the private sector bring added value to NGOs works.
- Saving cost and making projects more effective and approachable: Working with the private sector helps NGOs to save its cost and resources – i.e., saving cost in the designing of materials by Animasia. The contribution by the private sector can also make NGOs' projects more effective, attractive and relatable – i.e., Animasia design's materials that are approachable and relatable to the current situation and life of a Malaysian child.

At the same time, challenges and opportunities were also observed in the collaboration as follows:

The private sector's awareness on DRR: Few businesses understand the broader concept of disaster management and the role they can play in DRR and building disaster resilience. Building this understanding is essential in order to leverage business engagement and move away from short-term post-disaster contributions to long-term engagement and resilience efforts (APEC 2013). PwC was already familiar with the concept of disaster risk management based on BCP and BCM as a part of their expertise. However, further efforts to promote the DRR, disaster preparedness and risk management concepts among the private sector were required. Therefore, PwC initiated the collaboration to organize the awareness raising event with the NGO to make the event more interesting and attractive to the private sector by including the contents of disaster preparedness exercise and presentations provided by the NGO. The event was planned for both organizers to enable to gain benefits by making the best use of each other's existing expertise. With knowledge and interest in DRR issues, the private sector can initiate and develop their own DRR program without approach and guide by other stakeholders and explore even their new business opportunity and market. Awareness raising on DRR issues among the private sector is crucial for the future enhancement of private sector engagement.

Sustainable and long-term collaboration: One of the constraints for the private sector to engage in DRR activities is time constraints of the private sector's employees. Most of the private sector employees usually have their own work targets, hence it makes it difficult for the staff of the private sector to commit their time towards participating in DRR efforts which normally requires a long-term involvement and commitment. This is also a reason that disaster response and relief work is rather attractive to the private sector. However, such involvement in disaster response and relief efforts is also an extremely important opportunity for the private sector to understand and learn the holistic approach to disaster management. From such experience, the private sector also gains profound knowledge on disaster management – DRR can prevent and reduce the underlying causes, and eventually it may lead to active involvement and participation in DRR efforts. In addition, NGOs can work rather for longer-term projects, and NGOs and the private sector can support and complement each other by knowing each other's strengths, weaknesses as well as differences.

## 16.5 Way Forward and Conclusions

It was identified that the initiative and guidance by NGOs was extremely important and useful in Malaysia to initiate and strengthen private sector involvement in DRR. The collaboration with Animasia and PwC were initiated by MERCY Malaysia. In Malaysia, limited industries have already developed BCP/BCM, however, not all the companies are familiar with a risk management concept yet. It is urgently required to increase the knowledge on and interest in DRR among the private sector to encourage them to participate in DRR efforts actively. It is also the private sector's duty and responsibility to protect employees' lives, assets, and products, and maintain supply chains and business based on effective disaster preparedness even during and after disasters. It is the best way to convey and advocate such critical message in collaboration with NGOs and the private sector, sharing good case studies such as by Animasia and PwC. In their case studies, it was obvious that the private sector's contribution was not only the funding, but also they played a crucial role as program implementers. The private sector needs to be recognized as one of key stakeholders in DRR activities. Such collaboration made DRR projects more attractive and approachable as well as made possible reach out wider beneficiaries for both sides. In addition, both private companies gained an opportunity to contribute to social activities – education and awareness raising for children, the private sector as well as the public/citizens eventually which is not normally their business goal and objective.

To strengthen the DRR awareness, it was suggested by the private sector that a DRR national platform that invites various stakeholders including the private sector, mainly a representative from different industries such as banking, communication, construction, etc could be useful for information, knowledge and experience sharing. Also, the involvement of media can help raising awareness. Especially in a

country such as Malaysia that does not have a major disaster, DRR and disaster preparedness cannot be a priority work and issue for the country. Therefore, the role of NGOs and the private sector is crucial to compensate and fill in the gaps.

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# Chapter 17

## Indonesian Experiences of Private Sector Involvement: Focus on Partnership

Victor Rembeth

**Abstract** Ever since the Indian Ocean tsunami in December 2004, not just the global community learns something regarding better disaster management, but moreover the people and government of Indonesia are awoken of the needs to be resilient in the challenge of natural disasters. The new law of Disaster Management in Indonesia, Law 24/2007, has stated clearly that partnership as one of the main principles in doing disaster management. This means that the three pillars of Indonesia's disaster management actors; Government, Civil Society and Private Sectors; have to create a mechanism of collaborating in this matter. Responding to the same challenge of disaster threats, the World Economic Forum, initiated the Disaster Resource Partnership as a means of privates sectors to be involved in humanitarian works, mainly but not exclusively, among the Construction and engineering company. After the initiation in two countries, India and Mexico, the President of Indonesia himself, Susilo Bambang Yudhoyon, invited the Forum to start this public private partnership model in 2011. As the process developed, the partnership network was launched in 2011, activated in 2012, and has been a model of multi-stakeholder partnership in disaster management in Indonesia, where it is not just public and private, but also people partnership. And since Indonesia realized as stated in the Law, that disaster management spirit is risk reduction, then the partnership has also been involved in the disaster risk reduction effort with other actors. The partnership provides a model of tri-sector collaboration where close coordination and sharing resources are needed to build resilient in a country like Indonesia which is in the stage of moving from a supermarket of disasters" to a "laboratory of disasters".

**Keywords** Partnership • Disaster management • Private sectors • Construction and engineering

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## 17.1 Context of Indonesia

The Indonesian President, Susilo Bambang Yudhoyono, pronounced a remarkable statement in Davos 27 Januari 2011 by saying, “My second task is to announce the beginning of the process to set up the World Economic Forum’s third country network of the Disaster Resource Partnership in Indonesia” (unpublished material 2011). And he added, “This means when natural disasters happen again, as they are bound to, there can be quick response and recovery efforts from a tri-sector collaboration and cooperation between governments, the humanitarian workers and the private sector. I understand that the partnership will also work on prevention efforts.” It is not just an ordinary pronouncement of a president, it is a sincere call from the heart of the head of state who experiences shocking mega disasters in his first years in office.

As a nation, Indonesia really suffered from a number of severe disasters in less than a decade. The tsunami that follows an earthquake measuring 9.1 on the Richter scale on 26 December 2004 destroyed 240 km off the west coast of the northern tip of the Sumatra island. It really is the worst tsunami in the history of Indonesia that affected a total population of four and a quarter million where over 120,000 lives were lost, and another 90,000 people were declared missing. Moreover, as many half a million people lost their homes and many more lost their livelihoods. According to the Indonesia’s National Planning Agency, over 3,000 civil servants died and another 2,275 were reported missing, while 669 government buildings were destroyed (BAPPENAS 2005).

The devastation does not stop only in Sumatra island of Indian ocean tsunami. On 27 May 2006, an earthquake measuring 5.9 on the Richter scale struck the Yogyakarta Special Region (DIY) and parts of Central Java Province. This too claims substantial losses and damages, where 5,700 lives were lost and 280,000 homes were destroyed. The “Yogya earthquake” considerably impacted housing, private sector buildings and the economy. The total damage and losses were estimated to be around US\$3.1 billion. Following these two major disasters, Indonesia then experiencing several more small and medium scale disasters that are significant in impact caused by various hazards such as, volcanic eruption, flash flood, earthquakes, landslides and forest fire.

### 17.1.1 Mechanisms to Manage Disasters

In an urgent effort to handle the two major disasters, Indonesian government has formulated two different mechanisms due to the limited capacity of the then National Coordinating Board for Disaster Management,<sup>1</sup> which is under the authority if the

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<sup>1</sup>Badan Koordinasi Nasional Penanggulangan Bencana or Bakornas PB was established in 1979 and in 2008 under the new law of 24–2007 became National Agency for Disaster Management (BNPB).

Vice-President. For the Indian ocean tsunami, the president created a special agency in March 2005 to coordinate the reconstruction effort, which is Rehabilitation and Reconstruction Agency (BRR) of Aceh-Nias.<sup>2</sup> In the case of “Yogya earthquake”, the government of Indonesia, under the presidential decree 6/2006, established the National Coordinating Team to implement and coordinate the reconstruction efforts. Both mechanisms serve as instruments of the government to fill up the gaps of the absence of any national body that could perform proper disaster management in all cycles of responses.

The need of the state to perform better mechanism to handle disaster management is urgently needed than ever before. The repetitions of natural disasters prove that Indonesia is an area very prone to different hazards. In coincidence with the growing awareness of the need to have disaster management institutionalized by the state of Indonesia, the Hyogo Framework for Action was then formalized at the UN’s World Conference on Disaster Reduction (WCDR) in Kobe, Japan, in 2005, to be the first internationally accepted framework for proper disaster management. At this point Indonesia then integrated about 80 % of the spirit, content and points of the framework to the drafting of the bill of Disaster Management Law at around 2006–2007 (Triutomo 2014). The Law that was enacted in 2007 as Law no 24/2007 has subsequently ordered the creation of the National Agency of Disaster Management (BNPB), and with the spirit of Hyogo Framework for Action adopted three pillars of partnership in disaster management, i.e., The Government, Civil Society, and Private Sector.

### ***17.1.2 The Call of New Partnership***

The statement of the President of Indonesia in one of the sessions of the World Economic Forum in 2011, clearly has a strong base from various perspective, social, legal and moral. Indonesia is in dire need to have a better disaster management to reduce the risk of escalating impacts of disasters. Therefore, as stated, “efforts from a tri-sector collaboration and cooperation between governments, the humanitarian workers and the private sector” are there in the proper mechanism integrated in the institutionalism of disaster management in Indonesia. One of the gaps that are recognized in the implementation of the law is the partnership with private sector is so much mapped out by the President. Disaster Resource Partnership is crucially indispensable in the context of Indonesia that the initiative is well received by the head of state to start in Indonesia.

Following the Davos speech, Indonesia then started a new mechanism of tri-sector collaboration in the formation process of Indonesia national network of Disaster Resource Partnership. The effort to make this initiative grounded in the Indonesian context was then orchestrated by multi stakeholders participation. The often said phrase “disaster is everyone business” came into the development of

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<sup>2</sup>BRR is a ministerial level agency under the president direct authority.

creation of the partnership. Different people offered ideas, concept and resources to sharpen the initial raw model of existing ones in India and Mexico as to start a good beginning of the partnership in Indonesia. In the World Economic Forum East Asia Summit Jakarta in June 2011, the initiative was then launched officially. The further implementation of the partnership was further developed to make it as an effective as possible in the Indonesia ground at its time of enactment.

It is right at the time, when the growing awareness of all stakeholders in Indonesia toward proper disaster management is high, the initiative of the World Economic Forum to set up a partnership based on private sectors is there to complete the tripartite collaboration. The dawn of a new way of partnership in this matter has posed a significant change in the context of Indonesia and elsewhere. However, at the same time, the role of private sector, in this case construction and engineering companies in Indonesia is at stake as to prove its function in building resilience of the nation.

## **17.2 The Global Initiative: World Economic Forum**

From the global forum, the network of private sector the non-conventional actors of disaster management, the initiative started. The World Economic Forum which is an independent international organization committed to improving the state of the world by engaging business, political, academic and other leaders of society to shape global, regional and industry agendas (World Economic Forum 2011), is the initiator of the innovation of partnership involving the construction and engineering companies in this effort. The forum has always been a champion of connecting multi actors in partnership since its inception. The forum has shown it clearly in the vision of the organization that an impact could only be by catalyzing partnership for action. As a circular process, partnership serves as one of the four points of the integrated vision which include Communities, Engagement, Insight and Impact (Fig. 17.1).

It is in the spirit of the tagline of “committed to improving the state of the world”, in 2001 the forum responded appropriately to the need of the communities who are affected by disaster. Gujarat earthquake which occurred during the World Economic Forum Annual Meeting prompted CEOs in the Engineering & Construction (E&C) and Logistics & Transport (L&T) industry sectors to develop better coordination between companies and with the humanitarian community. It is an eureka of bringing vision into practice, when private sectors share the concerns which traditionally had only been the mandate of United Nations’ and civil society humanitarian organizations. The call to reduce suffering of the people as well as save lives has been integrated adequately in the vision of the forum by the business leaders who see the opportunity to bring about a real impact in the global multi-stakeholder community.

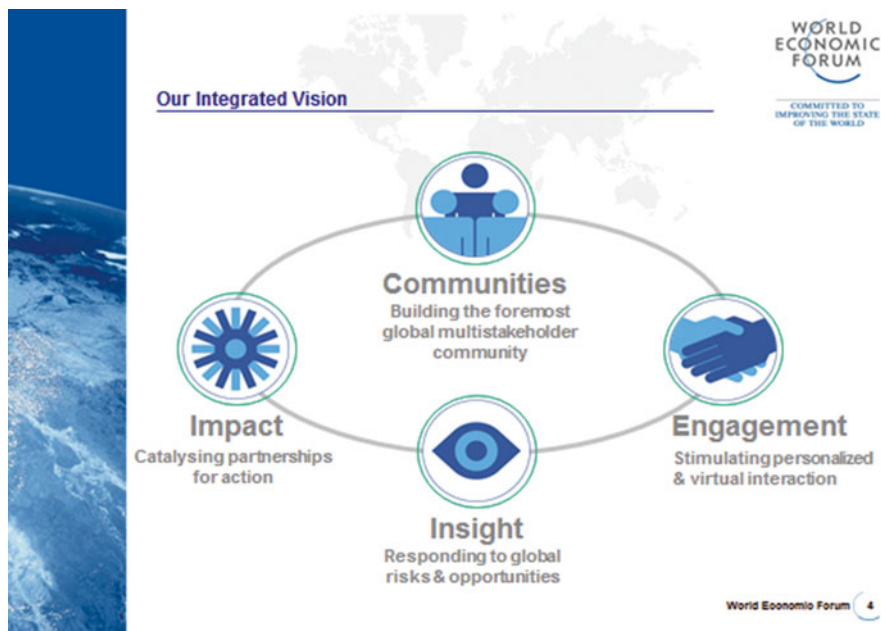


Fig. 17.1 Four points of the World Economic Forum integrated vision

### 17.2.1 The Making of the Partnership

The making of the partnership is triggered by Gujarat 2001 earthquake and also the then increasing numbers of disasters. According to the Forum there are several things that motivated the speeding up of the process. First, it is because the increasing frequency and scale of natural disasters with significant loss of materials and lives. Secondly, while many people/institutions try to help post disaster, often times the effort is not well coordinated. Thirdly, a broader and more integrated approach is required to effectively respond to and prevent natural disasters. And finally, there should be an awareness by the private sector of its own vulnerability to natural disasters and its imperative to act as a global citizen. All these four factors lead to a common commitment that is: a coordinated global Engineering and Construction industry model can fill a critical gap in the current disaster sector (prevention/mitigation, preparedness, response and recovery) by providing informed construction knowledge and services through expertise and equipment (The World Economic Forum 2011).

The new awareness among members of the Forum then transformed into an evolution of process that so much influenced with relevant condition of the global situation in relation to disaster management. In 2002: the E&C industry leaders launch the Disaster Resource Network with chapters in India and Mexico (since 2002. 10

deployments with over 110 engineers involved). Continued in 2005: L&T industry leaders (Agility, TNT, UPS, Maersk) launch Logistics Emergency Teams (LETs) in collaboration with World Food Program/Logistics Cluster of 9 deployments since launch. While in 2009–2011, the E&C reviews DRN model developed in 2002 which becomes the Disaster Resource Partnership, and then re-launched in 2011. The support of the multi stakeholders participants is very instrumental in defining the proper road map of the partnership which are in creation. One of the key defining network that pose a very strategic platform for the furtherance of the partnership is The Network of Global Agenda Councils comprises 72 Councils, including the Global Agenda Council on Humanitarian Assistance. The Councils serve as a global brain trust to the World Economic Forum and are fully integrated into the broader Forum community.

The Global Agenda Council on Humanitarian Assistance which relates directly to the making of partnership served in 2010–2011 and came up with several findings that strengthen the initiative started in 2001. The statement of John Holmes, the GAC Chair 2010–2011, former UN Undersecretary General for Humanitarian Affairs stated clearly what needs to be done i.e., “the new model should emphasize prevention, and risk reduction at least as much as response” (The World Economic Forum 2010). Holmes continues by saying, “the distinction between humanitarian and development work is more artificial than ever. Making this change will require significant determination on the part of all involved” (WEF 2010). Therefore as a conclusion, the key principles for success according to Holmes in the creation of the partnership are: (1) Promoting tri-sector partnerships for disaster risk reduction where-ever possible, (2) Not being prescriptive regarding how these partnerships are established. Tri-sector partnerships should be relevant to local contexts and therefore have local ownership and buy-in., and (3) Indonesia has the potential be a regional leader for such partnerships for disaster risk reduction, both because of its strong and experienced public sector as well as an effective and responsible private sector (The World Economic Forum 2011).

### ***17.2.2 The Operational Concept***

In relation with what the chair says, the final key findings of the Council on Humanitarian Assistance are as follows where firstly the Council has identified a Business Model for Humanitarian Assistance, with the following components:

- Building a comprehensive risk framework;
- Re-balancing spending between response, prevention and recovery;
- Investing in national and local capacity;
- Engaging with the private sector;
- Linking humanitarian to broader social and economic development issues;
- Working regionally across national boundaries to address cross-border issues.

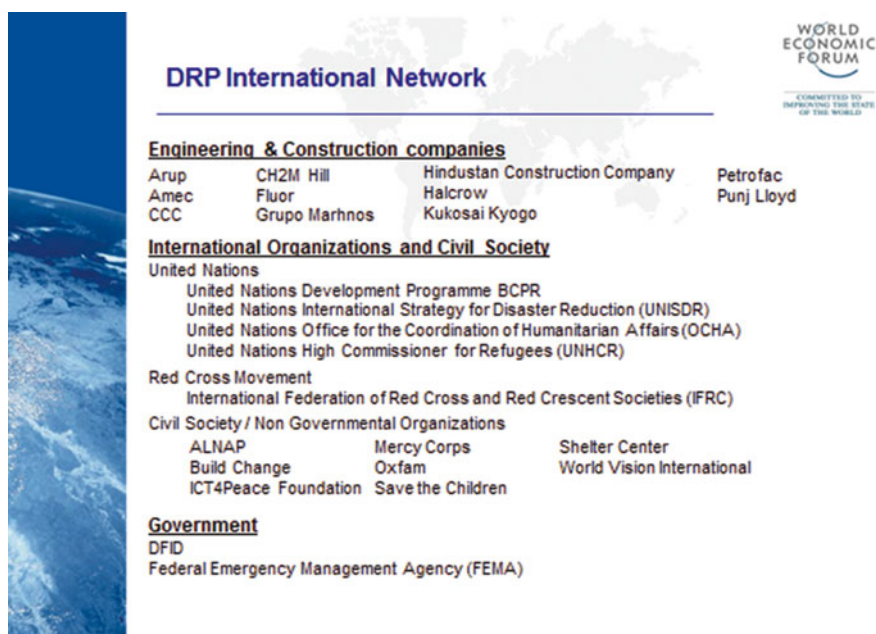
Secondly, the Council, in the context of the Forum’s Global Redesign initiative, proposed to put together high-performing Tri-sector Partnerships:

- Creating bottom up partnerships between governments (central and local), civil society and the private sector: locally driven, nationally coordinated and globally supported;
- Investing in building local resilience to both natural and man-made disasters.

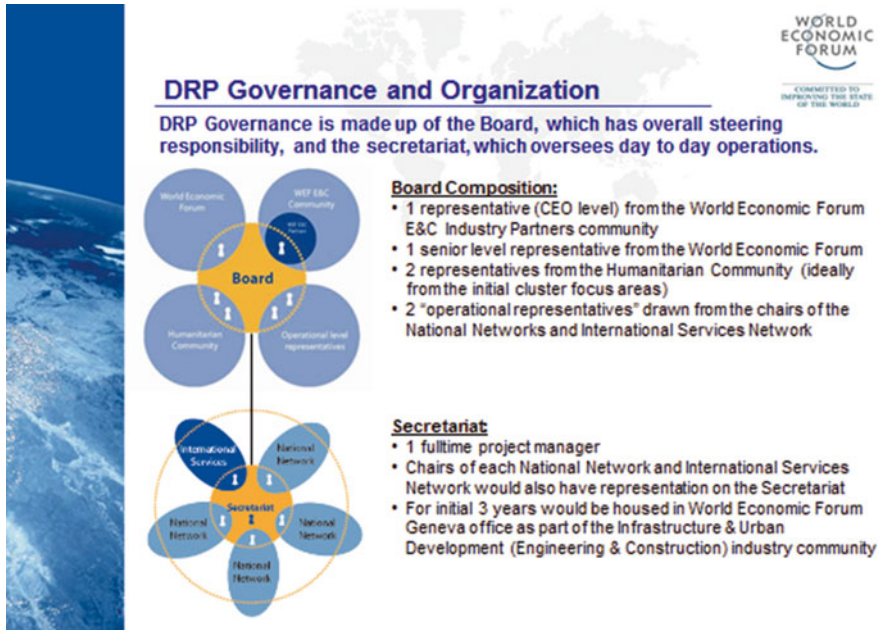
Thirdly, South East Asia (and Indonesia in particular) is considered as a promising area to pilot such an approach, because of obvious disaster proneness, and the existence of strong governments, civil society institutions and private companies in many countries of the region.

The DRP model of partnership and governance in the global level then decided to be as follows (Figs. 17.2 and 17.3).

The development of Disaster Resource Partnership in 2011, has made the new model of partnership a definite ground to work on the objective: “To develop a cross-sector, professional, and accountable humanitarian response to disasters that has the ability to scale up to meet growing demands”. This objective is broad enough to accommodate the tri-sectoral partnership as well as the future demand of the



**Fig. 17.2** Disaster resource partnership international network (“Companies who have committed to supporting DRP include : AMEC, Arup, CH2M HILL, Consolidated Contractors Company (CCC), Fluor, Grupo Marhnos, Halcrow, Hindustan Construction Company (HCC), Kokuasi Kyogo, Petrofac and Punj Lloyd)



**Fig. 17.3** Disaster resource partnership international governance and organization (The DRP Steering board is complete with senior-level representatives from both the humanitarian and E & C communities. The Steering Board is comprised of the following members: (a) Valerie Amos, Undersecretary-General for Humanitarian Affairs and Emergency Relief Coordinator, UN Office for the Coordination of Humanitarian Affairs (OCHA), New York. (b) Samir Brikho, Chief Executive Officer, AMEC, United Kingdom. (c) Bekel Geleta, Secretary-General, International Federation of Red Cross and Red Crescent Societies (IFRC), Geneva. (d) Ajit Gulabchand, Chairman and Managing Director, Hindustan Construction Company, India. (e) Alex Wong, Senior Director, Head of Centre for Business Engagement, World Economic Forum)

capacity of private sectors in disaster management. In relation to the objective, the Vision of Engineering & Construction partnership specifically mentions the role of the members and their functions as stated likewise: “to form an ongoing collaboration with the humanitarian community at the global level and government and other key humanitarian actors at the national level in order to leverage the core strengths and existing capacities of the E&C community before, during and after natural rapid-onset disasters to reduce suffering and save lives” This vision clearly says that is limited to E & C community but not exclusively so in doing disaster management, where the other actors are so much so needed in the partnership to provide collaboration in all cycles of disasters.

To make all the objectives achievable, then several practical scheme are developed as to make the partnership effective on doing the roles and functions. The first are modalities of delivery which will be define what could be done by the E & C Community as follows:

- Direct action where companies are operating in a location where there is a disaster they immediately engage in emergency relief such as distribution of food, water, medical supplies and NFIs



- Secondments of individual staff members into NGOs or UN agencies usually where the company is not operating in the disaster-affected area
- Local technical services where companies at a national level partner with local/national governments, academics, or NGOs to provide technical assistance - clearing debris, repairing critical infrastructure, damage assessment and design, project management and construction expertise.
- Global technical services where multi-national companies partner with each other or with the public sector (e.g. DfID) to provide technical assistance or fundraising through global networks)

Besides those, the operating objectives and principles of the Global network then defined as to facilitate the existing and future national networks. They are outlined as to provide guidelines so that the partnership could be effectively implemented between global and national networks. The operating objectives are:

- Support existing country level National Networks and catalyse new National Networks
- Establish partnerships and framework agreements with humanitarian organisations, donors and governments which:
- Facilitate the engagement of National Networks locally
- Facilitate the delivery of global E&C expertise at the global and local level (in countries where National Networks exist and in countries where no National Network exists).
- Capture and share ‘best practice’/institutional knowledge between National Networks and with humanitarian organizations and academic institutions.
- Provide a focal point and voice for the E&C sector in global humanitarian coordination

In order to make the Partnership has common principles both in the global and national level. These principles serve as a framework of the partnership to deliver the service to the humanitarian and broader communities that could collaborate as needed. The principles are:

- Focus on natural rapid-onset disasters, particularly extreme major events.
- Using disaster prevention as an entry point, create partnerships that can be leveraged in the event of a disaster.
- “Build Back Better”
- Mobilization of construction equipment dependant upon the proximity of equipment to a disaster zone and the availability of existing capacity.
- Multiple modalities of delivery
- Partnership networks will be mobilized through multiple entry points, through pre-formed relationships with relevant post-disaster actors

With the rising needs of better collaboration in disaster management, the initiative of the World Economic Forum with members that have capacity and resources to save lives and reducing suffering of the disasters’ affected people is mostly needed than ever before. The evolution of mainly responding to disasters in 2001 has been evolved into the key findings of the 2010–2011 GAC as to include building resilience of the people in the prone area of disasters. This means that the E & C



Community should not only focus on emergency responses as the primary strength at the first phase of initiation but more so inclusively be part of the disaster risk reduction efforts. In this regards of putting into action a partnership of multi-stakeholders with the private sector as the back bone, the world Economic Forum and its member have a key role to play. Surely, the Global partnership has paved a way to make this happen, yet the effectiveness of the partnership should be proven in the national network, as the ones in India, Mexico, and Indonesia as the one will be elaborated more in the next parts of the chapter.

### **17.3 The National Network: Partnership in Indonesia**

Based on the global network assessment as well as the invitation of the Indonesian government in Davos in January 2011, then the initiation of the partnership in Indonesia was started right away. Following a series of meetings convened by the Government of Indonesia, together with the World Economic Forum in Jakarta for several months, a DRP Indonesia framework and operational model have been developed. The DRP Indonesia National network as one of the three national networks, beside India and Mexico, has taken into account the country specific needs and context that despite replicating the strength in disaster response but not exclusively so by taking into consideration disaster risk reduction as a part of the work. Its objective is to develop a cross-sector, professional, and accountable humanitarian response to disasters that has the ability to scale up to meet growing demands.

The vision of the newly partnership network since inception has stated explicitly the growing needs of integrating of the network in the whole cycles of disaster management. It says that, “The vision of the E&C Disaster Resource Partnership is to form an ongoing collaboration with the humanitarian community at the global level and government and the other key humanitarian actors at the national level in order to leverage the core strengths and existing capacities of the E&C community before, during and after natural rapid-onset disasters to reduce suffering and save lives” (DRP Indonesia 2012) As part of the DRP Indonesia National Network Principles the partnership also states the integration of DRR in its basic principles. Point 4.4 of the principles said, “The partnership will not limit itself to disaster response but will also look at opportunities for supporting disaster risk reduction in Indonesia” (DRP Indonesia 2012)

PT Central Cipta Murdaya (CCM) The local joint venture partner of AMEC and Balfour Beatty agreed to champion the DRP Indonesia with the strong support from the government and civil society. With the support of all stakeholders as stated in Indonesia’s Law of Disaster Management, i.e., government, civil society and private sectors the new partnership experienced strong supports from all since its initial phase. The formulation of conceptual framework as well as governance are so much an outcome of the intense brainstorming and decision making process of all. Then, the President of Indonesia, Susilo Bambang Yudhoyono, announced the formal establishment of the DRP Indonesia National Network in his welcoming address at

the East Asia Summit in Jakarta June 2011 (The World Economic Forum 2011). It was officially launched at a press conference by Willem Rampangilei, Deputy to Coordinating Minister of People's Welfare together with Samir Brikho, Chief executive of AMEC, United Kingdom who represent the Global Steering Board; and Mr Murdaya Widyawimarta Po, Chairman of Central Cipta Murdaya who serves as National Chairman of the Indonesia DRP Board.

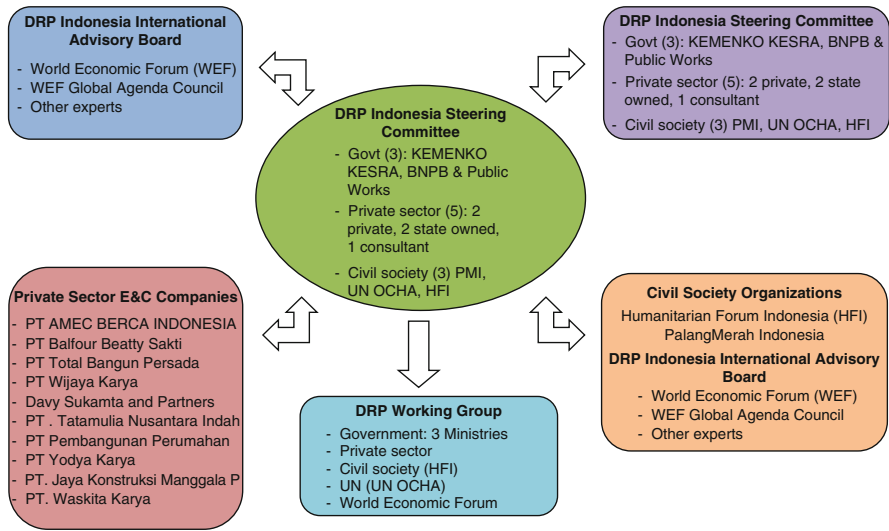
### ***17.3.1 Governance of the Partnership***

Presently, ten E&C companies have joined the DRP Indonesia National Network. The Memorandum of Understanding (MOU) was signed on 27 January 2012 by the National DRP chairman, Mr. Murdaya Widyawimarta Po representing the ten companies and Mr. Agung Laksono, the Minister of People's Welfare, representing the Government of Indonesia. The ten DRP Engineering & Construction Member Companies are PT. Amec Berca Indonesia, PT. PP (Persero) Tbk., PT. Wijaya Karya (Persero), Tbk., PT. Waskita Karya, PT. Total Bangun Persada, Tbk., PT. Jaya Konstruksi Manggala Pratama, Tbk., PT. Tatamulia Nusantara Indah, PT. Balfour Beatty Sakti Indonesia, Davy Sukamta & Partners, PT. Yodya Karya (Persero). As members of the network, these companies contribute to the network's objectives through monetary contributions, in kind resources, technical expertise, and pre-established local networks. In addition to the ten companies the network is strengthened by members and partners of the government side that includes the Coordinating Ministry for People's Welfare, the National Agency on Disaster Management and the Ministry of Health. The Civil Society is well represented by the Humanitarian Forum Indonesia, a collaboration of 12 interfaith based organizations. Also the support of the UN System in Indonesia has made the partnership starts well from the beginning.

The partnership of the mainly E & C communities completed by government representatives and civil society organizations decided a governance structure to strengthened the capacity as well as networks of the private sector actors. The governance of the DRP Indonesia National Network (Fig. 17.4) is made up of three components:

1. The DRP Indonesia Steering Committee, which is responsible for steering the network.
2. The Secretariat, which has responsibility over the day-to-day operations of the Partnership.
3. The DRP Indonesia International Advisory Board which provides technical support, advice and shares lessons learned with the Secretariat as and when needed.

Supporting the DRP Secretariat, a DRP Indonesia Working Group is established consisting of a senior level "working" executive from each DRP Indonesia Member Company and the government and partnering humanitarian organization. The DRP Working Group will work on the operational aspects of the partnership including training, deployments, knowledge sharing and advocacy.



**Fig. 17.4** Disaster resource partnership Indonesia network components (Framework model of the DRP Indonesia National Network (discussed and agreed on the first Steering Board Meeting, 21 March 2012))

The governance of DRP is created as to achieve the objectives of the partnership as stated in the MOU of Indonesian networks as follows:

1. To establish partnerships and framework agreements with humanitarian organizations, donors and governments which:
  - (a) Facilitate the coordinated engagement of the private sector before, during and after natural disasters.
  - (b) Facilitate the delivery of E&C expertise through a national network when and as needed.
2. To capture and share ‘best practice’/ institutional knowledge between National Networks and with the DRP global secretariat.
3. To provide a focal point and voice for the E&C sector in humanitarian coordination in Indonesia.

As shown in the Fig. 17.4, from its inception, Disaster Resource Partnership Indonesia is designed to include all stakeholders in doing disaster management. The partnership in disaster management has already been in the policy of the government of Indonesia, as stated in several articles of the Disaster Management Law no 24 2007, as well as implemented in the close collaboration of government, civil society and private sectors. As the report of UNDP says, “Partnerships in Disaster Management have been the cornerstone of the new Disaster Management Law in Indonesia, founded on the solid collegial bonds built out of the tragedy of disaster response. The partnerships for Disaster Risk Reduction were founded on the same collegial bonds but have since been engineered so as to evolve out of the legal reform process and head towards institutional and operational Change” (UNDP 2009).

In doing the program, Disaster Resource Partnership Indonesia has involved the government of Indonesia in the decision making process together with representatives of the civil societies and humanitarian organizations. It is actually the needs of the private sector, despite their resources, to be developed in the capacity regarding humanitarian matters and disaster management. In the series of learning sessions, both the Government of Indonesia represented by Coordinating Ministry for People's Welfare and the National Agency for Disaster Management, and several humanitarian agencies under Humanitarian Forum Indonesia and United Nations System in Indonesia have played significant role to train members of DRP in the relevant knowledge. In disaster affected areas the partnership has even clearly shown by the coordination effort by the Government of Indonesia and the UN System to advise DRP deployment to conduct relevant response. Also, the members of Humanitarian Forum Indonesia could also benefit from DRP in terms of structural mitigation and construction advices in building the resilient of the people affected by disasters.

The spirit of "disaster is everyone's business" has been executed in the actual partnership of different stakeholders in disaster management in Indonesia. The role and function of Disaster Resource Partnership Indonesia as private sector stakeholder is to support the Indonesian Government both central and local, as well as humanitarian organizations to fill the gap in terms of construction and engineering matters. At some points, with the available resources, the private sector could support other stakeholders to maximize their program in disaster management, but at others humanitarian organization and the Government could facilitate DRP to also smoothen the program in disaster management. In two medium scale disasters, i.e. Aceh Tengah 2013 earthquake and Manado 2014 flashflood, the partnership format has been tested and proven to be effectively activated. Also in several Disaster Risk Reduction activities like seminars, workshops, humanitarian campaigns, structural mitigation assessment and joint coordination of preparedness, the private sector has been involved actively in the spirit of proper collaboration and partnership that strengthen the resilience of the nation.

### ***17.3.2 A New Approach of Disaster Management***

According to Humanitarian Policy Group and Overseas Development Institute study released in February 2014 (Burke and Fan 2014), there are several aspects of the Partnership that make it unique. First, from the start it had strong champions, with support at the highest level of the Indonesian government and the private sector, and the support of the UN. A second innovative dimension to the Partnership is its governance structure, which includes Government bodies, Ministry for People's Welfare, the National Agency for Disaster Management (BNPB) and the Crisis Management Center of the Ministry of Health, along with private sector representatives and three humanitarian partners – the International Federation of the Red Cross/Red Crescent (IFRC), OCHA and a national NGO, the Humanitarian Forum Indonesia. A third innovative dimension to the network was the contribution of the

Partnership's members in the emergency response in three ways: through direct action in an affected area, through E&C staff secondments to work alongside humanitarian agencies and by sharing technical competencies and expertise. This involvement includes: conducting a building/construction damage assessment of selected health facilities and a hospital, assessment of local capacity in construction has led to the training of local builders and vocational training for personnel on earthquake-resilient construction.

With the uniqueness in approach and potential capacity of the partnership, the making of this new platform of tri-sectoral collaboration is not just needed by a prone disaster country like Indonesia, but more so could serve as a model to provide good service in disaster management. The discussions that lead to a final draft of vision, objectives and program of DRP are so much influenced by the context of Indonesian "Zeitgeist", that is a country that makes disaster risk reduction as its priority in developing the resilience of the nation. The creation of an organization that deals with disaster cannot be detached from the new Disaster Management Law that strongly integrates in all aspect disaster risk management referring to the Hyogo Framework for Action. In this context, DRP Indonesia has another uniqueness, that is not just exclusively deals with emergency responses but more so inclusive to integrate all aspects of disaster management including disaster risk reduction. Realizing to the fact that private sector has a unique role in delivering services, then DRP serves together with government and civil society to develop capacity in integrating its program that could build resilience of the nation.

## **17.4 DRP Indonesia and Disaster Risk Reduction**

In terms of disaster risk reduction the APEC report in 2013 (Roeth 2013) "New Approaches on Public Private Partnerships for Disaster Resilience" says regarding the DRP Indonesia that, "while the network focuses on disaster response it also aims to help build resilience through supporting the incorporation of risk reduction into rebuilding efforts." This is true, according to the same report, that the success of the creation of the partnership is because the relevance of the network's agenda to the Indonesian context and private sector leadership. As one of the ongoing programs of DRP, is a Contribution to fora and coordination mechanisms such as the Indonesian Platform for Disaster Risk Reduction, consequently the involvement lead to a greater inclusion on how private sectors and more specifically E & C communities could be a relevant actor in building resilience of the nation.

In addition to the APEC report, it is the Humanitarian Policy Group Overseas Development Institute, February 2014, also says that "The platform also seeks to harness the expertise and resources that the E&C sector can offer with respect to reducing the damage to physical infrastructure in disasters and ensuring that, when a disaster event occurs, recovery of the affected infrastructure is undertaken in a way that reduces future disaster risks [rebuilding better through risk reduction designs] (Burke and Fan 2014). Moreover, it is stated in the MOU that 'the network's

primary goal is to save lives and alleviate suffering by harnessing the strengths and assets of the E&C sector for disaster preparedness and response'. Therefore according to the HPG finding, "The Partnership also envisions that the E&C sector can make a significant contribution to disaster risk reduction in areas such as building codes and regulations, urban and land use planning and risk-sensitive construction" (Burke and Fan 2014).

#### ***17.4.1 Disaster Risk Reduction in DRP Concept***

The above findings as well as another report published by CSR ASIA, "Business and Disaster Preparedness : Helping Communities Prepare for Effective Response", which showcases the involvement of DRP in the aftermath of Aceh July 2013 earthquake, suggests that DRP Indonesia has done several things that integrate disaster risk reduction into its programmed activities. The strong inclusion of the government of Indonesia, especially in the drafting of the Annex 9 of Private Sector of the Yogyakarta Declaration of the 5th AMCDRR, has made DRP more in line with the disaster risk reduction framework with other actors in Indonesia. It is in the so called learning sessions of every working group meeting of DRP relevant disaster risk reduction matters are shared and learnt together both from member companies as well as civil society and government partners.

The implementation of disaster risk reduction concepts starts from the vision and conceptual frameworks of the partnership. By experimenting the inclusion of the three pillars or disaster management in one platform is in itself envisioning the close collaboration of different stakeholders. When this partnership starts with a strong awareness that "a growing recognition of the scale and complexity of humanitarian response, and considerable interest in and commitment to greater involvement of the private sector in disaster prevention, response and reconstruction", it is actually realizing that all should be included in this matter. Also, when DRP Indonesia national network's primary goal is to save lives and alleviate suffering by harnessing the strengths and assets of the E&C sector for disaster preparedness and response, it is also a commitment to bring about resilience by partnering with relevant stakeholders. The understanding to a proper collaboration mechanism in disaster management is a strong platform to mainstream disaster risk reduction in all DRP program

#### ***17.4.2 Practices of Disaster Risk Reduction***

In practice partnership is proven to be an effective mechanism to reduce risk just as the function of the National Platform, in this case DRP serves more from structural mitigation and specifically from the angle of engineering and construction. Therefore, a good coordination mechanism implemented both in the partnership

governance and practices serves as a good instrument of reducing risk and build resilience. In this matter, a peaceful time of no disaster provide time for strengthening collaboration among one another. DRP Indonesia supported by all disaster management stakeholders benefit from the existing coordination mechanism, one of which facilitated by the National Agency for Disaster Management, in the Sub-directorate of the Private Sector Engagement in Disaster. Through the strong inclusion of the government in this mechanism, DRP does not have to be in all disasters to get situational report. When it comes to decision as whether to deploy or not, the government provides a clear picture of the situation that saves lots of resources of DRP and other private sectors. In doing responses, this mechanism also serves as a good platform for DRP to relate to the right partners in the affected areas as to operate an effective service to the survivors.

Another coordination mechanism that also serves as strengthening capacity of private sectors and other stakeholders is the initiative done by the Coordinating Ministry for People Welfare. Together with DRP and others, the ministry facilitates the mapping process of the 3W (Who does What Where) of private sectors in disaster management. The process was integrated in the National Agency for Disaster Management program of volunteers under the supervision of the Directorate of People Engagement of Disaster. Also involved in this mapping process is OXFAM in Indonesia who has done similar process as to complete the data. The information gathered in the process supplies as a basis of the government, as well as DRP to better serve in any disaster prone areas of the country. This coordination where DRP and its members involved help to strengthen the capacity of all stakeholders, especially when in times of disaster strikes in any area and the government, both national and subnational, in need of support by the private sectors.

Surely, in the concept of the partnership itself, a coordination mechanism that is built upon three sectors is proven to effectively build the capacity of all stakeholders. The partnership has been a beneficiary as well as active participant in fabricating different fora of disaster management collaboration. The involvement of UN-OCHA and Humanitarian Forum Indonesia in the programming, capacity building activities, and emergency response coordination, makes DRP Indonesia more so strengthened to be a private sector player that could build itself into an organization that provides necessary service to the nation. In turn, the partners also benefit from the expertise of DRP personnel by having more information regarding structural mitigation that relates to construction and engineering matters. As the partnership builds more frequent meetings in the working group activities, the collaboration grows better as to share resources, knowledge and network.

A significant role of DRP in developing the capacity of the partner is the so called learning sessions, held jointly the UN systems, Humanitarian Forum Indonesia members and government. The sessions equip all partners in collaboration relevant structural mitigation information. In these sessions there two ways of doing these activities. First, as a part of the working group meetings where all

stakeholders participated and a resource person from the construction and engineering companies shares relevant materials regarding earthquake resistant building and or houses, building codes and good practices on construction. Secondly, held in the earthquake affected area where reconstruction of the community already finished like in Yogya, in which both DRP members and humanitarian organizations share good practices on the reconstruction process. The learning sessions is a media to learn together, especially with two NGOs that relates with rebuilding communities, i.e. Build Chang International and Habitat for Humanity. The information and knowledge shared during the sessions help to provide the partners ways to program early recovery and reconstruction process especially in the area affected by earthquake.

Another way to strengthen capacity in the matters of disaster risk reduction is to provide support to the government through expertise in the construction and project management, spatial plan of the prone disaster area and technical advisory. With the Ministry of Religion, which has projects on building Islamic school of Madrasa, DRP provides inputs to the project management team on how to do proper project management of the school buildings. With the Ministry of Health the partnership support risk reduction that is integrated with emergency response. When earthquake hits Aceh in 2013, the team deployed to do public buildings safety assessments. Together with the Ministry of Health, the partnership did assessment to five community health facilities and a general hospitals as to find out that the facilities still could be used and to save more lives in the first days of the response. Related to the output of the assessment, some recommendation are also made to do “build back better” approach from the very first days of the disaster. The similar things also done in the January 2014 extreme flash flood in Manado, where the team deployed provides recommendation to the Ministry to decide on which health facilities could still be used or not based on the assessment made.

### ***17.4.3 Risk Reduction Is the Core of the Business***

Risk reduction is in the core of the engineering and construction business. All of the policy and practices of the companies have been in line with the proper conduct of doing healthy construction business in term of managing safety and risks. The partnership has provided a platform that could be used by other stakeholders to reduce the risk in their works. The training of local builders right after Aceh earthquake in 2013 together with Humanitarian Forum Indonesia, Dompok Dhuafa, PKPU, Habitat for Humanity and Rehana Indonesia is one of the commitment to reducing risk for community in the affected areas in the early recovery and reconstruction process. Practically, risk reduction has been an integral part of the Disaster Resource Partnership Indonesia practices in all cycles of disaster management, mitigation,



emergency response, recovery, and reconstruction. In any part the partnership is needed, it tries to serve effectively with the existing resources available.<sup>3</sup> The capacity of all is needed to be built, and through the partnership with other stakeholders Disaster Resource Partnership could be in line with the proper disaster management.

As a new actor in doing disaster management, DRP Indonesia has tried to implement a new approach on doing disaster. The role of private sector has taken a new meaning to bring resilience to the country through the embodiment of the mutual partnership. Actually, it is not a totally new concept in the business plan of the engineering and construction companies to apply risk reduction. However, when the need to conform with the approach of disaster management, the existing resources and capacity could match suitably with the new awareness of disaster management in Indonesia. The existing partnership does provide a model that not just fit with the institutionalization of the Indonesian law of disaster management, but could serve well in time of disaster. It has met the challenges to be an effective tool of disaster management for what has been tested at least in two recent disasters in Indonesia, earthquake in Aceh 2013 and extreme flash flood in Manado 2014. Despite all the achievements, there are many yet to be done to accomplish the goals and principles.

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<sup>3</sup>This is clearly stated in the WEF Presentation “The Scope of DRP Network” as follows

Typical services expected from a DRP Indonesia Network include:

(1) Pre-disaster

Provide training, developing disaster response/contingency plans

Community Based Disaster Risk Reduction Programmes around project sites (mapping hazards and critical infrastructure, developing response plans)

(2) Immediately after a disaster (72 h–2 weeks)

Temporary repairs to critical infrastructure, provide emergency shelter, engineering first responder

Strategic technical assistance (e.g. advice on rubble clearance)

(3) Relief (2–12 weeks)

Temporary repairs to critical infrastructure, provide emergency shelter, secondments of staff

Needs assessment (leads to implementing programmes)

(4) Recovery (12 weeks – 3 years)

DRP Indonesia helps to facilitate activities such as building permanent housing (through company fundraising/CSR programmes), implementing recovery programmes

(5) Ongoing

Building relationships

Strategic technical expertise to inform decision making

Attending fora/coordination mechanisms

Acting as an honest partner

Project management

The proofs will be evaluated as whether the companies could still in commitment to do this effort and to serve the country with its humanitarian spirit.

## 17.5 Conclusion

During the short time of its inception in Indonesia, active DRP Members have been exposed to the meaning of the fundamental motivation that is to alleviate suffering and save lives, which is not just for the sake of their own personnel and assets on the project sites, but more so the communities affected by disasters. The good outcome, that, like elsewhere, both companies and individuals confirm that they receive benefits by engaging in this partnership of disaster management. Involvement in the disaster response enhances the image of the companies and does improve brand recognition as well as companies' reputation. Those who have been exposed share the spirit to others and by doing so they generate goodwill in their workforce and build a strong sense of community within and beyond their organization. Partnership does create new hope and expectation that as a non-conventional actor, private sector could be a promising one in the world where traditionally only done by other than themselves.

It is true that the World Economic Forum and its members, as well as other private sectors, have been witnesses to numerous alarming occasions where natural hazards turned to serious disasters. These series of disasters have resulted in considerable impacts that also jeopardize business as much as communities. It is not just in the spirit of charity or corporate social responsibility only the private sector like DRP could be involved in disaster management. The partnership of public, people and private is needed to be strengthened as a means of reducing risk and build resilience of the people. Therefore working in isolation does not represent an effective approach to meet the challenge of building systemic resilience (Pricewaterhouse Cooper 2013). Private sector should be considered as one of the effective actors in disaster management that could pave a better way forward to reach the full potential of all in securing the planet and people resilience, which in turn will also lead to profit resilience.

Samir Brikho, the chair of the Steering Board of the global Disaster Resource Partnership in his role as the Chief Executive of AMEC says a very important statement to summarize the role of this platform. He says, "The way and speed in which we respond are essential to mitigate the impact of natural disasters". Therefore he adds, "That is why I believe so strongly in this partnership" (World Economic Forum 2012). From a different angle the chairman of the Indonesia DRP network, Murdaya Po says, "We have resources, we have good people and we have good intention, and that is enough to help others in this country prone of disasters. Let us

then make this happen in our time”.<sup>4</sup> The effort has been made globally and nationally, with great people of influence on board to secure the partnership could be executed as close as possible to its vision. With the current situation, countries that are prone to disaster could consider strongly to replicate the prototype. In this world full of good business people, the private sector could secure good partnership that at the end will make the world a better place to live for all.

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<sup>4</sup>Said in the Indonesia DRP Update Meeting October 2013 in Jakarta. This spirit has also been sown in the logo of DRP Indonesia network that agreed mutually in July 2012 as follows:



This Logo represents three matters:

- Global Initiative done locally through local actors
- Three colors to represent : Public, Private and People Partnership
- Indonesia as not just the location but the spirit of resilience

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# Chapter 18

## Experience of Nepal: Implication to Risk Reduction

Man B. Thapa, Naresh Giri, and Manish Basnyat

**Abstract** The Kathmandu Valley (KV) stands top as the most seismically vulnerable cities in the world (Geo-hazard International, Global Earthquake Safety Initiative, USA, 2001). Recent studies indicated that more than 60 % of the houses will be severely damaged if earthquake of 8 and more magnitude occurs. As a result, 40,000 people will die due to building collapse while more than half million people will be displaced. Quality of buildings (both structural and non-structural) is one of the key reasons behind this damage assessment. In spite of this situation the Metropolitan City offices and municipalities in KV are grossly ignorant till recently and hence have very limited progress in effective implementation of Nepal National Building Code (NBC) which is in place since 1994. Among many other reasons; limited trained human resources, poor governance, weak monitoring and evaluation in place, no testing facilities, etc. are the factors behind this failure. In the other hand, risk and vulnerability in Kathmandu valley is growing everyday with new building permit being issued. In order to improve the situation on the ground, an effective public private partnership (PPP) mechanism can be an effective tool to implement NBC based on the principles of Risk, Reward and Responsibility (3 Rs). In this regard, with the technical and financial support from United Nations Development Programme (UNDP) Nepal initiated couple of innovative activities such as risk sensitive land use planning, e-building permit system, involvement of central bank and commercial financial institutions to effectively implement the NBC, etc. This paper describes some of the above mentioned initiatives involving private sectors to implement the NBC and make buildings safer from future earthquake shocks.

**Keywords** Nepal • Earthquake • Public private partnership • Building code implementation

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## 18.1 Context

Geographically, Nepal is placed on a geological and hydro-meteorological terrain which makes the country amongst the most disaster prone to natural calamities. This paper describes a component of the drive and strives of the Government of Nepal (GoN) and Nepal's private sector to use the PPP modality working to address the issue of disaster risk reduction. It further describes the attempts of the United Nations Development Programme (UNDP), Nepal to facilitate the successful implementation of PPP for disaster risk reduction.

The Kathmandu Valley (KV) ranks top among the most seismically vulnerable cities in the world (Geo-hazard International 2001). A recent study indicated that if an earthquake of 8 and more magnitude hits Kathmandu more than 60 % of the total houses will be severely damaged while 40,000 people will die and more than half million people will be displaced (JICA 2001). The issue is not abstract as history has proven that the geological composition underneath Nepal is capable of providing the capital city and the rest of the country with such a shock. The major reason for such a predicament by the authors of the research and report is the quality of buildings (both structural and non-structural. It is to prevent such scenarios as the death toll predicted by the report that, Nepal's National Building Code (NBC) was formulated in 1994. After almost 20 years of its formulation, the code's implementation remains a critical issue, with large scale non-compliance in the construction of new buildings.

The legal authority for the issuance of the building permits lies with the municipalities. However, the current municipal building permit process does not ensure NBC compliance. Due to reasons such as lack of capable human resources and access to technology, only 3 out of 58 municipalities in Nepal have been able to incorporate NBC into their building permit process. But alas, even these attempts at the incorporation of NBC into the building permit issuance process are partial and lack necessary field verifications to ensure full compliance.

The three municipalities- attempting to incorporation NBC into their building permit process - are Kathmandu and Lalitpur- situated within the capital area- and Dharan in the far eastern region of Nepal. The building permit issuance process in Kathmandu and Lalitpur municipality is very elementary and subjective. Hence, their claim of enforcement of NBC compliance is only limited. Few generalized checklists have been developed while the questionnaires included in the checklists can be easily manipulated. There is no effective mechanism for field verification of approved drawings. Even the concerned authorities of Kathmandu and Lalitpur municipalities realize that they have ineffective code compliance tools in their building permit issuance system. Such limited and inefficient implementation of NBC in and around the Kathmandu area is simply weakening any enthusiasm for effort by the rest of the municipalities in the country. In order to overcome such hurdles, Nepal has adopted few Public Private Partnership (PPP) initiatives. The paper attempts to focus on few PPP activities towards achieving objectives of DRR in Nepal.

The concept of public private partnership in any field is new in Nepal. The government agency responsible for coordinating with other agencies and dealing with issues pertaining to natural disasters is the Ministry of Home Affairs (MoHA). MoHA and other government agencies are aware of and accept that investing in disaster risk reduction (DRR) and mitigation will assist the Nepali community in dealing with post-disaster recovery more efficiently and effectively, by decreasing the workload- as compared to the present scenario.

The government of Nepal is also aware that it needs to increase awareness on natural disasters and mobilize resources from the Nepali community itself. Therefore, being the main agency responsible to address the issues of natural disasters, MoHA has decided to and is in the process of developing a PPP policy. The goal is that the private sector of Nepal can increase the outreach of awareness about natural disasters through their clients and patronage, while at the same time engages in DRR and mitigation through its core activities.

The government of Nepal has also accepted that natural disasters have consistently posed a threat and drawn back the process of development. As such, it is necessary to mainstream natural disasters into the development process of Nepal. The government agency responsible for drawing up the periodical development plans of the country is the National Planning Commission (NPC). The NPC has decided to include disaster risk reduction as a component- in the next periodical development plan (National planning Commission, Nepal 2008).

Another government agency heavily involved in the field of disaster risk reduction and mitigation is the Ministry of Urban Development (MoUD). The MoUD, with support from its Department of Urban Development and Building Construction (DUDBC), has been making immense efforts towards making buildings and other infrastructure in Nepal resistant to the negative impacts of natural disasters. Its focus has been on ensuring the implementation of and adherence to the National Building Code (NBC).

The National Building Code was developed by experts taking into account structural assessments of buildings, including seismic vulnerability. Consequently, homes and other buildings constructed in lieu of the National Building Code ensure the safety of lives and property. As experts in the field of disaster, economy and political science have pointed out, the non-adherence to the building code can have severe social, economic and political repercussions. These include:

- Loss of lives of ordinary citizens
- Lack of sanitary facilities, which lead to mass health issues
- Risk of lives of government officials, putting risk to the efficient functioning of the government including rise of anarchy
- Loss of employment, income and wealth putting the economy at risk
- Destruction of physical infrastructure, including bridges, financial institutions buildings and airports- increasing the cost of recovery and decreasing the probability of supplies
- Destruction of agriculture, leading to food insecurity

- Destruction of socio-economic infrastructure, including schools and health care services, leading to backward stepping in the process of poverty reduction and human resource development

The MoUD and DUDBC decided to use the PPP modality of working to raise awareness on and ensure application of NBC by the larger Nepali community.

Other government agencies involved in the process of disaster risk reduction and mitigation include:

- Ministry of Federal Affairs and Local Development (MoFALD)
- Ministry of Agricultural Development (MoAD)
- Local level government bodies- Village Development Committees (VDCs) and District Development Committees (DDCs)
- The national bank and financial regulator- Nepal Rastra Bank (NRB)
- The insurance regulator- *Beema Samiti*

These government agencies and line agencies are currently in the process of building PPP guidelines and policies for the purpose of disaster risk reduction and mitigation. Kathmandu Metropolitan City (KMC) has already initiated the process of PPP in field verification process of approved building drawings from January 2014. Through the PPP model, they have engaged the private professionals in the third party verification of the approved drawings (Kathmandu Metropolitan City 2013).

## 18.2 Private Sector of Nepal and Disaster Risk Reduction

The private sector of Nepal has been aware of the risks posed by natural disasters to their businesses and enterprises. They are aware of the history and statistics, which show that 2 years after a natural disaster strikes a high proportion of businesses in the country or geographic area collapse. However, being a profit organization means that disaster risk reduction and mitigation is not a part of their core activities. Therefore, they do not have the capacity and knowledge of the steps they need to take in order to make their business and investments resistant to natural disasters.

In Nepal, the premier private sector umbrella organization is the Federation of Nepali Chambers of Commerce and Industries (FNCCI). The FNCCI has agreed to mobilize its members on creating natural disaster resilient enterprises and investment processes. The FNCCI agreed to mobilize its members to invest in fire services, which is a major disaster in Nepal, using a PPP modality.

The Hotel Association of Nepal (HAN) and the Trekkers Agencies' Association of Nepal (TAAN) have also expressed an interest to mobilize their members to address the issues of disaster risk reduction and mitigation. HAN looked forward to creating disaster resilient infrastructure and ensuring the availability of emergency services in case of natural disasters. TAAN on the other hand looked forward to working with the government services to create safeguarding infrastructure for tourists in popular hiking paths and destinations.



Although very limited, a number of businesses have started developing business continuity plans, which incorporate disaster risk measurement into their regular operational procedures. An example of business continuity planning is the internet service providers (ISPs) and their association in Nepal. The ISP association in Nepal agreed that their infrastructure, such as fiber optic cables laid on the ground – which represent a large portion of their long term investments- are at risk of being destroyed because of natural disasters such as floods, earthquakes and landslides. Hence, they seek to work with the government of Nepal- especially their regulator, the Nepal Telecommunication Authority (NTA) – to create disaster insurance funds. The idea behind the funds would be that the ISPs themselves would contribute to it, with probable additional fund contribution by the NTA. The fund would be mobilized in case of any of the contributing ISP provider’s infrastructure was destroyed by natural disasters.

Similarly, mobile service providers (MSPs) of Nepal, of which there are three, have agreed to create disaster resilient mobile communication infrastructure. Several options have been investigated, like:

- Mobile van towers
- Building of mobile network towers in government identified natural disaster resilient land
- Satellite based communication networks

The MSPs of Nepal agreed to build the disaster resilient infrastructure in agreement with the government and for their own long-term investment protection and business sustainability. Additionally, the MSPs of Nepal have also agreed to create communication platforms- especially using the Short Message Service (SMS) – for uninterrupted communication post-disaster.

The UNDP has been working with both the public and private sectors to make these PPP initiatives successful implementations (World Bank, USA 2001).

### **18.3 Activities of UNDP**

UNDP has been working with the Government of Nepal since the early 1970s to safeguard the lives of the population and the economy. Recently, UNDP took up the initiative of implementing and facilitating PPP for disaster in Nepal in close partnership with government ministries and the private sector. The idea behind the implementation of a PPP initiative for disaster is premised on a participatory approach to development. UNDP understood that successful implementation of the PPP approach hinged on the buy-in into the concept and goal by all stakeholders. The goals behind the implementation of PPP are to:

- Raise awareness about the negative impacts of disaster to the population
- Mobilize communities to take steps towards their own safeguarding with provision of expert technical backstopping

- Assist the government to take steps towards their own safeguarding and
- To make the private sector contribute to disaster risk reduction and mitigation through funds and taking of risks.

With the achievement of these goals, stakeholders of the Nepali society would, through a participatory approach, take ownership of natural disaster risk reduction and mitigation. Due to the lack of resources and the habitual adeptness at disaster risk recovery, the GoN had largely been concentrating on recovery efforts after a disaster. Hence, UNDP took steps towards implementation of DRR measures.

To ensure the reduction of the risk of loss of lives and infrastructure, one of UNDP, Nepal's major concentration was on the implementation of and adherence to the National Building Code (NBC).

Having identified the need to increase the resistance of buildings and other infrastructure, to natural disasters, as the basic need to reduce the risks of the above mentioned negative repercussions, UNDP set out to build awareness on and ensure adherence to the NBC. Taking into account the centralization of the Nepali economy, UNDP identified it as critical that the NBC be implemented and adhered to through a phasing in process- starting with the capital city of Kathmandu.

Through its research and work, UNDP figured out that almost 90 % of the buildings and other infrastructure being constructed in Kathmandu and other parts of Nepal were being financed through debt from formal financial institutions. However, the debt being furnished by formal financial institutions to their clients didn't take into account natural disaster related risk in their credit risk assessment process for the loans. The formal banking and financial institutions relied on a mandatory credit risk insurance- to be paid by the client- to safeguard against risks in repayment. The mandatory insurance is related to destruction of buildings and infrastructure by earthquakes and fire. However, calculations by experts showed that the insurance sector of Nepal didn't possess enough capital to cover all the credit risks in case of even a medium scale earthquake striking Nepal. This put the entire financial sector at risk and therefore the economy and even furthers the financial health of the entire society. To put this into perspective the financial sector- which makes up the majority of the services sector- contributes approximately 55 % to the GDP of Nepal.

Using analytical tools and expert reviews it was identified that the best path towards Increasing awareness of NBC and risks posed by natural disasters; and Safeguarding lives, livelihoods and the economy was to ensure the inclusion of disaster risk measurement analytics into the credit risk assessment process of financial institutions. Hence, UNDP approached the concerned agencies as following:

- The patrons of NBC- the Ministry of Urban Development (MoUD) and the Department of Urban Development and Building Construction (DUDBC)
- The financial regulator of Nepal- the Nepal Rastra Bank (NRB)
- Individual private sector banks and their umbrella organization- Bankers' Association of Nepal and
- Individual insurance companies and their regulator and umbrella organization- *Beema Samiti* (Insurance Board of Nepal)

To effectively implement the mandatory analytical DRR measures in the financial credit risk assessment process, UNDP under the leadership of Central Bank organized a series of consultation with Banking and Financial Institutions (BFIs) and key stakeholders. The initiative has finally taken a shape into a Central Bank's legal directive on July 2014 to all BFIs for code compliant housing investment in Nepal. In addition to new buildings and infrastructure, NRB representatives also announced that old buildings and infrastructure would also be made subject to DRR assessment. The simple methodology for this was through collateral assessment. NRB policies and directives make it mandatory for all banking and financial institutions to acquire equivalently valued collateral from clients before furnishing them with loans for any activity. Data showed that the majority of loan seeking clients fulfill this criteria by furnishing properties as their collateral.

The agreement- of both the public and private sector financial institutions- and announcement about the inclusion of DRR in the credit risk assessment of banking and financial institutions- for both new and old buildings and infrastructure, was a major achievement in the field of PPP for DRR facilitated by UNDP, Nepal.

#### **18.4 Major Achievement – The Tool to Make It Easier to Implement and Concur Adherence to NBC Through PPP**

After many intensive discussions with municipal officials, it was reported that compliance enforcement is ineffective mainly because of the high workload and limited number of trained professionals. The tracking system of building permit processing is also inefficient. Often permit application documents under certification process are lost and manipulated. On several occasions, the documents are replaced and manipulated just to conform to the NBC code compliance on paper. In order to overcome this malpractice, an effective governance system which can ensure transparency and accountability at every stage of the process is what required in the country.

Needless to say that the database management of building stock inventory in Kathmandu Metropolitan City (KMC) and Lalitpur Sub-Metropolitan City (LSMC) is weak. There is no disaster risk exposure data of existing buildings within the regions. Hence, it is very difficult to calculate the underlying risk factors of more than 200,000 existing buildings within these cities. Besides, vulnerability in the Kathmandu valley is rising each day with every new building permit being issued without compliance to NBC. It is therefore imperative to establish a system which can not only assess the resilience of new buildings but also handle the archival of old building permit folders. This will eventually assist in identifying the underlying vulnerability factors.

All these factors necessitated to design an automated system – **Electronic Building Permit System (e-BPS)** – which can systematically handle the complexi-

ties of building code compliance and building permit system for both new buildings as well as old building stocks. The sole aim of the automated system is to effectively implement the NBC and Building By-Laws (BBL) and thereby promoting safe building construction practices and planned urban development in the national capital of Nepal - mainly Kathmandu and Lalitpur municipalities.

#### ***18.4.1 Formulation of Electronic-Building Permit System (e-BPS)***

Electronic-Building Permit System (**e-BPS**) is a joint project initiated by UNDP's Comprehensive Disaster Risk Management Programme (CDRMP) and the GoN. This initiative aims to provide wholesome support towards the effective implementation of Nepal's NBC in the building permit issuance process of municipalities in Nepal.

e-BPS is an automated system whereby both provisions of code and bye laws are integrated into the building permit process. The system also provides basic database of the total building stock of the municipalities and analyzes the seismic vulnerabilities of the built area. In addition, it enhances the municipal governance by embedding necessary accountability and transparency mechanisms within the system. This it does so by making the tool available to anyone through mediums such as the internet. Hence, anyone especially financial institutions, municipalities and members of the public and private sector looking to construct buildings can check their buildings' and their design's compliance to NBC.

The basic characteristics of the system are as follows;

#### ***18.4.2 Concept of e-BPS***

The e-BPS is a web-based application through which building permit requests are processed and current building records are maintained. This is an effective and efficient system to monitor and evaluate the current state of building constructions in a municipal area. The facility is decentralized to lowest level whereby; it can be implemented from both the municipal offices as well as their field offices, Ward Offices. The system allows citizens to submit as well as track their application(s) and its status respectively over the internet. The e-BPS enables municipalities to manage a building permit system by integrating both the NBC and municipal Building Bye- Law BBL. It supports municipal staff members to maintain a building permit database and ensures NBC and BBL compliance for individual buildings through an intuitive web interface. Municipal staff members with different responsibilities, such as application registration, technical data verification, compliance checking, field verification, certificate printing, handling of legal issues, house address generation, GIS data maintenance, collection of permit fees, assessment of disaster vulnerability, building permit data archiving, executive permit approval,

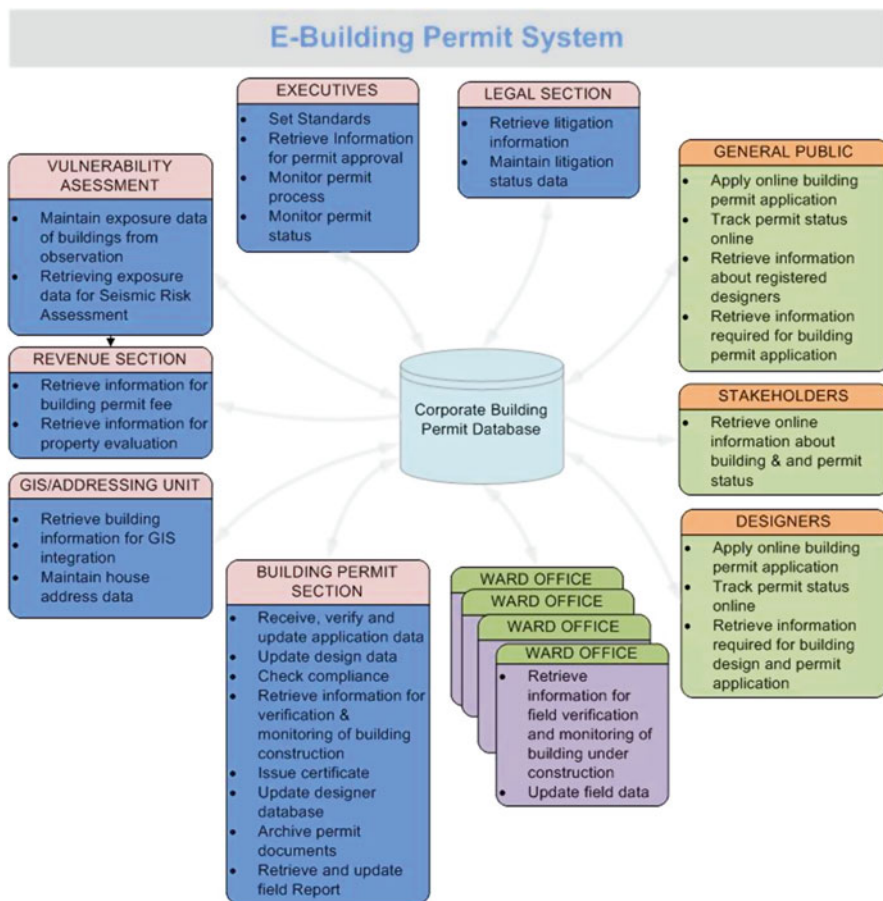


Fig. 18.1 The components of PPP in e-BPS

and others will be able to access the e-BPS through any of the following mediums: LAN, Internet or Intranet. These all responsible staffs were trained (theories and practical) in their areas of responsibilities. The main elements of e-BPS are explained in Fig. 18.1.

### 18.4.3 Role of Private Stakeholders in e-BPS

There are four key stakeholders for the system. They are:

- Government Partners:
  1. Ministry of Urban Development (Policy support), and
  2. Municipalities (Implementation)

- Private Partners:
  3. House owners, and
  4. Private building designers
  5. Banking and Financial Institutions Builders, contractors and masons

The essence of e-BPS is creating an environment of democracy, transparency and while encouraging compliance to NBC. Implicitly, this means that there needs to be a demand from the public and private sector for the service. Hence, in order to entice and create a demand from the private partners, and in addition to raising awareness amongst the private sector and public on the risks posed by disaster, the system has ensures layman's ease to upload the design of buildings. With the effort of both these partners, the successful piloting of the system has already been carried out in KMC. This is an example of both the public and private stakeholders working with each other to implement building code and consequently contributing to reduce disaster vulnerability.

#### **18.4.4 Key Features**

The key features of the e-BPS are as follows;

**Compliance Checking** Compliance checking for BBL and NBC is one of the most complex and time consuming tasks. The system offers an automated feature for checking against BBL and NBC compliance and is one of the most important features of the system. The system verifies the data and information provided by the building designer against the system standards defined by the municipality. This feature helps municipalities to speed up the permit process and also identify buildings that do not comply with its current standard.

**Online Registration** This is one of the elements of PPP mechanism in the system, where by private stakeholders are allowed to access the password and participate in the process. An applicant can register and submit a building permit application through the municipalities' web portal. The provision of online submission saves many valuable hours of the applicants and municipal staff. Supplementary information about BBL and NBC such as checklist of documents, information about registered designers and trained masons, and more are available online.

**Tracking Permit Status** This feature provides the basic transparency in the system. The private stakeholders can track the status of the registered documents using their access codes. The system updates the permit status of each application on regular basis. The applicants may track their building permit status online by logging on to their municipality's website. In comparison to the current methodology, this substantially reduces (almost eliminates) the number of calls or visits an applicant has to make to their municipality office to query about the status of their permit application.

**Management of Building Permit Application** The system manages the mass of applications on behalf of the municipality while individual documents on behalf of the applicants. The individual applications include documents such as House and Land Ownership, Construction Site detail, Neighboring Land Parcels (plots), Building Plan and Drawings, Design Data required for BBL and NBC compliance, Citizenship and Land Ownership Certificates and any other specific municipality requirements.

**Archiving Building Permit Data** This system enables municipalities to archive existing building drawings/plans and other related documents. It has the capability of storing, retrieving and managing electronic AutoCAD and/or other image/PDF file formats of building drawings. Documents can also be scanned and uploaded on to the e-BPS, and thus stores documents such as maps. The private stakeholders and DRR practitioners can easily access the volume of existing building database for study and research purpose.

**Checklists for Vulnerability Assessment** The Private stakeholders such as BFIs/DRR practitioners can analyze the vulnerabilities of existing buildings. This will pave the way for them to have the necessary guidance on whether the building property is suitable for investing or not. The archived building database includes exposure data of each building collected after visual inspection. This facilitates the conduction of qualitative vulnerability assessment of each building structure following the guidelines developed by Department of Urban Development and Building Construction (DUDBC). The provision also recommends the requirement of retrofitting options of the vulnerable structures as per the approved retrofitting guidelines.

**GIS/Addressing Support** The e-BPS also enables municipalities to integrate building data with a GIS based building database and thus permits them to assign a 'house address' for new buildings. The house addressing system needs to engage the wider participation of private stakeholders.

**Revenue Generation** The system is designed to check the status of taxes and fees paid. Any discrepancy in the collection of land and/or property tax simply stalls the permit application thereby leading to improved revenue collection.

## 18.5 Current Status

Currently, the e-BPS has been successfully piloted in KMC. The result has shown exceptional acceptance by all concerned stakeholders. The total number of application so far has been 1,218 (Fig. 18.2). The system has supported KMC in identifying the location of rapid urban growth and plans their infrastructure accordingly.

The progress of implementation of e-BPS can be explained through the below graph (Fig. 18.3). At present the 93 % of all applications are undergoing through the e-BPS process.

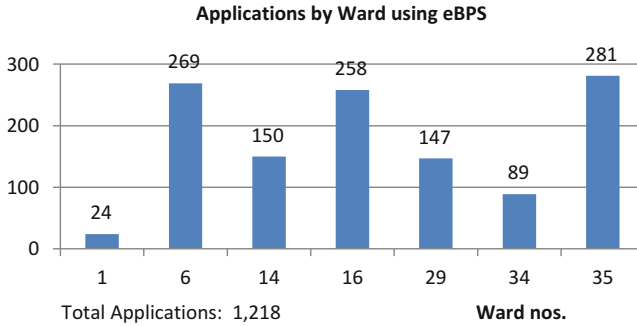
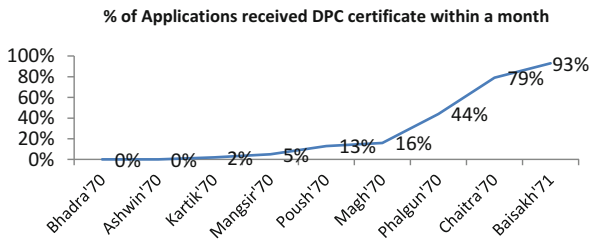


Fig. 18.2 Distribution of growth of building stock in different wards of city

Fig. 18.3 Increase in public acceptance of the system



## 18.6 Lessons Learned

After initial period of piloting the e-BPS in KMC, following key lessons have been learned:

**Importance of PPP in Good Governance Mechanism** e-BPS was an initiative to address code compliance issue more effective in municipal institutions. As we can see there is ever increasing demand for certificates through e-BPS, it is largely attributed to private stakeholders acceptance to the system.

**Accountability and Transparency** One of the key reasons for the success of this initiative was the accountability and transparency factors associated with this project. Accountability and transparency are maintained through the ability of all concerned stakeholders to access information.

**Information Sharing and Participatory Planning** The database of e-BPS has been effective in making investment decisions for KMC. The public hearing for city planning is now supported by the database of urban growth trend. The infrastructure planning is now more rational and able to control and guide the growth based on the revenue generation in the localities.



## 18.7 Conclusion

Despite of immense roles and possibilities of private sector role in reducing DRR in Nepal, the potentiality has not been fully explore and utilized. With the technical and financial support of UNDP, e-BPS has been recently implemented in Nepal with close collaboration and partnership of all concerned actors. The initial response and findings seems very positive and encouraging. However, it requires more time for sustainability, improvement and large scale replications.

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# Chapter 19

## Malaysian Experiences: Public-Private Partnership Involvement in Disaster Risk Reduction in Community Resilience in Malaysia

Nafesa Ismail, Takako Izumi, and Rajib Shaw

**Abstract** This article presents the literature concerning the Public-Private Partnership (PPP) in Malaysia especially in Disaster Risk Reduction (DRR) areas. Since Malaysia is on the fast-track developing modern country, its economy is being led by the private sectors through many initiatives particularly through the PPP concept. Currently, there are about 611 successful PPPs in Malaysia that had been carried out from 1983 till 2014 mainly on infrastructures projects throughout the years. Being the matured leader in Asian for the PPP projects, Malaysia shares its PPP experiences and guidance via the annual Asian Ministerial Conference in Disaster Risk Reduction (AMCDRR). However, the PPP in Malaysia are still lacking in DRR fields areas and have not been extensively covered by both the public and the private sector. Even though Malaysia does not experience any natural disasters, the rare occasion of tsunami or man-made disasters proves to be disastrous. Therefore, this paper provides in depths on the PPPs as well as the DRR-related partnerships in Malaysia.

**Keywords** Public-private partnership • Disaster risk reduction • Malaysia

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## **19.1 Public-Private Partnership (PPP)**

### ***19.1.1 Introduction***

Private sector plays an important role in a country's economy development as this sector is the engine that drives a nation's future growth. Business creates economic growth, employment and generate revenues to pay for national development programs. Both corporate leader and the government have to show leadership as to ensure sustainable growth because cumulative effort adds up to the whole economy. The United Nation (UN) itself has a flagship of caring for business by incorporating The Global Assessment Report 2013 (GAR13) on Disaster Risk Reduction (DRR) for business entities. GAR13 looks at the rising disaster risks that could become a major problem for businesses. Floods, typhoons, storms and earthquakes can cause damages to facilities and simultaneously interfering and paralyzing output and business activities. Additionally, damages from disasters on the infrastructures and facilities provided by the public sector too will have an impact on businesses as they heavily rely on those amenities. The rapid globalization of business and the economy led to a need to look over disaster risk that can affect both businesses and the societies in developing or developed countries (Avendano 2010). Disruption of businesses caused by natural and man-made disasters have a major impact on a country's economy as well as resulting in a longer growth of economies. Therefore, protecting companies from business downfall should be greatly emphasized. Hence, GAR13 fills in the gap of how investments by businesses could actually decrease risk factors by involving business leaders and private investors to discuss on disaster risk management as well as the prospects of shared value for business and society. This chapter reviews the PPP initiatives in general and in Malaysia specifically, as well as recognizing the challenges and the opportunities of PPP implementations in DRR for Malaysia.

### ***19.1.2 Definition of PPP***

According to the World Bank Institute (WBI 2004), the definition of PPP is to mobilize the private sector's resources such as technical, managerial and financial to deliver basic public services; infrastructures, health and education. In another definition by the Asian Development Bank (ADB 2008), PPP is a framework that engages the private sector as well as acknowledges and constructs the role for the government by ensuring the social obligations are met and are successful in reforming both sectors and also in public investments (BusinessWorld 2010). PPP establishes the collaboration of both private and public sector in providing and delivering better services to the people. PPP is widely practiced throughout many developed and developing countries such as Brazil, Argentina, South Africa and Mexico and also countries in Asia, for example, India, China, Philippines, Thailand and Malaysia

(Annez 2006; Malalgoda & Hulangamuwa 2006). Additionally, PPP drives a country's economy by supplying labor force and also contributes to majority of the exports. The important principle in PPP is that the private sector is responsible for delivering public infrastructure with the public sector as the 'partner' in financing the projects (IBON Foundation 2011). Usually the collaboration would last about 30 years (Blondal 2005). In this collaboration, both private and public sector make an agreement on the degree of costs to bear or risks to take (Van Ham and Koppelman 2001; Broadbent et al. 2003).

## 19.2 PPP and Disaster-Related Fields

Private sector can play an active role in activities such as mobilizing resources, promoting risk financing, implement and incorporating Disaster Risk Reduction into their projects and also Corporate Social Responsibility (CSR). According to the Green Paper by the European Commission (EC) in 2004, there are two dimensions of CSR:

### A. The internal dimension:

- (a) Human Resources Management
- (b) Health and Safety at Work
- (c) Adaptation to change
- (d) Management of environmental impacts and natural resources

### B. The external dimension:

- (a) Local communities
- (b) Business partners, suppliers, consumers
- (c) Human rights
- (d) Global environment concern

While many companies practices CSR, there are also other means of PPP approach that are available. The United Nations International Strategy for Disaster Reduction Secretariat (UNISDR) has collected new perspectives and gained insights on PPP approach based on disaster risk reduction work through the world. In one of the UNISDR publication, a booklet titled Private Sector Activities in Disaster Risk Reduction which was published in December 2008 found three partnerships of the PPP approach that were carried out (UNISDR 2008). These are:

#### 1. *Advocacy and Awareness Raising Partnerships*

Private sector partnering with the government takes leads in advocating, campaigning and contributing to solve different issues and also participating in legitimate dialogues and cooperative actions. It is a partnership between the UNISDR and a private sector through PPP approach to further learn and grasp the idea of disaster risk reduction.

## 2. *Social Investment and Philanthropy Partnerships*

The business provides financial support, supplies volunteers and expertise or make donations. In other words, the UNSIDR engage with the selected private sector in supporting key impacts areas based on the proposed basis-of-interest foundation.

## 3. *Core Business Partnerships*

Both public and private sectors team up and become partners to create jobs and cultivate entrepreneurship which leave impacts on the economic growth, tax revenues as well as the social ethical standard to provide reasonable price of goods and quality services. UNISDR helps to link individual companies like the Small Medium Enterprise (SME) by assigning projects and products for each respective businesses. According to the PPP and Disaster Resilience Workshop held in 2010, the UNISDR came out with a few strategies in order to engage with private sector on disaster risk education activities (UNISDR 2010). The opportunities are as follows:

- **Cross-industry coalition**  
*To collaborate with industries such as insurance, utilities, ICT and tourism to build cross-industry partnership for disaster risk management.*
- **Safe schools and hospitals within the disaster resilient cities**  
*Providing expertise and resources in areas such as land use regulations and retrofitting.*
- **International Day for Disaster Reduction**  
*Rising awareness by involving countries such as Southeast Asia, South Asia and the Pacific.*
- **Global Platform**  
*To strengthen the International Strategy for Disaster Reduction system to sustain global momentum in building resilience in the disaster affected nations and communities.*
- **Global Assessment Report on disaster risk reduction**  
*Gathering publications, translations of the information and launching in a global scale.*
- **Climate change and disaster risk reduction**  
*Delivering technological support to national governments on early warning, modelling, hazard vulnerability and risk assessments.*

PPP had proven to be beneficial especially in connecting both government and the private sectors through cooperation (Mohd Saron et al. 2013). However, there are factors that make a successful PPP. These factors that need to be kept in mind are the relationship between public and private sector, being able to discuss about problems and the difficulties arises. In addition, PPP is also found to strengthen monitoring in projects and ensuring better accountability (Hall 1998).

There are four distinct PPP models that have been adopted through the years by many countries (ERIA 2013). These are:

1. Concession Model  
For highways/bridges which are structured on BOT (Build, Operate, Transfer) concept.
2. Accommodation Model  
For administrative complexes, teaching hospitals and branches of universities which are structured on BLMOT (Build, Lease, Operate, Maintain and Transfer) concept.
3. Process Plant Model  
Being used for power generating projects and structured through 2 forms of payments; fixed capacity payment and utilization payment.
4. Usage Model  
For projects with high risk of technology obsolescence where the government do not plan in taking ownership of the asset upon the expiry of the contract (e.g.: medical facilities).

### 19.3 Disasters in Malaysia

Whether it is low frequency, high risk or high frequency, low risk; disaster often times proves to be devastating and challenging towards many; mainly public sector and business entities. Public sector and business sector are both interdependence on each other in order to survive. Damages to transportation or communication network could cost billions of cash to the business entities and therefore, public sector need to toughen up and be ready against disaster risks. Thus, an innovative partnership between the involved stakeholders especially the public sector; the policy and decision makers, community member and private sectors should be established to reduce, eliminate or figure out ways to overcome challenges.

The 2004 Indian Ocean Tsunami affected many countries including Malaysia. The 2004 disaster had caused 68 deaths and 52 were from Penang Island (POHD Royal Malaysian Police 2005). Many deaths occurred along the beach area as the shoreline recedes away. The deaths were of picnickers who stayed along the beach to observe the situation instead of evacuating to higher and safer areas. Since Malaysia had never been struck by tsunami before, the local people were not able to prepare for it.

Landslide is another type of disaster that Malaysia experiences but occasionally. However, the recent landslide cases were mostly from houses built on hilltops and when rainy season comes, the weather condition adds up to the risks. Lists of previous cases and damages are shown in Table 19.1.

Although Malaysia is generally free from any natural disasters but the most significant natural disaster is the annual flood. Approximately 29, 800 m<sup>2</sup> of area are flooded affecting about 4.82 million citizens and causing up to RM915 million

**Table 19.1** Landslides disaster occurred in Malaysia for the past decade

Date	Location	Deaths and damages
11 Dec 1993	Highland Tower	48 deaths
30 June 1995	Genting Highlands Highway	21 deaths
25 Dec 1997	Ampang-Hulu Klang, Selangor	3 deaths
15 May 1999	Bukit Antarabangsa and Wangsa Ukay	1 death, thousands affected
1 Nov 2002	Taman Hillview, Hulu Klang	8 deaths
31 May 2006	Kampung Pasir, Hulu Klang	4 families, 49 houses were damaged
6 Dec 2008	Taman Bukit Mewah, Bukit Antarabangsa and Ampang	5 deaths, buried 5 bungalows
21 May 2011	Hulu Langat, Selangor	16 deaths
29 Dec 2012	Setiawangsa Heights	2 damaged bungalows

Source: Department of Statistics Malaysia [2012](#)

(USD260 million) of damages. According to the 2012 Malaysian Budget report, there are approximately four million people living in flood-prone areas in Malaysia. There are many prevention steps that were carried out to either reduce or eliminate the existing risks. The main policy making and coordinating body for disaster management in Malaysia is known as the National Security Council (NSC). The body manages all activities related to preparedness, prevention, response/relief operations as well as recovery/rehabilitation of disaster management. Decrees of The Land Conservation Act, Environmental Protection Act, Town and Country Planning Act, Irrigation and Drainage Act and Uniform Building by Law complement each other to create a thorough disaster mitigation structure. For example, the Secretariat of Irrigation and Drainage Department developed some planning tools such as on Environmentally Friendly Drainage Manual (MASMA) and also Land-use Planning Appraisal for Risk Program (LUPAr) by the Department of Town and Country Planning Peninsular Malaysia and National Slope Master Plan by Public Works Department. The guidelines is said to enable the monitoring process of implementing the Hyogo Framework of Action (HFA) in preparation of state structure plan, local structure plan and other related studies. All local authorities and developers need to abide to the guideline constituted. In the research of Roosli and O'Keefe (2013), they argued that post-disaster housing need to provide and follow the NSC policy on disaster management and also international requirements pertaining to the rights of disaster victims.

## 19.4 PPP in Malaysia

The government had always been financing public infrastructure and facilities in Malaysia such as clean water, electricity and roads. According to Economic Research Institute for ASEAN and East Asia (ERIA), since the introduction of PPP

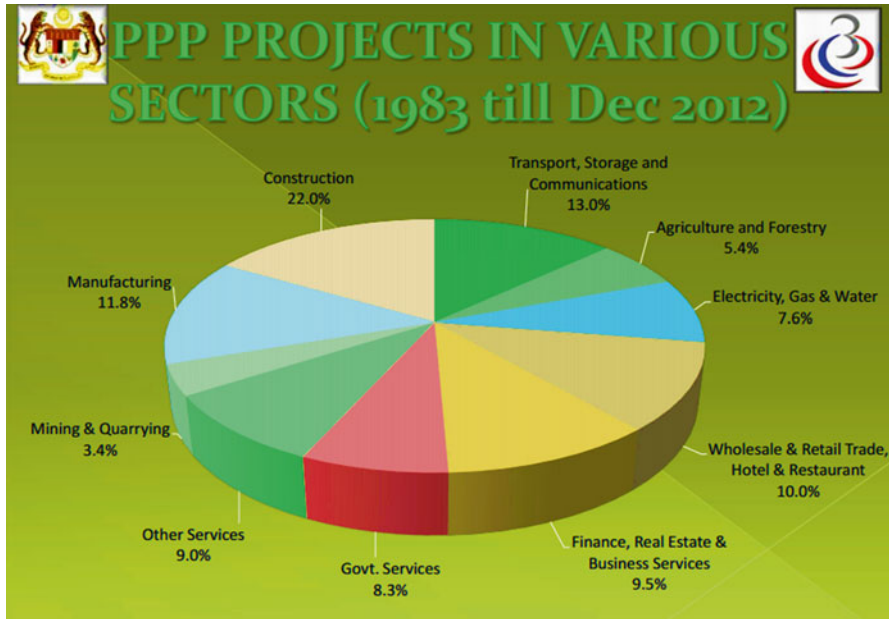
in Malaysia about 33 years ago, there were as many as 611 projects that have been implemented through the PPP approach. Those projects cover a wide variety of sectors such as transportation (highways, ports), communication, health, energy and utilities, education and training and general admission. However, the PPP approach is less visible in Malaysia unlike in the United Kingdom where PPP transparency are made clear in the government's policies and documents (Broadbent et al. 2003).

The history of privatization in Malaysia began when the government introduced the Malaysian Incorporated Policy (MIP) in 1981. The main objective of MIP was to encourage cooperation between public and private sectors. The government then announced the Privatization Policy in 1983 and the Guidelines on Privatization was introduced in 1985 to show better guidance for the private sectors. However, not until 2006 that Malaysia introduced the Private Finance Initiative (PFI)/PPP and only in 2009, the PPP Guidelines were made available to further lead the private sectors to participate and stimulate private investments through PPP as one of the national development agenda (Abdullah et al. 2014).

According to Forbes Asia, to-date, the Malaysian Government is still going strong with the PPP as they are committed to decrease the budget deficits over 5–7 years, creating more jobs for the people and also reorganizing the public sector to make it more conducive and attractive for private investments to pour in. They even called it the Third-way Path, a PPP to bring wealth and economic progress to the people. The agendas of the Third-way Path are to learn the lessons from the past, the government in becoming a better partner, quality services and preserving the public interest and developing innovative partnerships (National Digital Conference 2012). The future of PPP in the 10th Malaysian Plan stated that competitive bidding of the toll highways, power plants, universities, transportation, industrial parks and incubators are highly expected (The 10th Malaysian Plan 2011–2015 (2010)). Figure 19.1 shows the kinds of PPP projects in Malaysia throughout the span of 1983–2012. The most frequent is construction (22 %), followed by transport, storage and communication (13 %), manufacturing (11.8 %) and wholesale and retail trade and hotel and restaurants (10 %). The most least is mining and quarrying (3.4 %).

The PPP in Malaysia permits the government to gain access to financial resources and simultaneously getting the advantages of the skills and management from the private sector which in turn decrease the cost and adds values to the government's assets. The fundamental responsibilities of the government in PPP are having to decide the competing objectives, defining the purposes and the required standard that they must meet as well as ensuring the interest of the public are protected. On the other hand, the private sector contributes by seizing the business opportunity and meet the requirements of the customer. Through this process private sector is able to improve their services and becomes more efficient. Additionally, the private sector can also look out for opening to develop profitable businesses. Table 19.2 shows some of the examples of the best and innovative PPP practices carried out in Malaysia.





**Fig. 19.1** PPP Projects in Various Sectors from 1983 to 2012 (Source: Public-Private Partnership in Malaysia (2013). Project Monitoring & Secretariat Section Public Private Partnership Unit Prime Minister Department (3PU))

**Table 19.2** The PPP models that were being conducted in Malaysia

Model	Service/product	Remarks
Cooperative model	Service: mySMS 15888	A service number accessing to all government services through Short Messaging System (SMS). The government of Malaysia provides subsidy and assistance with no ownership
Special Purpose Vehicle (SPV) share ownership model	Product: e-Services, ePerolehan	A collaboration established to develop, build, maintain and operate for a certain term; Private sector being the equity shareholder
Bulk purchase model	Product: eBidding	An electronic bidding system that simplifies the procurement process
Concession model	Product: DagangNet	An internet site that provide online services and products to help businesses leverage on e-commerce as a strategic business tool. A long term contract with the government and assets are going to be hand over after the specified term
Management contract	Product: PRISMA	An appointed private sector manages and runs the Standard of Conduct during a specified term with the assets remains as the properties of the government

### ***19.4.1 Involvement of Private Sectors in PPP and DRR Activities in Malaysia***

The HFA serves as the guideline for disaster risk reduction facilitating Malaysia's commitment in achieving its goals through HFA Implementation Regional Action Plan (HIRAP) and the 3rd AMCDRR declaration on establishing a National Platform for Disaster Risk Reduction in Malaysia. Additionally, the platform also made way for both public and private sector to encourage dialogue as well as to work on their PPP projects such as CSR, goodwill and volunteerism aspects in disaster management.

According to the UNISDR 2009 report of The Development of a Public Partnership Framework and Action Plan for Disaster Risk Reduction in Asia, there were insufficient amount of proof of the successfulness of PPP for DRR. Most of the PPP were focused mainly on relief and building disaster response preparedness. In Malaysia, very few companies such as PETRONAS, Sime Darby and United Engineers Malaysia (UEM) Group Berhad collaborated with the government through the PPP in DRR programs (Roeth 2009). PETRONAS and UEM employed the volunteer programs to help the disaster victims during the 2004 Indian Ocean Tsunami. As for the community-based projects, collaboration is usually carried between the private companies and the local NGOs. Meanwhile, Sime Darby were involved in attracting foreign direct investments, undertaking infrastructural development and also having the initiatives to employ flood mitigation strategies and assessing risks in potential development areas.

In order to prevent the annual occurrence of the flash flood in Kuala Lumpur city area, the Malaysian Mining Corporation and Gamuda Berhad through PPP scheme had built Storm Water Management and Road Tunnel (SMART) system which are able to mitigate floods, control traffic and congestions problems as well as increase safety levels whilst reducing adverse impact on the environment.

Another example of PPP in DRR is the PPP Agreement between the Malaysian Government and TELEKOM Malaysia in the connection of High-Speed Broadband (HSBB) project in 2008. As a developing country, Malaysia is also on the fast-track of Internet users. The Malaysian Communication and Multimedia Commission in 2013 found that as much as 63.6 % users accessed the Internet (Malaysian Communications and Multimedia Commission 2013). This fasten the speed of information especially during disaster where the information can be of help in notifying the people as well as increasing the level of knowledge on disaster and its risks.

The National Disaster Relief Fund that was established by the government to provide financial assistance to the disaster victims. Through the concept of PPP, relief funds and microfinance tools were designed to support the recovery of the affected victims. The government had allocated RM500 million (USD140 million) through the Central Bank. Through PPP scheme, all commercial banks, SME banks and Malaysia Agriculture Bank are authorized to release the Special Relief Guarantee Facility (SRGF) fund intended for recovering businesses and recon-

structing damaged infrastructure in the affected areas throughout Malaysia. The reaction towards the PPP scheme was a success as RM472 million were approved to help the affected companies.

In the National Progress Report on the implementation of HFA (2009–2011), Syarikat Perumahan Negara Berhad (SPNB), a government-owned housing development company through PPP project had completed numerous housing projects for the relocation of the residents in the flood and tsunami prone areas in Peninsular Malaysia and Sabah areas.

PPP is not only limited to economic crises but also to other relevant fields as well such as health. For example, the Steno Diabetes Center in Denmark, the University of Southampton in United Kingdom, the University of Witwatersrand in South Africa with the Malaysian Healthy Ministry have been working together on international level to develop the ‘Jom Mama’ initiative to implement a long term course approach in preventing diabetes type 2 in the future (Thomson Reuters 2013). This program targeting young newly married couples which undergo a 3-year health intervention study in order to monitor the changes in their health and helping them to make better decision in food consumption and healthy lifestyle. Additionally, Malaysia also has made successful PPP in the area of medical diagnostics particularly in MyDENKit, a kit to detect and stereotype dengue virus. The PPP was partially funded by the Malaysia Ministry of Science and Technology (MOSTI) between University Malaya and Geneflux Biosciences in providing dengue screening services to small clinics, public and private hospitals (BIOTECHCORP 2010).

## 19.5 Malaysia’s Contribution Towards Strengthening PPP

In collaboration with the UNISDR, the 3rd AMCDRR held in Kuala Lumpur in December 2008 witnessed the preparation of Regional Action Plan and the Kuala Lumpur Initiative on PPP for DRR on the outcome of ‘Kuala Lumpur Declaration on Disaster Risk Reduction’. AMCDRR acts as a regional platform for disaster risk reduction especially for Asian countries by sharing success stories, identifying challenges, highlighting actions needed to be taken and as well as providing guidance to speed up the HFA 2005–2015 execution. The theme for the conference in Kuala Lumpur was ‘Multi-stakeholder Partnership for Disaster Risk Reduction from National to Local’ emphasizing on the PPP for DRR and Community-Based DRR Actions. In the Kuala Lumpur Declaration, appreciation towards the Government and the international organizations that helped to reduce the cost and damaged through investments was stressed firmly to show the importance of PPP in disaster risk reduction. The conference also encouraged the on-going efforts on building local capacity, the effectiveness of the national legal and policy frameworks’ provisions, the financial and technical support to both local authorities and community-based organizations embarking on DRR activities simultaneously boosting the partnership of multi-stakeholder and the local government and the communities to

reduce disaster risks. One of the themes that were addressed during the conference was PPP in Disaster Risk Financing with regards to the insurance industry.

UNISDR had launched Good Practices on PPP document which highlighted successful global examples of PPP in DRR. The document encourages governments to apply the practice on local communities as well as translating it into regional language. Another theme that was discussed is the private sector engagements in DRR looking into the different ways private sector can contribute to DRR. PPP is hoped to encourage CSR and having business continuity plans in cooperation and businesses, advocating monetary policies in disaster risk management through micro-credit and micro-finance to businesses, to encourage the multi-stakeholder mechanism to promote PPP and lastly, to provide an enabling environment for the risk insurance market in disaster risk reduction activities. The following year, March 2009, stakeholders meeting took place in Bangkok, Thailand to ensure the operational of the Kuala Lumpur Initiative on PPP.

To-date, Malaysia's PPP is quite extensive as they already implemented some of the critical discussed themes (PPP Country Profile Malaysia 2013):

1. *Technology to scientific application to disaster risk reduction, including climate change adaptation*

As flood is one of the most frequent disaster occurs in Malaysia, the government had established an emergency response system such as SMS warning, Malaysia Emergency Response System (MERS) 999, telephone Fixed-Line Alert System (FLAS) with one of Malaysia's leading telecommunication network, TELEKOM MALAYSIA, and also Government Integrated Radio Network (GIRN) by SAPURA.

2. *Media engagement*

The Ministry of Communication and Radio Television Malaysia (RTM) also partnered with the private local media to broadcast news and other information for the people for better services and reception.

3. *Public awareness and education*

Established through SEADPRI-UKM, Malaysia Meteorological Department, Ministry of Health, other universities and NGOs through disaster awareness campaigns, pamphlets, seminars and workshops.

4. *Mobilizing resources*

Involvement of the Ministry of Finance, Central Bank of Malaysia, Co-operative Organization and GLC with private sectors in Malaysia for finance; credit, CSR and philanthropy purposes. For example, Tekun National Foundation (TNF) provides funding for businesses and industries especially for the SME. Funds were set up by government agencies as well as the Non-government Organization (NGO) in Malaysia.

5. *Empowerment of PPP of local governments and society in disaster risk reduction*

The involvement of MERCY Malaysia and Malaysian Red Cross Society to help educate the people living in risk-prone areas. Additionally, Haluan Malaysia, Global Peace Malaysia provides rehabilitation, reconstruction and medical assistance for the post-disaster process.

The 10th Malaysia Plan has targeted that the private sector will be the locomotive of Malaysia's economy and running Malaysia to be in the high-income and developed nation by 2020 (Economic Planning Unit 2010). The RM20 billion (USD6 billion) Facilitation Fund will assist the private sectors in investments exclusively for nationally strategic areas. The Malaysian government is aspiring to improve domestic investments and simultaneously attracting foreign funds into the country. This is done by establishing the PPP where the government-linked companies (GLC) and government-linked investment companies will set up partnerships with the private sectors and sponsoring public projects through private capitals. Currently, the Malaysian government is doing its best to create an encouraging environment for both local and foreign investors by making a strong foundation for them to flourish.

The Plan also included a long term strategy for Malaysian water resource management to accomplish water security. It has become a crucial issue as there is a need to overcome the challenge in water resource management in addressing the mismatch between regions that have plenty of access of water but having high economic and population growth. The National Water Resources Policy (NWRP) is made responsible to handle the water resource management in ensuring efficient and fair distribution of water throughout the country. Besides that, measures that cover the environment such as implementation of the Integrated Water Resources Management and Integrated River Basin Management were also counted in. The government had allocated RM5 billion for flood mitigation programs which see through that the Integrated Flood Management manages risks of damages from flood via forecasting, warning facilities, flood hazard map and also disaster preparedness and community awareness program.

Besides that, the Plan also covers PPP initiatives in upgrading public transportation in Kuala Lumpur city area which further push the economic growth. At 2013, the transportation usage were at 17 % and by 2020, it is expected to rise to 40 % of usage with the allocation of RM2.7 billion (USD8.3 billion) facilitation fund for PPP projects in 2014.

The extensive of PPP in Malaysia also covers schools and education whereby PPP involvement in developing in pre-schools and also in the delivery of basic education through Trust School. The government provides Trust Schools with autonomous decision making in condition of producing better outcome in students. On top of this, the initiatives will help the Malaysian government to greatly reduce its financial burden. In addition, with the extra funds the public will also gain benefit as the social safety net is expended.

Additionally, the Information Communication and Technology (ICT) is also crucial to accelerate and strengthen and widen areas networks as to speed up data especially during disaster so that disaster recovery center can well-manage the situation on hand.

## 19.6 Challenges and Way Forward of PPP in Malaysia

### 19.6.1 Challenges of PPP

- Uncertainty of PPP Involvement in DRR Activities

Report from the APEC Workshop on PPP and Disaster Resilience in Bangkok 2010 found that some governments were uncertain about the involvement of PPP in national DRR efforts. Meanwhile, private sectors too have perception of risk whenever they think about venturing into PPP projects (Siew Soon 2012). The private sectors are reluctant to undertake risks that are related to macroeconomic as well as political. The report also stated that in order to help the private sector to understand their role in DRR, there is a need for other DRR contributors to assist them. It is important to magnify the private sector involvement in disaster response activities to a wider scope covering preparedness and recovery process as well. Additionally, it is also necessary to educate the business organizations of their role in DRR and motivate them on how they can be a part or involve directly. Some of the business organizations are neither well aware nor prepared for natural disasters which consequently lead to having low awareness of hazard risks.

As for Malaysia, the report from Malaysian HFA National Progress Report (2011–2013) pointed out that Malaysia is still in the process of establishing a National Platform on DRR (GFDRR 2012). The platform is still in the planning stage and is gradually advancing in coordinating efforts by different stakeholders at all levels to reduce risks and disaster impacts as well as facilitating sustainable development. Nevertheless, there are many mechanism to tackle on the various disaster faced by Malaysia which are either focusing only a particular hazard or is response-oriented during/after the disaster event. The NSC is constantly working to engage multi-stakeholders on different aspects of DRR efforts through the Disaster Management and Relief Committee.

- Indefinite National Budget for DRR

The UNISDR in 2010 had called upon the governments in Asia to allocate no less than 1 % of their national budget for DRR expenses as well as developing funds at both national and local level. Since the intensity of disaster is unpredictable in Malaysia, the Asian Disaster Reduction Center (ADRC) found that there is no specific budget for DRR activities in the National Budget for Malaysia. A National Disaster Relief Fund under the National Security Division (NSD) is set-up to finance efforts related to disaster relief activities (National Security Council 2011). The 9th Malaysia Plan (2006–2010) had allocated RM6 billion (USD2 billion) for flood mitigation, multi-hazard monitoring, early warning system, etc. The next 10th Malaysia Plan had allotted about RM5 billion (USD1.7 billion) for relevant effort in flood mitigation, forecasting and warning facilities, flood hazard map and also developing disaster preparedness and community awareness program.

- Vagueness of DRR Integration in PPP

Other challenges also includes the miscommunication and inadequate demonstration of the proper process of DRR integration into PPP as it were not properly conducted and thus, puts PPP at a disadvantage. For example, the presence of private sectors is assumed to hasten disaster recovery but then, this varies on the amount invested by the stakeholders as well as the control level on the risk. The truth is that the PPP has always been perceived as the CSR and Business Continuity Plan (BCP) only. Many private sectors are skeptical towards DRR in PPP as they believed that involvement in DRR projects are risky as the return rate is low and there are other complexities that comes with it (Rusmani 2010). The intervention of PPP between the government and the private sectors often times were carried out in isolation. The private sectors involvement in DRR management are still limited and yet to stretch their philanthropic and charitable activities.

According to UNISDR (2012), majority of the governments have not fully developed the organization and communication of the PPP for DRR in a well-structured manner across different sectors as well as across local governments. Often times, many of the government lacks in commitment and resources after setting up the PPP legal and institutional framework in the country. This resulted in nil coordination with other countries to learn, adopt and share their PPP stories.

### ***19.6.2 Future of PPP in Malaysia***

After the 3rd AMCDRR held in Kuala Lumpur, the PPP in DRR has been improved and profound tremendously for many disaster stricken countries. The 6th AMCDRR in Bangkok, Thailand established the significance of involving private sectors in DRR management and activities as well as recognizing the ways of engaging though PPP. The conference highlighted on the incentives that could be the mechanism for the private sector to invest in DRR and the ways to facilitate this (AMCDRR 2014). The idea is that to change the concept of business continuity to risk-sensitive investments and from relief and recovery activities to tri-sector partnerships for risk prevention, risk reduction and preparedness. Moreover, an enabling environment through public policy is also one of the appropriate moves to support and boost businesses resilience. The conference also recognized the inadequate number of private sectors' engagement in the HFA where more businesses are set-up in hazard-prone areas nowadays. These investments need to be sensitive towards the risks and the impacts both public and private sectors will face in the future. The HFA2 will urge businesses to be more responsible, resilient and accountable in their business as well as promoting how tax can be made as a practice to promote public disaster resiliency. Hence, it is essential to have good DRR measure and mechanism to contribute to effective disaster governance and coordination. Efforts among actors in various fields in ensuring the acceptance of DRR in PPP projects among the stakeholders. According to ADPC (2013), these efforts can be carried out through



regulations, incentives, capacity building, information and ensuring the private sector engagement in the Post-2015 DRR Framework. There are many valuable lessons and guidance that Malaysia can learn, adopt and practice from the 6th AMCDRR in applying to its own PPP for DRR.

Although many of Malaysia's PPP projects are not directly related to DRR, there many main priority sectors that PPP has covered indirectly such as health, education, renewable energy, green technology and communication (World Bank Group 2014). One of the sectors that the Malaysian government is exploring is the healthcare facilities. As a modern developing country, Malaysia's healthcare facilities are increasingly on demand (IPFA 2013). Therefore, the government ought to tap into the private sectors for healthcare financing as well as building of hospitals or expansion of the healthcare facilities. This could improve standard services upgrading it to international level and simultaneously, making it efficient and affordable for the public in terms of healthcare services. A conference on the healthcare infrastructure on PPP had already took place in 2013 at Kuala Lumpur. The PPP Healthcare Infrastructure, Design and Construction Conference and Exhibition discussed topics on understanding the Malaysian government policy in healthcare design and construction, best PPP model to deliver the PPP healthcare projects, financing matter, legal framework, key issues in PPP healthcare project and design, exploring PPP capital cost as well as reviewing the Evidence-Based Design (EBD) for the healthcare facility for the best outcome.

Another emerging sector in Malaysia is the biotechnology industry. Large local corporations such as PETRONAS, Chemical Company of Malaysia (CCM), Genting Group and Sime Darby should take leading role in driving green technology initiatives (BIOTECHCORP 2010). The promising PPP for both public and private sectors can be formed through creating a platform by the private sector for the exploration and Research and Development (R&D) of biotechnology industry in order to supply green products or services to the public sector.

There is a need for a paradigm shift for both the public and private sectors to realize that it is critical for them to make full use and strengthen the PPP especially in DRR context in Malaysia. The future of PPP in Malaysia are undeniably progressing towards a better relationship between the public and private sectors especially with the Asia Executive Programs (AEP) organizing workshops to provide better in-depth of PPP for interested parties. There are many short courses held on PPP to help both the government and the private sectors to understand the opportunities and incentives that PPP has to offer aside from discussing on risk allocation and the flexibility through the life of PPP contracts. It is hope that through effective monitoring, timely negotiation and implementation can guarantee smart PPP venture with high commitment from both public and private sectors. It is true that no one can stop natural disasters from occurring but we can prevent them from causing loss of lives and damages in properties. Therefore, through PPP implementations efforts from both public and private sectors could reduce damages during disasters.

PPP for DRR should be built on core business competencies of companies while taking into consideration of what is important for the involved stakeholders. The



success factors of PPP implementation in Malaysia, in top rankings include good governance, commitment and responsibility of public and private sectors, favorable legal framework, sound economic policy and available financial market (Ismail and Ajija 2013). Any policies, rules and regulations on PPP for DRR in Malaysia should be made to fit the practice of the businesses in Malaysia. The government and the private sector must be able to overcome their difficulty in matching their resources and need to be able to spread and reach out to other countries. Therefore, by establishing National Platform, the main challenges of PPP are to increase the awareness of the significances of PPP for DRR and to build an understanding as well as knowledge of such partnership (SriGowri & Kitamoto 2006). However, in order for this to take place, an agreement of the purpose and capacity of the PPP for the DRR and the main concern of working areas need to be settled on a country level.

Overall, the PPP in Malaysia has matured after coming a long way since in the 1980s. Malaysia enjoys many benefits from the PPP implementations and this can be develop further to tackle DRR related matters and expand to a wider range of businesses. The Vision 2020 puts Malaysia on the motivation to deliver high quality infrastructure which can be achieved through the involvement of PPP. The previous experience of successful PPP can also facilitates for more PPPs to be accomplished especially in the DRR areas. In recent years, interest and demand on PPP has started to grow across regions particularly in some countries that facing financial restraint that could benefit from PPP projects. The 33 years of experiences in PPP made Malaysia learnt from past mistakes and to have the upper hand to share their successful PPP implementation stories with other countries especially to other developing countries that could benefit from the best practices accomplished. To-date, Malaysia is examining means to cut down financial risks to the public sector without risking the incentives to the private sector in PPP. This could be achieve through forming a set of public sector indicators when assessing the PPP projects as well as applying groundbreaking PPP that can utilizes the public sector's expenditure (Public-Private Partnership in Transforming Malaysia's Economic Development 2014).

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# Chapter 20

## Challenges and Potentials of Private Sectors in Disaster Management

Rajib Shaw and Takako Izumi

**Abstract** Private sectors, depending on the size and nature of business are differentially involved in the disaster management issues. There are different roles of private sector in response, recovery and preparedness. While Business Continuity Plan [BCP] becomes the key during response phase, innovations in risk reduction becomes important in recovery phase, and development investment is the key to the preparedness activities. To enhance private sector participation, a balanced approach of legislation, incentive mechanism and engagement process are required. Corporate Social Responsibility [CSR], BCP [Business Continuity Plan], and PPP [Public Private Partnership] become important for legislation issues, while business development becomes the key incentive mechanism, and roles of other stakeholders [like civil society, academia, media] becomes important in the engagement process. As the approaches, private sector as a major group can play an important advocacy role in the international level for framework development; can influence policy and legislation development at the national level through participating in the national platform, and can influence in the local decision making through urban related work [on business continuity or safety standards] and rural development businesses.

**Keywords** Disaster legislation • Private sector engagement • Business development • Business continuity planning • Development investment

### 20.1 Introduction

Corporate or private sectors, depending on the size and nature of business, has different types of stakes with the community or the governments. A large construction company where the labor forces come from different rural areas, need to know

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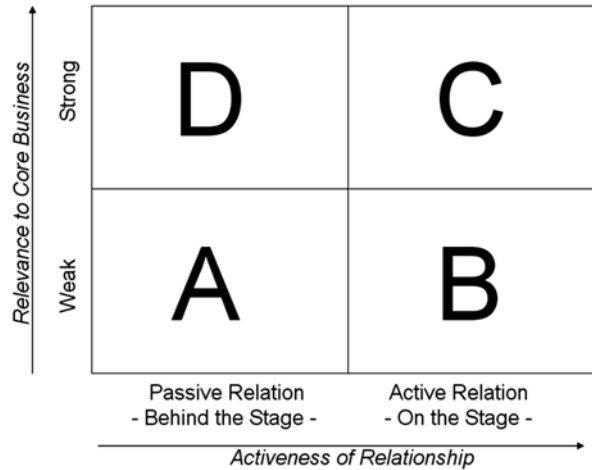
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**Fig. 20.1** Types of interventions of corporate sectors (Source: Shaw 2012)



about the risk and vulnerabilities of the areas of origin of labor forces. This is purely to ensure their business continuity during and post disaster time. In contrast, an IT [Information Technology] company needs a different approach of insuring and re-insuring their assets, including proper back-up system for the data during the disaster. The large manufacture company and smaller suppliers need to strengthen their relations to ensure supply chain management. Miyaguchi and Shaw (2009) and Shaw (2012) categorized the corporate sectors in four different types based on its degree of activeness and relevance of core business (Fig. 20.1).

The vertical axis represents the relevance to core business, i.e. degree to do with making profit and/or investment. The horizontal axis represents the degree of “activeness,” i.e. whether activities are jointly implemented (active involvement), as opposed to being contracted out (non-active involvement). The four categories mentioned in their study are Type A [the companies who provide resources], Type B [network based or cooperative actions], Type C [Disaster as the core business], and Type D [encourages research and investment activities].

Shaw (2012) in his argument of corporate community relationship, has emphasized that following resources of communities are helpful for the small and medium enterprises [SMEs] for having a better relationship with the communities: (1) Knowledge of past disasters, vulnerabilities and capacities, (2) Knowledge of preparedness and mitigation actions, (3) Community organizations and volunteers, (4) Technical knowledge [like masons or skilled labors], (5) Physical resources and equipment/tools, and (6) Local natural resources (bamboo, forests, water, land etc.). It is imperative for middle level industry managers to explore the extent of resources available locally with communities and build partnerships with local communities in order to benefit from local resources for implementation of industry and community level risk reduction activities.

In this chapter, lessons are drawn from different experiences mentioned in previous chapters, and a few generic conclusions are drawn. Tools and methods of private sector involvement are described, followed by detailed description on the mechanisms. Finally, approaches of private sector involvement are mentioned with some future directions.

## 20.2 Tools and Methods for Private Sector Involvement

Private sector involvement in disaster management can be looked at three phases of disaster cycle: Response [during disaster], Recovery [post disaster], and Preparedness [pre-disaster risk reduction]. Figure 20.2 shows the different phases of disaster cycle and the key issues related to each phase.

### 20.2.1 Response Phase

The key to response phase is business continuity, which ensures supply chain management, and the business losses can be covered by insurance. Therefore, the response phase has following tools/methods.

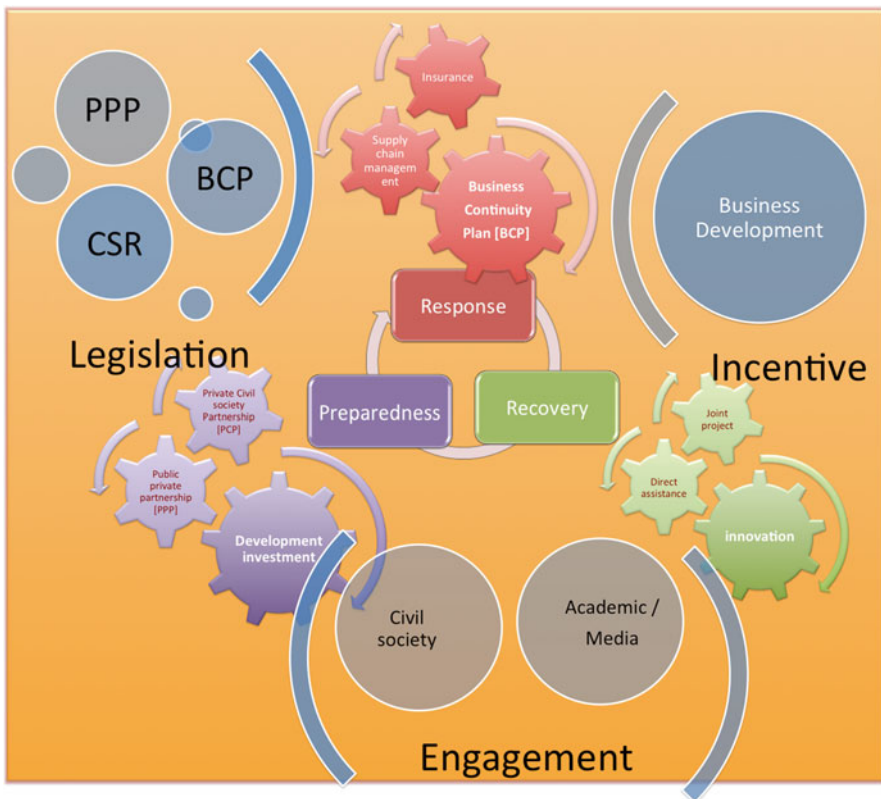


Fig. 20.2 Tools and mechanisms of private sector involvement in disaster management

### **20.2.1.1 Business Continuity Plan [BCP]**

PDCA [Plan-Do-Check-Action] cycle is the basic step of BCP. Based on the asset values, local characteristics, the companies need to develop their own BCP. For a local company, which depends more on the local communities, need also to focus on corporate community interaction for their own BCP. Thus, the BCP is closely related to CCP [Community Contingency Plan], and DCP [District Contingency Plan]. During the emergency time, the companies, especially the SMEs [small medium enterprises] need to follow the following steps (APEC Guidebook 2013): (1) Evacuation and rescue (2) Setting up Emergency Operation Center, (3) Safety Confirmation of employees (4) Stabilizing the situation and prevention of secondary damage (5) Survey of damage (6) Assets protection (7) Safety confirmation of employees' commuting, and (8) Gathering and sharing information of incident / damage.

### **20.2.1.2 Supply Change Management**

In the age of globalization, businesses are inter-connected. Thus, impact on one company can affect or stop the production of other companies. This is especially relevant for the production sector. The Thailand Flood of 2011 has shown it very vividly that how the impacts on SMEs have affected the production of major Japanese companies. Therefore, it is for the sake of business continuity that the supply change management needs to be ensured. Supply change management needs an integrated approach of infrastructure related issues as well as legal and institutional provisions from the local as well as national governments.

### **20.2.1.3 Insurance**

Insurance sector is an important private sector business, which helps in restoring losses during the disaster. There are different types of insurance, some are private, some are state controlled, and some are with private public partnership. Insurance can be a business opportunity, especially in the non-explored rural and semi-urban areas on different assets, like houses, assets and crops. Insurance of small and medium sized companies are also important for the business continuity and maintaining supply chain management.

## **20.2.2 Recovery Phase**

Recovery phase can be short term or for a prolonged period, depending on the nature and scale of disaster. There are different scopes of private sector involvement during recovery period.

### **20.2.2.1 Innovation**

The recovery is a development opportunity, where there are different scopes of innovation, be it building materials or other technology driven innovations. Structural dimensions like roads, bridges, embankments, drainage, and buildings etc., and nonstructural dimensions like existing vulnerabilities and capacities, rules, regulations, planning, skills, knowledge, awareness, community support systems, social transactions in terms of reciprocity, trust and exchange of labor and skills etc. are essentially to contextualize and package in form of recovery planning. In the GET [Governance Education Technology] recovery framework (Shaw 2013), innovation is very much related to technology development, especially focusing on implementation oriented technology as well as process technology. This can be considered as potential business opportunity for private sectors.

### **20.2.2.2 Direct Assistance**

Private sectors are often associated with direct assistance to the affected communities. In several disaster cases, the private sectors often conduct Corporate Social Responsibility [CSR], as part of their charity policy. In some countries, CSR is mandated by regulations, and in several disaster cases like cyclone Nargis of Myanmar (2008), the government mandated the corporate sectors to conduct area based recovery programs. The recovery is a period, when the involvement of the private sector can have higher visibility, which is linked to future business promotion. A well aware and sensitive private sector, with proper implementation of innovative technology can also contribute to build a resilient community and habitat in post disaster period.

### **20.2.2.3 Joint Project**

The other alternative approach is joint project implementation with other partners like government, non-government and local communities. In some cases, private sectors are also involved with international and/or bilateral donors for recovery process. This is different from the CSR activity pointed in earlier section, and is a for-profit activity, as well as new business opportunity. However, as mentioned earlier, a well aware and sensitive private sector can contribute significantly to the sustainable recovery process.

## **20.2.3 Preparedness Phase**

This is the most challenging phase of private sector investment, which needs more emphasis. The key for preparedness is the approaches for risk reduction and resilience building. Here, the private sector involvement needs to be linked to be development processes.



### **20.2.3.1 Development Investment**

Development investment is a business opportunity for the private sector both in rural and urban areas. As exemplified in the Bangladesh example that, the *Gazi* tank, which can hold water for a longer duration is of extreme importance for the coastal communities in the saline rural areas. The sanitary toilet or roof rain water harvesting are some of the areas, where private sector involvement becomes crucial in the specific development sectors like water, sanitation, basic livelihoods and food security. These are regular development issues, which are linked to risk reduction in longer term. To engage private sectors, it needs some hand-holding and partnership with the local governments or related ministries or in some cases with the international NGOs. When the private sector finds a market in the rural investment, it can build on its own marketing plan to explore and expand.

### **20.2.3.2 Public Private Partnership [PPP]**

In several developing countries, PPP becomes a more viable model for infrastructure development. To include the disaster risk reduction elements [like seismic strengthening for building a bridge in a high seismic area] in the infrastructure development projects, there needs to be clear guidelines and legal mechanisms from the government sectors. PPP is also found to be relevant for promoting insurance sectors in some countries.

### **20.2.3.3 Private Civil Society Partnership [PCP]**

PCP is another collaboration model, where private sector can work closely with the civil society [both local and international] to enhance community resilience. In some countries, networks of PCP is found to be effective in influencing disaster management regulations, as well as lobbying for importance of disaster risk reduction measures in different government sectors.

## **20.3 Mechanisms of Private Sector Involvement**

Three key issues are considered to be important for private sector involvement in disaster management: (1) Legislation, (2) Incentive, and (3) Engagement. These issues create the base or foundation for effective private sector involvement (Fig. 20.2).

### **20.3.1 Legislation**

There needs to be clear legislative measures for different ways of private sector involvement. Some of the countries have clear CSR law, which focuses or urges the private sectors to donate certain percentage of the profit to development activities, especially for the needy communities. This can be used properly to enhance resilience in urban informal or rural vulnerable sectors. BCP can also be mandatory through legal provision in the high-risk areas, which will ensure supply chain management during disasters. PPP, if mandated by law, can also be considered as a transparency mechanism.

### **20.3.2 Incentive**

Private sectors need economic and social benefit for its involvement in disaster management activities. Economic incentive, business development and profits are the basic requirement for sustainable engagement of private sector. Social incentives can be enhanced through participation in CSR activities, and raising social profile of the companies.

### **20.3.3 Engagement**

Disaster management and risk reduction needs multi-stakeholder approach. Engaging private sector is a process-based approach, where, apart from the government sector [which is primarily responsible for legislative framework], civil society, academic community and media can play important roles. Continuous engagement in different phases of disaster cycle, and learning from previous disaster experience is an important issue, which needs to be kept in mind for sustainable partnership with private sectors.

## **20.4 Approaches of Private Sector Involvement**

To enhance the above-mentioned tools and mechanisms, three levels of approaches are required for effective use of private sector in disaster management. Figure 20.3 shows a schematic diagram of this at three levels: global and regional, national and local.

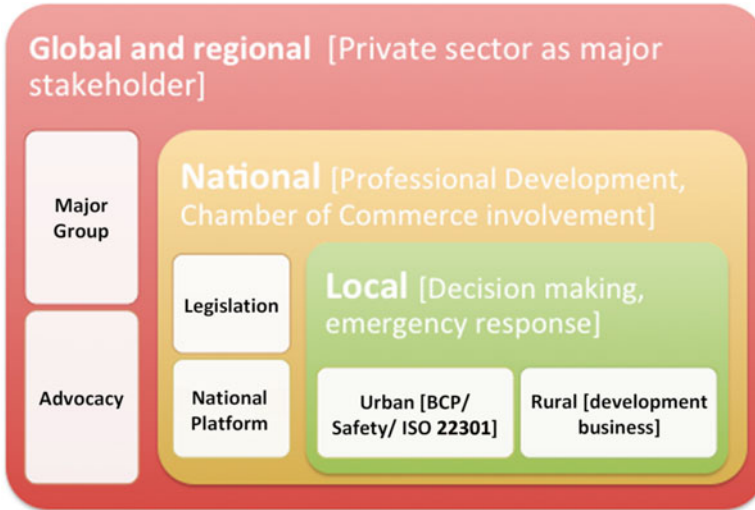


Fig. 20.3 Three level approach of private sector involvement

### 20.4.1 *International and Regional Level*

At the international and regional level, private sector has emerged as a major stakeholder group, and is working closely with the country governments, UN ISDR [International Strategy for Disaster Reduction], other stakeholder groups to develop and formulate post-2015 agenda of disaster risk reduction. The major group plays an important role in advocacy in different levels, especially to the governments for promoting sustainable investment friendly environment, which can cope with adverse impacts of natural disasters.

### 20.4.2 *National Level*

At the national level, private sector roles have been rather sporadic. In some countries, very good partnership is observed in terms of strong collaboration with the national platforms, which has been found to be effective in policy advocacy at national level, especially in formulation of legislation. Professional development at the national level among the private sector becomes important, especially for BCP certification. The legislation can facilitate the professional development process, where certain number of BCP experts would be required in each private sector depending on nature and scale of the company. A strong link of the national disaster risk reduction platform and the chambers of commerce is required to make a sustainable system at the national level.

### **20.4.3 Local Level**

At the local level, there can be differential approaches in urban and rural areas. In urban areas, where most of the companies are based, it is required to develop a system where private sector can participate in the decision making to enhance urban resilience along with the city government and other stakeholders. Urban safety and resilience should be key of the partnership, where urban managers along with the private sectors need to be encouraged to enhance their safety standards through professional development training courses like ISO 22301 [Social security and business continuity management system]. In case of rural areas, the approach should be more as promoting development business, where the private sector needs to be linked to different development issues through innovative business models.

## **20.5 Private Sector Involvement Beyond 2015**

### **20.5.1 Private Sectors in International Framework**

In the UN ISDR led global actions of disaster risk reduction in the post 2015, the private sectors have been very active in influencing global framework in putting their contributions to the WCDR [World Conference on Disaster Reduction] process. The Private Sector Partnership [PSP] of the UN ISDR have identified following five essentials as “Call for Action: Five Essentials for Business in Disaster Risk Reduction” (UN ISDR 2013):

1. Promote and develop public-private partnerships for DRR to analyze the root causes of continued non-resilient activity.
2. Leverage sectoral private sector expertise and strengths to advance DRR and mitigation activities, including resilience and response.
3. Foster a collaborative exchange and dissemination of data: Share information on assessment, monitoring, prediction, forecasting etc. between the public and private sectors.
4. Support national and local risk assessments and socio-economic cost-benefit analyses and capacity-building, and demonstrate opportunities where resilience building and DRR is a sound economic strategy, with attractive returns and competitive advantages.
5. Support the development and strengthening of national and local laws, regulations, policies and programmes that enhance DRR and improve resilience.

A closer look at these five essentials says that through the WCDR process, private sector asks the country governments on the need of disaster risk reduction approaches in the investment. While this is important to sensitize government to develop and provide appropriate environment for safer and resilient private sector investment, it is also important for the private sectors to internalize the risk reduc-

tion issues in their own policy and investment plan, which is often found missing. There needs to be a clear impact evaluation on the role of private sector involvement in post 2015 disaster risk reduction agenda. This is especially important in the countries, where private sectors are more active than the public sector, and where they can reduce the dependency only on the government efforts.

### ***20.5.2 Disaster Issues as Core Business, and Focus on SMEs***

In the international framework of the private sector group, a few selected multinational companies are involved. However, for many countries, the challenges remain with the small and medium enterprises [SME], especially how they internalize the risk reduction approaches. The other challenge is to focus on the risk reduction as the core businesses for certain sectors. As exemplified with some of the SMEs in Bangladesh case, the initial support from the government and or international NGOs or academic institutions can make a lot of difference in changing mind-set of the SMEs and providing new business opportunities with risk reduction business becomes core of their operation. There are some good examples from Japan, like making “disaster response memorandum” [*Saigai Kyotei* in Japanese] between the government and some SMEs, which can mobilize their resources immediately during the time of disaster. This also gives an institutional mechanism for the private sector to act quickly during the emergency.

In case of the SMEs in the overseas countries, cutting cost becomes the most important issues for most of the cases. Many SMEs think that disaster resilience need additional cost, and it is often not permitted without approval from their head offices. Therefore, proper incentive based approaches need to be promoted either by the country governments or city governments or by the by the chamber of commerce in respective countries or sometimes by the larger global companies, who are related to these SMEs through the supply chain.

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