International
Recovery Platform

Guidance Note on Recovery

PRIVATE SECTOR

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IRP was established following the Second UN World Conference on Disaster Reduction in Kobe, Hyogo, Japan, in 2005 to support the implementation of the Hyogo Framework for Action (HFA) by addressing the gaps and constraints experienced in the context of post-disaster recovery. After a decade of functioning as an international source of knowledge on good recovery practice, IRP has been focusing on more specialized role as an "international mechanism for sharing experience and lessons associated with build back better". In the context of the Priority Four of the Sendai Framework for Disaster Risk Reduction 2015-2030, IRP seeks to strengthen its global position as a recognized provider of information, including lessons and best practices in the field of build-back-better in recovery, rehabilitation, and reconstruction. Its vision, mission, and goals reflect this specific focus.

Cover photo: © Temporary Shopping Village in Minami Sanrikucho one year after Great East Japan Earthquake 2011 (IRP)

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Introduction

Purpose

There is currently an abundance of documents, plans and policies that address common issues faced in the mitigation, preparedness, response, and relief phases of natural disaster management. Yet for disaster recovery planners, policy makers, and managers, there is no cohesive documented body of knowledge. It is conceded that preventive measures are extremely effective for reducing the more costly efforts of disaster response and recovery. In the post-disaster situation, the availability of knowledge products reflecting past practices and lessons learned is critical for effective and sustainable recovery. Unquestionably, a wealth of experience and expertise exists within governments, businesses, NGOs, and organizations. However, majority of this knowledge is never documented, compiled, nor shared. Filling this knowledge gap is a key objective of the International Recovery Platform and the *Guidance Note on Recovery: Private Sector* is part of the ongoing effort to document, collect and share disaster recovery experiences and lessons. IRP hopes that this compilation of the successes and struggles of past experiences with private sector disaster recovery will serve to inform the planning and implementation of effective recovery initiatives in the future. The aim is not to recommend a specific course of action, but rather to place before the reader a menu of options.

Audience

Like others in the Recovery Guidance Note series, the *Guidance Note on Recovery: Private Sector* is intended primarily for the use of local, regional, and national government policymakers, planners, operational staff, and others interested or engaged in facilitating a more responsive, sustainable, and risk reducing recovery process. At the same time, IRP recognizes that the information contained herein is of great value to private sector entities and the many other nongovernmental partners working together to build back better. Finally, this document can help micro, small, medium, and large enterprises to formulate their pre and post-disaster recovery planning and operational efforts, enabling them to see what options exist, what worked well, and what might have achieved better results if modified.

Content

The *Guidance Note on Recovery: Private Sector* draws from the wider body of knowledge on private sector recovery and from documented experiences of past and present disaster planning and recovery efforts. Materials have been collected through desk review and direct consultations with relevant experts. These experiences and lessons learned are classified into the following four major issues:

1. The Disaster Recovery Role of the Private Sector
2. Engaging the Private Sector in Disaster Recovery
3. Public Sector Support of Private Sector Recovery
4. Public Support of Privately Owned/Operated Infrastructure

The materials are presented in conjunction with relevant case studies. Analysis of many of the cases, which highlights key lessons and notes points of caution and clarification, is provided. The case study format has been chosen in order to provide a richer description of recovery approaches, thus permitting the reader to draw other lessons or conclusions relative to a particular context.

While it is recognized that certain activities or projects presented in this Guidance Note may have met with success in the context described, the reader must keep in mind that there is no guarantee that the same or similar activities will generate equal results across all contexts. Cultural norms, socioeconomic conditions, gender relations, and myriad other factors can and do influence the process and outcome of any planned activity. Therefore, the following case studies are not intended as prescriptive solutions to be applied, but rather as experiences to inspire the reader, to generate contextually relevant ideas, and where appropriate, to be adapted and applied in practice.

There exist a number of published documents that recovery planners will find invaluable in building their efforts. It is our intention for this guidance note to complement rather than replace or duplicate these resources. To the extent possible, this document is consistent with these existing publications.

Chapter 1

Private Sector Recovery

Investigations conducted in the aftermath of recent mega-disasters, including the Indian Ocean Tsunami (2004), the Great East Japan Earthquake (2011), and Hurricane Sandy (2012), have indicated that the nature of private sector recovery is changing. Risk management is certainly not a new function for the sector, and evidence dating as far back as Hammurabi's reign (1792-1750 B.C.) shows businesses taking steps to prepare for and militate against adversity. In the modern record, we have witnessed businesses contributing to community, national, and global disaster relief and recovery through philanthropic cash and in-kind support. Most recently, this sector has indicated its willingness to fully embrace disaster risk management, thereby assuming a more central and operational role in community disaster relief, response, recovery, and reconstruction.

Document Purpose

This guidance note is designed to address the following needs:

1. To present to users a background on disaster risk management in the private sector, beginning with an overview of private sector risk and vulnerability. Many aspects of recovery in the context of the private sector are distinct from those that exist or occur in public sector recovery, and therefore delineation of contextual variance becomes necessary. Such knowledge is key to planning for future recovery needs, mitigating consequences before disasters happen, and addressing future vulnerability and risk in the event that a disaster results in private sector disaster recovery activities.
2. To summarize the impacts typically sustained by private sector entities. An understanding of the direct and indirect impacts of disasters on businesses enables more effective recovery planning and operational support for those entities charged with such tasks including the private sector entities themselves. In this regard, the guide helps to frame the overall scope of work that will be or is faced by planners and decision-makers focused on private sector recovery.

3. To introduce recovery targets according to which private sector recovery capacity and/or operations may be measured, and the obstacles that often limit or prevent success. These targets may be thought of not so much as a roadmap but rather as the endpoint to which all efforts might strive to reach. It is through the identification of outcomes that the development of measurable goals and objectives becomes possible.
4. To introduce the key recovery issues and themes that influence, shape, or determine the actions and decisions made by private sector recovery stakeholders, presented in the context of case-based experiences.

Document Scope

This guidance note provides guidance intended to enable public sector support of private sector recovery, and details several actions and activities that private sector entities can perform to support their own recovery and that of the communities where they operate. This guidance note is unique within the Recovery Guidance Note series in that the private sector is both a recipient and a source of recovery support, and as such an understanding of the nature of both of these roles is a prerequisite to effective recovery management.

Document Applicability

This guidance note has been developed to inform the pre and post-disaster recovery planning decision-making processes, not to direct them. It is therefore our intention that this document be viewed by the user not as instruction but rather as a menu of options from which an appropriate response may be selected to address one or more recovery related needs. The materials contained within are driven by and presented in accordance with actual cases in practice documented by private sector disaster risk management stakeholders that have been impacted by or have prepared for disasters during the last decade. Our approach is sensitive to the existence of the unique nature of pre and post-disaster conditions in each distinct event whether related to hazard, economic, governmental, organizational, cultural, or otherwise and as such this document applies no judgment or analysis on performance. Our intent is merely to provide users with access to a collective record of experience from which they may draw their own selective conclusions or parallels from among the many chronicles presented. From these stories, best practices and lessons learned gain renewed value, and the obstacles that had been previously encountered serve to enable the aversion of similar trouble in the future. In the spirit of philosopher George Santayana, this document enables us to remember the past that we will not be condemned to repeat it.

The Private Sector Defined

Approximately 85 % of all investments worldwide stem from the private sector (UNISDR, 2012). Likewise, the majority of most nation's infrastructure systems and networks are owned and operated by private sector entities (Hart, 2007). When disasters occur, the bulk of physical damages and economic losses are incurred by the private sector as well. Although the function of disaster risk management is traditionally examined within the context of the public sector role, there unquestionably exist innumerable opportunities for inclusion of private sector stakeholders in community risk reduction, pre-disaster recovery planning, and post-disaster relief, recovery, and reconstruction.

Significant variance in the use of the term "private sector" persists both within the common lexicon and specific to disaster risk management practice and literature. When considered in its familiar form, which is typically used as a counter to governmental entities (i.e., "public and private sector entities"), the private sector is a grouping that includes all entities not owned or otherwise controlled or operated by a government or government sanctioned body. In addition to profit making businesses, this umbrella categorization groups for-profit businesses with nonprofit organizations, religious institutions, philanthropic entities, volunteer organizations, and others (Armand, 2007).

A World Bank report focused on global health systems uses a similarly broad description of the private sector in stating that, "[t]he private sector is defined to include all actors outside government, such as for profit, nonprofit, formal and non formal entities. This broad definition includes service providers [and] non-governmental organizations" (World Bank, 2011). A definition used by the Inter-American Development Bank (IADB) in a report on job creation parallels that of the World Bank in stating the following (Mazza, Paris, Màrquez, and Ripani, 2005):

> *The private sector is defined as all economic activities, profit and nonprofit, that do not involve production by the public sector. This definition includes all for profit firms regardless of size, activity (goods, services, or financial), or location (urban or rural). It also includes institutions specifically established to serve the private sector such as industry associations.*

There are, however, more focused usages of the term. For instance, a United Nations report titled Guidelines on Cooperation between the United Nations and the Private Sector describes the private sector in a more limited fashion as being inclusive of the following three distinct groups (UN, 2009):

1. Individual, for profit, and commercial enterprises or businesses
2. Business associations and coalitions (cross industry, multi-issue groups; cross industry, issue-specific initiatives; industry-focused initiatives)
3. Corporate philanthropic foundations

Even among UN System agencies, there are differences in the delineations of which entities are considered a part of the private sector. FAO defines the private sector to include, "enterprises, companies or businesses, regardless of size, ownership and structure". This definition, which is food industry specific, states that the entities covered by the distinction range in their scope from "farmer organizations, cooperatives and SMEs to the largest international corporations", and include "private financial institutions; industry and trade associations; and consortia that represent private sector interests". The FAO definition makes a qualification that academia, research institutions, and philanthropic foundations are *not* considered to be a part of the private sector (FAO, 2015). At the same time, a United Nations Industrial Development Organization (UNIDO) bulletin defines the private sector as including (UNIDO, 2013):

1. Individual, for profit, commercial businesses or companies, including SMEs and cooperatives, whether national or multinational
2. State-owned enterprises to the extent that they behave or operate as commercial businesses or companies
3. Corporate foundations, directly funded and/or governed by business
4. Business associations, trade and/or industry representations, and business-led groups or initiatives aimed at promoting corporate citizenship

By expanding the suite of stakeholder group categories, it is possible to better isolate the distinct characteristics of organizations, and therefore better tailor plans and policies to their needs and capabilities. This is often the case in the context of disaster risk management, wherein stakeholder groups differ significantly in their roles and responsibilities. The following categories are commonly encountered in the disaster risk management literature (UNISDR, 2015; UNISDR, 2015b):

- International Organizations and International financial Institutions
- Governmental (Public Sector) Organizations
- Nongovernmental Organizations (NGOs) or Nonprofit Organizations (NPOs)
- Private Sector Organizations
- Academic and Research Institutions
- The Media
- Individuals and Households

In this context, the primary distinguishing factor that differentiates the private sector from other listed groups is the commercial interest common among all

members in that grouping. It is such a distinction that is used to define those entities included within the private sector as referred in this document. This approach matches one used by the Kings College of London Humanitarian Futures Programme, which administers the *Private Sector Challenge* (to better engage the private sector in disaster risk management efforts). The *Challenge* documentation aptly describes the private sector as being, "that part of the economy that is owned and controlled by individuals and organisations through private ownership" (Humanitarian Futures, 2013). In this manner, the private sector includes (but is not limited to) businesses, companies, cooperatives, corporations, firms, franchises, partnerships, multinational corporations, proprietorships, and sole traders. In order to address the broad spectrum of national governance systems and structures, this is to include state-owned enterprises serving state capitalism functions and commercial activity within the informal sector.

Among businesses, distinctions are often made between small, medium, and large enterprises. Enterprise size can be a factor of the number of employees, the annual revenue, or a combination of both. The distinction *micro-enterprise* is used to describe small businesses that have 10 or fewer employees. Small enterprises are typically considered to be those employing fewer than 50 people, while medium enterprises employ 51 to 250. Large enterprises are those whose employees number more than 251. In some instances, multinational businesses are so large that they rank among national governments in terms of their employees, assets, cash flows and influence. Small and Medium Enterprises (SMEs) are typically referenced in conjunction given the number of issues and characteristics they share. As a group, SMEs account for approximately 90% of businesses worldwide (IFC, n/d) and as great as 97% of businesses in some regions (APEC, 2015). As a factor of employment, SMEs represent only about 50% of all private sector employment despite their prevalence. The remaining half of all employment exists within the grouping of large enterprises. Despite their relatively smaller size, SMEs represent a significant portion of the global economy, and are crucial to community viability in light of the goods and services they offer.

Private Sector Vulnerability

Vulnerability is defined as a measure of propensity (of an object, area, individual, business, group, community, country, or other distinction) to incur the consequences of a hazard (Coppola, 2015). It is often considered the opposite of resilience, which is the propensity or ability to resist the consequences of a hazard and/or recover from any impacts sustained. Mere *exposure* to a hazard need not translate to disaster if vulnerability is well-managed. Vulnerability affects structures, systems, and resources, and can differ significantly between hazard types even for the same entity.

Among the myriad community stakeholder groups, the private sector is perhaps the

most diverse in terms of its membership. However, from the micro-enterprise or sole proprietor to the multinational corporation, the need to maintain consistent and reliable revenue streams exists as a common thread. It is this shared goal that has served as the principal motivator for entities that have sought to reduce hazard vulnerabilities. A business' profit potential and perceived value are both contingent upon successful management of risk and likewise vulnerability. Businesses address asset and operational vulnerabilities by applying a range of industry tested methods, many of which are guided by internationally accepted standards of practice.

Trends in business disaster readiness and recovery planning efforts are indicative of how private sector entities perceive their hazard vulnerability. Until very recently, response and recovery planning focused on data security and facilities protection. Since the turn of the century, and predominantly as a result of mounting disaster costs across the sector, many businesses have gained a better appreciation for the full extent of their vulnerability (which is an extension of the vulnerabilities exhibited by operational and management staff, of the communities where the businesses are located, and of the global economy itself).

While the vast majority of large enterprises maintain an institutionalized risk management capability, most SMEs have done far too little to address their vulnerability drivers. Most SMEs lack the capacity, resources, or knowledge required to conduct risk reduction activities, including Business Continuity Planning (BCP), Enterprise Risk Management (ERM), Continuity of Operations Planning (COOP), Disaster Recovery Planning (DRP), or simply the purchase of insurance. Many businesses that do utilize insurance coverages view such purchases as a sufficient protection. It is often a simple lack of understanding about risk and vulnerability that presents the most significant obstacle to business resilience including reliance on old data that fail to reflect changing hazard trends. They are also more dependent on the actions of others, including landlords, lenders, and suppliers, in areas that influence risk. Finally, they are less likely to be able to absorb the loss of employees or customers, even for short periods (UNDP, 2013). Since vulnerability is collective within sectors, communities, countries, and other groupings, deep rooted vulnerabilities often persist even for large enterprises that have taken measures to address them on the enterprise level.

Vulnerabilities are the result of one or more physical, social, economic, and/or environmental factors. The geographic location of a facility over a seismic fault, for instance, is an example of a physical vulnerability, while the presence of an unstable government is an example of a social vulnerability. Within this context, there are a number of vulnerability drivers that are unique to or prevalent among private sector entities. These include:

Inadequate Insurance Access and/or Penetration

For most companies, especially Micro-Enterprises (MEs) and SMEs, the transfer of financial risk associated with the disaster damages and the losses associated with business interruption represents a vital lifeline. Businesses may have little access to capital reserves or loans, and may not qualify for or have the opportunity to receive governmental and philanthropic humanitarian assistance. Insurance coverage can provide a fast and reliable source of funding to cover repair and reconstruction costs, staff salaries, and other financial obligations at a time when revenue is depressed or altogether ceased. Private sector insurance availability varies by country, as does the penetration of the insurance market. Global insurance broker Lloyd's has derived country by country insurance adequacy measures that compare insurance penetration rates to expected disaster losses (both as a percentage of GDP), and they show that most low-income countries remain woefully underinsured in light of their probable financial losses (Lloyd's, 2012). Larger enterprises may have the ability to self-insure and are therefore not nearly as dependent on local insurance markets as are MEs and SMEs.

Overdependence on Insurance

Insurance is a highly effective means to limit the financial costs associated with a disaster, but it does nothing to limit actual physical damages in a disaster. For many businesses, reimbursement of the costs of damaged equipment may ultimately prove deficient to enable full recovery given that access to replacement resources or repairs does not immediately exist. A disaster impacted firm may find that they have recuperated all of their capital losses related to facilities and equipment damage, only to find that all of their customers have found alternate suppliers. Kataria and Zerjav (2013) write that, "Insurance can provide protection from extensive cost implications, such as damage of premises or equipment or even business continuity cover in some cases, but it will not cover intangible items such as customers' goodwill, decreased productivity, low employee morale, increased absenteeism, stress, worker unrest or increased workers' compensation claims". Business resilience and likewise recovery capacity is dependent upon a company's ability to resume operations in a manner that is timely enough to retain customers, protect employee salaries, maintain upstream supply chain requirements (e.g. have the capacity to accept and utilize parts and resources that have been ordered), among other needs. Insurance payments may also be insufficient to address the mitigation actions required to limit or eliminate risk and vulnerability factors inherent to business facilities and operations. As such, insurance that exists in the absence of a balanced recovery capacity that includes plans and risk reduction measures is unlikely to support effective recovery.

Case 1: Thailand Flooding, 2011

Topic: Overdependence on Insurance

Most of the large companies and many of the SMEs affected by the 2011 flooding in Thailand had maintained flood eligible insurance coverage to address facility damage, replacement of equipment and other property, and business disruption. However, not all were prepared for the loss of market presence sustained when longer than expected delays in product delivery to customers occurred. Several businesses that had been in the midst of preparations for the release of new products when the flood struck were ultimately unable to meet their previously-established launch dates. Japanese electronics manufacturer Sony was one of the companies that experienced sustained flooding at its Thailand production facilities, which resulted in the delay of several planned product releases including its high end NEX-7 camera which was delayed until March of the following year.

For many firms, resumption of operations was further stymied because several insurers refused to renew flood policies until the Government of Thailand released a comprehensive plan to reduce future flood risk in the affected areas. The event became an opportunity for many companies to reassess their reliance on insurance and shift the balance towards risk reduction versus risk transfer mechanisms.

Source: Bland, Ben and Robin Kwong. 2011. Supply Chain Disruption: Sunken Ambitions. Financial Times. November 3. http://on.ft.com/1E6ffgO

Lessons:

- Insurance should be a stop gap for issues that hazard mitigation measures cannot address (e.g. flood proofing facilities, relocating facilities out of the floodplain, or elevating flood prone facilities)
- Delays in establishing new land use policies and releasing spatial risk information can impact the availability of private sector insurance

Supply Chain Complexity and Rigidity

Business enterprises of all sizes have become more intricately linked as the global supply chain[1] has grown in terms of its complexity, efficiency, and reach. For many manufacturers, supply chains are interconnected webs formed by upstream

[1] Supply chains are systems of organizations, people, activities, information, and resources involved in moving products or services from suppliers to markets and ultimately to customers. Supply chain activities transform natural resources, raw materials, and components into finished products that are delivered to end users.

sourcing of components and raw materials from multiple suppliers in different countries and the downstream sale of processed assembled parts, reprocessed supplies, or finished products out into the global marketplace. Disruptions of or changes to global supply chains in the event of an emergency or disaster are costly not only to the businesses that are directly impacted, but also for those upstream and downstream enterprises and entities depending on such linkages for their own production and sales. Impacts to the ports, transportation infrastructure, and government support systems that enable international land, sea, and air freight to move are equally if not more serious in terms of the scope of their impact. The 2011 Great East Japan Earthquake and the 2011 Thailand Floods occurred in relatively close succession and together drastically impacted production in the electronics, automotive, and other industries resulting in worldwide shortages of products and parts. These events were perhaps the most revealing thus far in terms of the extent to which inflexibility in the global supply chain can cause widespread economic impacts far beyond the immediately impacted areas. Manufacturers located far from disaster zones, including in other global regions, may endure weeks and possibly months of ceased operations simply because they lack redundancies and other protections in their upstream and downstream supply chains. Unfortunately many entities have a limited understanding of their supply chain reliability and therefore take little or no action to buffer against interruptions.

Case 2: The Great East Japan Earthquake, 2011

Topic: Supply Chain Rigidity

Several Japanese automakers were forced to cease operations following the Great East Japan Earthquake, including a number that were in areas that had received no direct physical damage from the event. The principal problem was that over 500 suppliers of automotive parts that were located in the impacted areas had ceased operations, and there were few redundancies in place to manage the situation. The problem was exacerbated by the fact that many of the impacted suppliers made parts that were made nowhere else in the world and as such there was no way that the impacted automakers could otherwise source the needed parts.

While several of the larger Tier 1[2] suppliers were able to quickly recover from the event and resume the production and delivery of parts, lower tier parts makers did not have the ability to recover as quickly. The diminished capacity of these lower tier parts makers served as a bottleneck in the production process for the companies they supplied. When just months later, a similar problem for automakers was identified with the rising flood waters in Thailand, several automakers acted proactively and joined together in helping several automotive

[2] *Tier 1* suppliers are direct suppliers to an original equipment manufacturer (OEM) while *Tier 2* suppliers are key suppliers to Tier 1 suppliers, and do not supply a product directly to OEM.

parts suppliers in the affected areas to relocate their operations to lower risk areas.

Source: Shiga, 2015

Lessons:

- Supply chain vulnerabilities have industry wide impacts, and should therefore be addressed in a cooperative, non-competitive manner
- Businesses can assist each other both up and down the supply chain stream
- Supply chain effects reach far beyond the area impacted by the disaster event

Overdependence on Weak Infrastructure

Private sector entities utilize a majority of the services provided by major utilities and other infrastructure, including approximately 90-95% of municipal water supplies, and more than 80% of electricity (Bredenberg, 2012). Businesses also depend to varying degrees on natural gas, communication, transportation (roads and bridges), sewerage, and other utility services. Most enterprises are unable to function when confronted with an interruption of any of these services for more than a brief period and some, such as banking and healthcare, are unable to tolerate even the shortest breaks in service. A 2003 power outage that struck 50 million people in Canada and the United States resulted in over USD6 billion in economic costs to those two countries, affecting businesses, water supplies, transportation systems, communications systems, food supplies, and much more. While businesses can reduce their dependence on some components of infrastructure by incorporating redundant systems (e.g. power generators), not all redundancies are possible or cost effective (e.g. transportation). Businesses enterprises and facilities that are dependent on weak infrastructure are likely to experience losses and/or damages in the event of a disaster, even if the physical structures involved are strong and/or are not directly impacted by the hazard.

The increase in distributive power systems and localized renewable energy is diversifying power options and reducing vulnerabilities to some extent, but opportunities for disconnecting from transmission and distribution networks remains limited. Even where renewable energy systems are in operation, their connectivity to the grid limits resilience in that when the grid is knocked offline there is insufficient stability to maintain the availability of electrical power.

Case 3: India Power Outages, 2012

Topic: Dependence on Weak Infrastructure

India was struck by two consecutive power outages on July 30 and 31 of 2012.

Historically, these events represent largest and second largest power failures in terms of impacted populations (300 million and 670 million people respectively). The area affected was almost 2,000 miles in diameter. Because much smaller localized power outages are common throughout India, most businesses had access to backup power systems including diesel fuel generators. It was later determined that excess demand brought on by drought conditions had led to the failures. What remains unclear despite the regularity of these repeated short-term incidents is how well business' backup power systems would manage in the longer term outages that occur when infrastructure networks incur physical destruction on account of external physical forces (e.g. earthquake or typhoon). Fuel shortages would quickly render such systems inoperative.

Source: Yardley and Harris, 2012; Acclimatise, 2012

Lessons:

- Businesses unaccustomed to infrastructure failures may have intrinsic vulnerabilities that only come to light during major events
- Redundant systems put in place to address extensive risk provides resilience for intensive risk events, but those benefits may not apply in extended infrastructure outages or failures

Staff Vulnerability

Businesses are only as resilient as the individuals they employ. Many companies take great strides to protect their staff while they are at work, performing their jobs. Yet very few take action to ensure their employees are resilient to disasters once they return home. This includes many of the standard personal disaster preparedness measures, such as: protecting one's home and possessions from hazard risk; making family communication, evacuation, and reunification plans; ensuring adequate stores of food and water are maintained; and finding alternate means for childcare or work travel. Even when a company's own facilities escape any direct physical impacts, it is often the case that staff are confronted with damage or destruction to their homes, the prospect of being unable to meet the life sustaining needs of their families (including care for children or for adults with functional needs), or simply an inability to get from their home to their place of employment. If employees with critical responsibilities or simply a large percentage of all employees are unable to report to work, it is unlikely that a business can function. Businesses minimize their own recovery needs by providing employees with preparedness training and support in advance of a disaster and having the systems in place to assist them in a disaster's aftermath. It is difficult to accurately gauge staff vulnerability given privacy concerns and the tendency of individuals to believe they are more prepared than they actually are.

Topic: Employee Resilience

Wood products supplier Weyerhaeuser is a large business with sales exceeding USD8.5 billion in 2013. The company, which employs over 41,000 people in 18 countries, promotes a culture of safety, environmental stewardship, and corporate responsibility. Company literature states that, "We believe no business can survive, let alone prosper, unless it addresses the needs of all who have a stake in its operations". When the Gulf Coast of the United States was impacted by Hurricane Katrina in 2005, 40 of Weyerhaeuser's plants and almost five thousand employees were in the affected area. More than 250 employees were directly impacted by the storms, including deaths of family members, total losses of their homes and property, and other structural losses that mandated recovery.

In response to the event, the company established a senior management committee to coordinate policy decisions, provide company-wide direction on recovery support and donations, and to offer guidance for employee-initiated assistance to communities and individuals. This committee immediately authorized the donation of cash from company accounts and building materials that existed in inventory. The company also appointed an experienced disaster relief coordinator from within the company's ranks that advocated directly for impacted employees to relief agencies and insurance companies and acted as a liaison to governmental and nongovernmental agencies conducting community-wide recovery. In addition to providing counseling and facilitating employee access to governmental recovery programs, Weyerhaeuser initiated the following staff-focused recovery programs:

- **Adopt-a-Family Program:** This program linked teams of employees with affected staff and their families. Employee teams were provided with the information, resources and guidance needed to facilitate many of the recovery needs of the impacted families, especially those areas that remained unaddressed by other relief agencies. Teams committed to a minimum of one year of assistance for the assigned families.

- **Loaned Employee Program:** This program encouraged employees to assist their colleagues by maintaining the salary and providing the transportation, food and lodging expenses of any employee who wished to travel to the affected area to assist in helping affected employees (and the community at large) to rebuild. The program ultimately resulted in over 42,000 hours of volunteer time repairing and rebuilding the houses of employees, retirees, and other non-affiliated members of the affected communities. Weyerhauser partnered with a local NGO to facilitate the program. Many of the materials used in rebuilding homes were provided

in-kind by the company, and structures were elevated to reduce future flood risk.

Weyerhaeuser's successful recovery efforts following Hurricane Katrina were shaped by the company's experience following another hurricane (Floyd) just 6 years prior. In the aftermath of that event, the company formalized their policies, which were activated during Katrina. In order to share these policies Weyerhaeuser developed and released guidance document entitled *Rebuilding a Community: An Employer's Guide to Assisting Employees*. This guide is designed to meet the needs of any organization wishing to assist their employees, regardless of size. The 180 page document, which details the steps that an employer can take to create and implement a disaster relief program, addresses the following topics:

- Addressing the Immediate Needs of Affected Employees
- Coordinating Employee Relief Coordinators
- Assessing Damage and Collecting Data
- Formulating the Company Response
- Follow-up Activities (Transitions Beyond Recovery)
- Supporting Documents and Resources

Source: Weyerhaeuser, 2005; Weyerhaeuser, 2006

Lessons:

- Businesses that utilize wide geographic spatial distribution between facilities can use employees stationed outside the disaster area to assist those that are directly impacted
- Few businesses have the skills in place among management or staff to perform the tasks required to provide community emergency response and recovery assistance, since the tasks associated with response and recovery are not aligned with product lines and do not impact proprietary information, business leaders may support each other in designing and sharing facility, staff, and community emergency support strategies and plans

Case 5: Microchip, Inc. Assists Disaster Impacted Employees

Topic: Staff Resilience

During the 2011 flooding in Thailand, Microchip's facilities in Thailand were not directly impacted by the event. However, many of their employees lived in neighborhoods that had been inundated. The company, which lists one of their

guiding values as *Employees Are Our Greatest Strength and Customers Are Our Focus* had planned for such events and mobilized a response to support their staff in both response and recovery in order to address employee needs while simultaneously enabling the resumption of normal business operations. The company initiated three separate efforts:

1. An "evacuation team" was mobilized to assist in the rescue of stranded employees, their family members, and their pets, from housing that had been flooded;
2. Temporary accommodations and kits containing daily essential commodities were provided for flood impacted employees and their families; and
3. Staff members were encouraged to provide volunteer cleanup assistance for families whose homes had been directly impacted in order to enable those employees to return more quickly to their jobs.

Staff members were also encouraged to support general community recovery, which they did by providing recovery cleanup assistance at schools and temples and by donating almost USD63,000 to a flood relief fund the company established through its charitable foundation AZ First. This money was used to support the recovery needs of employees who faced costs associated with clean-up and renovation. The company stated in the aftermath of the disaster that employees were made to feel both safe and valued, which contributed greatly to their ability to return to their jobs and support the company's delivery of products and services. Microchip suffered neither a factory shutdown nor a wage reduction, and product shipments were maintained at full capacity.

Source: Microchip.Com, 2013

Lessons:

- Even if company facilities are not directly impacted, recovery may be difficult if employees' homes are within the impacted area
- Businesses can speed up their own recovery by facilitating the recovery of their employees
- Short-term salary continuation programs can provide tremendous help to employees during times of business interruption, and likewise help to ensure that employees do not find work elsewhere before regular operations resume

Facility Structural Vulnerability (materials and/or design)

Structures must be properly designed and constructed with appropriate materials to withstand the physical forces of a natural hazard if they are to survive the event. Some business facilities may not have been constructed with strict adherence to design standards, which is a problem that has also been seen in facilities with other uses (e.g. housing, schools, infrastructure). Private sector facilities differ considerably according to the functions that they serve, whether completely housing the business (e.g. a convenience store or restaurant), to meeting the needs of one or several business functions (e.g. warehousing, sales, production, processing, service delivery, operations, shipping and receiving, and others). Facilities that are dilapidated or poorly maintained, are built with materials that are either of poor quality or are improperly made (e.g. concrete blocks with excessively high quantities of sand, or unreinforced concrete), or are constructed using materials that are not appropriate for the risk profile of the area (e.g. often the case with unreinforced concrete, sheet metal roofing, light wood framing, or sheathing) may fail in a disaster. Many MEs and SMEs lease the facilities where they operate and therefore may not be aware of structural weaknesses. Even when building codes are stringent or at least sufficient to address prevailing hazard risk, inadequate enforcement, corruption, or landlord negligence can result in hidden vulnerability.

Building design can increase resilience or vulnerability according to the hazard to which it is exposed. For instance, in seismic areas, buildings with soft stories (e.g. first floor parking garage), close proximity, or asymmetrical shape are typically more likely to fail in the event of an earthquake. In high wind zones, failure to incorporate construction straps can lead to roof loss or structural failure. Areas of high snow must have adequate snow load capacity built into frames and roof structures.

Inadequate or inappropriate construction codes are a major source of vulnerability in private sector facilities. Such codes function best when based upon prevailing knowledge of local hazard risk and accepted minimum safety standards (even in light of increased construction costs). Codes that fail to consider hazard risk appropriately incorporate vulnerability into building design. Codes must be regularly updated to match industry innovation, new risk information, and prevailing practice and knowledge of the construction industry.

In the absence of adequate enforcement, building codes are of little use. Because of the increased cost of construction associated with more stringent codes, they are all too often neglected both by contractors and by the facility owners or lessors. Building codes are only effective when there exists mechanisms to inspect structures as they are built and thereafter, and to impose penalties for those who do not engineer a structure correctly or build it to code. There have been cases where codes were sufficient, but there was a lack of trained inspectors to handle the case

load that existed, just as there have been cases where ample staff exists, but a culture of corruption allows buildings to receive proper occupancy permits despite code violations via bribery or other means.

Case 6: Business Facility Collapse (Multiple)

Topic: Structural Vulnerability

One of the most deadly structural failures in history is that of the Rana Plaza, an eight story building located in Bangladesh that housed multiple independent garment production operations. The structure had been designed and constructed to house business offices yet was later converted to manufacturing use without proper re-engineering to handle the increased load associated with machinery, supplies, and product inventory. On April 24, 2013, the building suffered a partial collapse. Cracks had been noted in the building's structure just the day prior, and the building had been evacuated at that time. However, the building's owner made a televised public assurance that the building was safe. Many workers had no choice but to return the following day or risk having pay docked. When the building fell that next day, there were more than 3,100 people present and 1,129 were killed. This event was not the result of an instigating natural hazard such as an earthquake or a tsunami, yet the event highlighted the pressures global market prices exert on worker safety in private sector operations, especially in developing countries. Given the Rana Plaza building collapsed in the absence of any instigating event, logic follows that similar facilities suffer high vulnerability to collapse during seismic events or high winds.

Other notable business facility failures include:

- May 24, 2001: A four-story wedding-hall facility in Jerusalem, Israel collapsed while full of people attending a wedding party, killing 23 people and injuring hundreds more.
- June 29, 1995: The ceiling of the five-year-old Sampoong Department Store in South Korea collapsed from the weight of a rooftop water tank and poor quality concrete used in construction; 500 were killed and thousands were injured.
- July 17, 1981: 114 people were killed and more than 200 injured at the Hyatt Regency Hotel in Missouri, USA when a suspended walkway upon which over two thousand people had gathered on and below suddenly gave way.

Heavy snowfall experienced in the Northeastern United States in 2003 led to a number of businesses experiencing roof collapses due to inadequate snow load limits. Flexovit, which maintains a combined abrasives manufacturing plant and warehouse in New York State, was forced to halt production when the roof of a

facility employing more than 140 people collapsed without any warning. Another facility owned by retail home supply store Burke's also experienced a roof collapse that destroyed inventory, vehicles, and equipment, and impacted business operations. The inadequacy of structures to handle roof snow loads in these cases has been cited as an example of the influence climate change is having on the adequacy of existing building codes.

Major earthquakes often reveal systemic inadequacies in building code stringency or in the adherence to and enforcement of construction standards. The 2008 Sichuan Earthquake, 2010 Haiti Earthquake, and 2015 Nepal Earthquake each exhibited heavy loss of life in large part because of inadequate adherence to seismic resistant construction standards. For instance, majority of residential buildings and many businesses (including hotels) were completely destroyed due to challenges of enforcing and adhering to the building codes.

Source: Lenihan, 2014

Lessons:

- Businesses may not be aware of or understand their vulnerability to hazards, especially in light of climate change and its effects on risk
- Without regulation or effective enforcement, business owners may accept high structural or operational vulnerability even in the face of elevated risk to meet competitive market demands
- Conversion of commercial facilities to fundamentally different uses requires an engineering re-assessment
- While site selection is a key element in new construction, there must also exist incentives to retrofit existing facilities, especially those in areas of known risk

Staging operations or locating facilities on disaster prone land

Businesses will often consciously and even intentionally locate their facilities and operations in disaster prone places. The most common justifications for this behavior includes a lack of alternatives, lower costs, and because the nature of the business demands it. Agricultural and livestock related enterprises are notable in terms of their proclivity for disaster prone land, including flood zones, coastal plains, on steep slopes, in volcanic lava flow hazard zones, or in other highly fertile locations that community land-use restrictions limit against residential and other uses. Fishing industries have little alternative than to operate along high risk coastlines where cyclonic storms, storm surges, tsunamis, and other atmospheric and hydrologic forces come together precipitously. A similar pattern exists in the tourism sector. The ability to

provide customers a unique interaction with a high risk yet spectacular environment or activity represents a major source of revenue for many hotels and tour operators (and by extension, the communities where they operate). Facilities, equipment, inventory, and staff are intentionally sited on land that is prone to storm surges, coastal flooding, wind, tsunamis, and other hazards. This ultimately leads to the construction of supportive infrastructure (e.g. pipelines, power transmission lines, roads, sewerage, and more), government buildings, schools, employee housing, roads, and many other investments in these hazard-prone areas.

Case 7: Boxing Day Earthquake and Tsunami, Thailand, 2004

Topic: Siting Production and Facilities on Disaster Prone Land

The 2004 Boxing Day Tsunami hit businesses from several different industries operating in Thailand especially hard. In addition to the loss of many employees' and customers' lives, impacts were sustained in agriculture and livestock, fisheries and aquaculture, agro-industry, commerce and tourism. Businesses engaged in each of these sectors commonly site facilities on low-lying coastal land out of necessity, availability, or value. Descriptions of the types of impacts sustained include the following:

- Agriculture: Tsunami waters inundated agricultural lands located near the coastline in the six Thai provinces affected. Standing crops were either washed away or destroyed by the salinity of the water. Semi-permanent plantations, including oil palms and coconut trees, were uprooted by wave action resulting in longer-term losses. Estimates placed the losses associated with the tsunami to be approximately USD9.65 million. Of this amount, 76% was caused by damage to crops, while the remaining 24% was the result of production losses.

- Livestock: Over 17,500 cattle, goat and sheep, swine and chicken drowned as a direct result of the tsunami. The total amount of damage for the sector was USD450,000.

- Fisheries and Aquaculture: The tsunami resulted in heavy damages to and losses of fishing boats and gear, and of the infrastructure required for aquaculture. The production of these two sub-sectors was depressed during the period required to replace or repair the assets lost. The cost to repair or replace fishing boats and gear exceeded USD38.3 million, though this is considered far less than was actually experienced given many fisherfolk failed to report their losses. For the aquaculture sector, losses were a factor of equipment, hatcheries, and lost productions, and were reported as exceeding USD25.5 million. The issues of partial reporting given were also present in this sector, as many business

owners failed to report. The total estimated impact of the tsunami in the fishery and aquaculture sector of the affected provinces, including lost production, was USD166 million, 40% of which was for damages to assets and 60% from losses in production during 2005.

- Tourism: The six provinces affected by the tsunami generate approximately 17% of the nation's total tourism revenues. In 2004, there were 1,130 registered hotels in those provinces maintaining 40,272 rooms. The tsunami impacted these hotels both directly by causing structural damage to 328 of the registered hotels (24%) and indirectly by causing a decrease in bookings in the unaffected facilities. The estimated replacement value of hotel infrastructure (including contents such as interior decoration, equipment and furnishings) and of other tourism related commercial facilities (stalls, shops and restaurants) was reported as USD37.3 million-a value associated with damages and destruction. Losses of revenue due to a drop in tourist arrivals were estimated to be almost USD125 million by January of 2007. As such, only over 20% of the overall losses recorded in 2007 were associated with damages and destruction, while 80% is a result of revenue losses.

Source: ADPC, 2006

Lesson:

- It is unrealistic to expect all businesses to use relocation as an option to address disaster risk, especially if revenue is derived from the high-risk location itself

Not all businesses are located in high-risk zones because of a perceived or actual need. Siting operations or facilities in disaster prone areas can also be the result of uninformed choice, negligence, and/or a lack of alternatives. Construction near or above seismic faults may occur for decades or even centuries before the existence of the fault is known. Construction along the urban/wildland interface comes as a factor of urban sprawl and an insufficiency of buildable or available land. Technological hazards can result in similar effects on vulnerability. Land that surrounds chemical manufacturing plants, airports, or storage tanks and pipelines, tends to be less expensive to develop, and might even be considered desirable by businesses due to the proximity to employees, suppliers, customers, or distribution networks.

Geographically Concentrated Risk

Large enterprises, especially those that operate on national or international levels, are typically more resilient to disasters and thus better able to recover quickly because the physically-dispersed nature of their operations means the business is only partially exposed to the direct impacts of any single event. For this reason, they tend to

have a greater capacity to manage disaster impacts and losses than their counterparts that operate at a single location or within a relatively small geographic area. Through creative planning, geographically dispersed businesses are able to more easily shift employees and operations away from the affected area, or may even have redundant operations that are able to address outstanding orders while the impacted facilities recover. Smaller businesses, even those that maintain multiple facilities, tend to exist within smaller geographic areas and their customer base may likewise be concentrated depending on the nature of the business. Even if they are not directly impacted, small businesses' revenues might fall if many or all of their customers are impacted by disaster events (ESCAP, 2014; ILO, 2012).

Disaster Impacts and Implications

Businesses sustain both direct physical damages through interaction with a hazard's effects and indirect costs and losses that result when revenue or productions cease, market positions are lost, or other situations occur. In the directly impacted zone, businesses can represent as much as 90% of damages sustained, as occurred in the Philippines when Typhoon Ondoy struck (McElroy, 2013). Indirect and secondary impacts may also be sustained by businesses far outside the impacted zone of the disaster, and have resulted in global impacts on a number of occasions thus highlighting the need for greater sector-wide attention on disaster risk reduction. The financial losses sustained by the travel industry in the months that followed the September 11, 2001 terrorist attacks in the United States are just one example. In this section, common direct and indirect disaster impacts and their implications to the private sector and to society and general are presented.

Micro-enterprises and SMEs sustain much more devastating impacts during disasters in terms of the percentage of total business value represented by the damages and losses individually sustained. This occurs primarily because they have: limited geographic range (all aspects of the business are impacted, rather than a single facility or unit); less likely or able to take preventive actions: less likely to have insurance policies that reimburse disaster related costs; and more likely to be located in high-risk zones (UNDP, 2013). The secondary impacts are likewise greater, simply because they have far fewer facilities to address operational interruptions, they are much more dependent on a single or limited market, and they have far less cash on hand to manage recovery needs. This is in addition to the fact that many micro-enterprises and some SMEs are part of the informal sector that has far less access to credit and loans, and may even be ineligible for certain governmental and NGO-based grant and other aid programs.

The following list describes the types of impacts typically sustained by businesses during disasters that often result in recovery related issues:

Impact on Capital Reserves

Businesses need access to capital (cash), whether reserves maintained in company accounts or credit that is readily available. Capital is used to maintain company finances, including the payment of salaries, invoices for supplies and services, and other operational needs. A disaster impacts the availability of much needed funds by reducing cash revenues, compounding operational costs, and presenting new costs related to the repair and reconstruction of facilities, equipment, and other assets and the replacement of damaged supplies and other resources. Disaster impacted businesses may also find they have reduced access to credit given the loss of collateral and the higher-risk nature of the loan. While large businesses are often able to set aside capital "rainy-day funds" that ensure liquidity during periods of recovery, most SMEs cannot tie up sufficient capital in the same manner (Vizez, 2015).

Damage to or Loss of Facilities, Equipment, Supplies, and Inventory

A business directly impacted by a disaster may experience damage to or the loss of its facilities, equipment, or other property and inventory. In addition to direct financial costs associated with the monetary or market value of these physical properties and resources, the business may also experience exponential losses caused by decreases in production capacity and revenue. These losses may reverberate through the supply chain, causing financial losses for both upstream suppliers and downstream customers. Employees may lose income or perhaps their livelihood, and local and national governments will see a reduction in tax based revenues. Finally, these losses can influence local and global inventories of certain commodities and/or services, causing shortages and likewise price fluctuations.

After residential housing, facilities reserved for commercial use represent the second largest subset of most community's or nation's building stock. Business facilities may be damaged or destroyed by direct exposure to the disaster event, be contaminated by direct or indirect effects related to the event, or face temporary or permanent restrictions on use and/or access because of some event related situation. There are a number of reasons why an otherwise structurally sound business facility might experience restrictions on its use or occupancy. The most common of which include:

- Contamination and Inundation: The property or environment surrounding the facility may become contaminated by a chemical, biological, nuclear, or radiological release that renders it temporarily or permanently uninhabitable. For instance, the Chernobyl accident in the former Soviet Union caused the permanent evacuation of areas in Belarus, Ukraine, and Russia, despite that these homes were structurally sound. Many

communities surrounding the Fukushima Daiichi Nuclear Power Plant in Japan face the same issues. Additionally, land areas inundated by tsunamis such as in Tohoku (Japan) and Aceh (Indonesia) resulted in land readjustments that are coupled with new restrictions of reoccupying those land areas.

- Excessive Risk: Following disasters, new information is learned about risk. This often leads to the designation of risk zones within which there exist facilities that might have survived the disaster only slightly damaged or not damaged at all. However, the potential for future risk far exceeds that which is considered acceptable by agencies governing land-use, and businesses will not be allowed to resume operations there as a result. This can happen when new faults are discovered, as floodplains grow and/or change, as hillsides become increasing unstable due to a range of factors, among other examples.

- Loss of "wraparound services": In very rare instances, governments may determine that the best course of action to reduce risk in the community is to relocate entirely. This can occur even if not every structure within a community faces damage or destruction from the hazard in question. While this is primarily a factor of housing and government, a community is typically the sum of its parts and as such the viability of businesses located there will be reduced or fully eliminated. In such cases, even these untouched facilities are therefore impacted by the event and action must be taken to recreate what was lost elsewhere in terms of facility function, employee use, access to supplies and utilities, and more.

- Loss of Access: A disaster may have no impact on the structure but nonetheless impact transportation routes and infrastructure such that access becomes difficult or impossible. Without reliable access, employees may not be able to travel to work, supplies may become difficult to deliver, and the logistics of product sales or service provision may become unsustainable. The 2007 collapse of the I-35 Bridge over the Mississippi River in the United States, which provided direct access to Minneapolis (Estimated Population of 400,000), is an example of an event that caused great economic impact to otherwise unaffected businesses as a result of restricted access. The bridge provided access to an average of 140,000 commuters, travelers, and other business related vehicles each day. In addition to job losses, the increased transportation costs associated with alternate routing resulted in an estimated USD60 million in 2007 and 2008 until the bridge was repaired (Minnesota Department of Transportation, 2009). These losses translate to lost tax revenues for the city and the state, as well lost revenues, especially for businesses located close to the bridge that lost a good portion of their customer base.

Unless appropriate redundant locations exist and are able to be procured, it may be extremely difficult or even impossible to relocate a business or its operations elsewhere. This is especially true if the lost or damaged facility met unique requirements, such as a hospital, hotel, or manufacturing plant. While many larger companies are able to institute redundancy measures, SMEs lack the capacity to do so.

The scope and severity of facility damage and destruction will vary throughout the impacted area due to structural design and composition, proximity to specific forces, elevation, location in relation to infrastructure networks and nodes, and other factors. Structural safety of facilities may remain in question following a disaster until inspectors are able to determine if any critical impacts had been sustained. In the event that a large number of residential and commercial facilities lie within the impacted area, there may not exist sufficient trained and locally accessible inspectors to perform this task in a timely manner.

Loss of Information and Data

Data and information are critical to business operations, and include customer and supplier accounts data, financial records, marketing data, and more. In most large enterprises, data is stored in highly protected servers, often housed in off site locations or in redundant sites, and backed up on a continuous basis. However, many MEs and SMEs still store data locally on desktop and laptop computers or on external storage devices that are housed onsite. Some MEs and small enterprises may still use paper based records or ledgers, which are particularly vulnerable to loss in disasters.

Data loss typically results in three types of impacts for affected businesses:

1. The cost of continuing operations without the data
2. The cost of recreating the data
3. The loss of market shares that results from a tarnished reputation

Businesses often underestimate the impact their operations will sustain if a data loss occurs, and as a result many businesses fail to adequately address their data protection needs. Disaster recovery in any sector, including the private sector, is much more difficult when data has been lost, at times resulting in an insurmountable obstacle. Consulting firm Price Waterhouse Coopers conducted a study that found as many as 70% of small businesses that have experienced a major data loss failed within one year even when the data loss was the only impact experienced (Lindzey, 2013).

Loss of Employees

Disasters result in the loss of employees through a number of different mechanisms. Exposure to and direct impact from the disaster itself may result in employees' deaths, injuries, and permanent disabilities. Employees may also become so consumed with managing their own personal response and recovery needs, such as dealing with the death or injury of family members, the loss of a home, reduced access to childcare, or other hardships, that they are unable to report to work. This can impact businesses even when their facilities are not directly affected by the event. If the situation happens where a business must even temporarily cease its operations, employees may be tempted or forced to find alternate employment elsewhere, which can become permanent. If an evacuation has occurred, especially those that result in longer-term displacement, employees may choose to remain in their new location. While large companies are often able to provide temporary space or work for disaster-affected employees in facilities that were not impacted by the event, SMEs are less able to do so without outside support.

Another threat to the local employee base is recovery related work that emerges in the aftermath of a disaster, such as the construction of housing or infrastructure. Recovery related jobs are of great help to those whose livelihoods have been impacted, but it can also draw actively employed workers out of otherwise stable jobs, especially when the salaries for disaster work are higher. This can leave businesses already reeling from the financial impacts of lost facilities, equipment, or inventory unable to afford newly competitive salary requirements.

Case 8: The Gujarat Earthquake, 2001

Topic: Loss of Employees

The 2001 Gujarat Earthquake struck with a 7.9 magnitude and caused many handicraft workshop facilities to collapse. Over 3,000 artisans were killed in the Kutch District alone. Over 70% of artisans died in one particular village (Dhamadka). Compounding these deaths was a high number of severe injuries, many of which resulted in long-term therapy, prosthetics, and permanent disability.

The regional economy was heavily-dependent on the handicrafts industry prior to the event, and the sustained losses resulted in impacts to over 3,000 SMEs and 20 large businesses. The number of handicrafts workshops damaged or destroyed, including the loss of relevant tools and equipment, was of such great magnitude that the livelihoods of over 50,000 artisans were directly impacted.

Many artisans elected to find immediate employment elsewhere rather than wait for the reconstruction of workshop facilities. This contributed to the permanent closing of more than 10,000 artisan enterprises, representing not only an

economic loss for the region in terms of reduced exports, but also the loss of cultural heritage in terms of the skills and customs passed down from generation to generation in the textile and art industries.

Source: World Bank and Asian Development Bank, 2001

Lessons:

- The failure of businesses to quickly recover can lead to the exodus of employees or decisions by businesses to leave the area
- When recovery fails to address existing vulnerabilities, exodus of employees is likely to happen
- Industries that rely upon skilled employees may not be able to recover if those with skills are killed, injured, or relocated as a result of a disaster

Impacts on Operations

The survival of private sector entities is dependent on predictable and reliable revenue sources. For most micro-enterprises and SMEs, and even for some large businesses, there is very little tolerance for stalled or lost revenue due to a lack of capital reserves, little or no access to credit or limited access to community infrastructure that supports business operations including postal and shipping services, energy, water and wastewater systems, and others. Businesses must therefore adhere to more strict recovery timelines than are typically faced in other recovery sectors. Businesses may measure their operational impacts in weeks, days, or even hours or minutes spent idled. Business intelligence research firm Aberdeen Group found that the average cost of business interruptions across all businesses they surveyed was USD161,000 per hour, which is a number that is obviously influenced by larger industries but none-the-less indicative of the desire all businesses have to resume operations quickly (Csaplar, 2012). So desperate is this need that for some businesses, the only plausible option is to shift operations outside the impacted area. These moves can become permanent, resulting in a devastating loss of employment and/or revenue for the community, especially in the event that the impacted business was a major employer. Operational impacts also equates to a loss of one or more goods or services in the community, and perhaps the region, country, or even the global market until operations resume or attain pre-event levels.

Case 9: Global Impacts of the Russian Wheat Harvest Failure

Topic: Global Reach of Impacts on Business Operations

In a study, titled *A Sign of Things to Come,* conducted by Coghlan, Muzammil, Ingram, Vervoort, Otto, and James (2014), the global impacts of hazards and events affected by climate change are highlighted. The authors explain the

mechanisms by which a heat wave in Russia caused local, national, and international impacts beginning with a dramatic reduction in the Russian wheat harvest. The low-output reverberated outward as national food supplies became depleted, in-turn resulting in negative financial impacts for the farming communities. To address shortages, the Government of Russia banned the export of wheat, thereby triggering global shortages that resulted in worldwide wheat price increases.

Analysts subsequently linked these price increases to widespread upticks in global unrest, including events that transpired in the nations affected by the Arab Spring, almost all of which remain dependent on Russian wheat. These effects were notably pronounced in Pakistan, which that same year concurrently faced higher than normal monsoon-related rainfall that severely damaged crops, killed livestock, and caused shortages in local markets. In addition, it caused health-related problems and damaged housing stock and infrastructure.

Source: Coghlan, Muzammil, Ingram, Vervoort, Otto, and James, 2014

Lesson:

- The secondary impacts that reverberate far from the disaster area are not always financial in nature

Because the global supply chain is without geographic limits, operational impacts often occur far outside the disaster area. This can result in sudden and unexpected business interruptions, even for industries that have taken significant action to physically harden their facilities.

Additionally, business interruptions and breaks in the supply chain caused by SME suppliers can trigger primary manufacturers to shift towards the use of supplier options outside the impacted area. In many cases these shifts become permanent and the local businesses never recover.

Case 10: Impact of 2011 Japan Earthquake and Thai Floods

Topic: Supply Chain Risk

The Great East Japan Earthquake and the Thai Floods of 2011 revealed the extent to which disasters can result in wider impact on global value chains (GVC)[3]. The Great East Japan Earthquake caused Japanese automobile production levels to

[3] Global Value Chains (GVCs) are cross-border business networks which consist of a number of facilities, operations, suppliers, subcontractors and consumers in various parts of the world (ESCAP, 2014).

fall by 48% overall. Since the distribution of these products had become highly integrated into industries physically dispersed across the globe, the widespread disruptions in supplies resulted in secondary impacts at the international global level. This was particularly apparent in nearby countries in Asia that were most dependent on the Japanese parts producers. For example, automobile production fell in Thailand by 19.7%; in the Philippines by 24%; and in Indonesia by 6.1% (ESCAP, 2013).

The 2011 floods in Thailand were even more devastating to transnational companies. This protracted event impacted several industries' cross-border operations in Asia and elsewhere in the world. According to the World Bank, economic damage amounted to USD45.7 billion, with manufacturing loss and insurance payment shouldering 94% of the cost (ESCAP and UNISDR, 2012). Although the effects of natural disasters on businesses are significant, regardless of the size or industry of the company, the differences in overall relative impact of natural disasters on transnational companies, large enterprises and small and medium sized enterprises (SMEs) are notable.

Source: ESCAP, 2014

Lessons:

- Supply chain impacts are global, but tend to impact nearby countries the greatest
- Micro-enterprises and SMEs have less capacity to deal with supply chain interruptions and are therefore more profoundly impacted when they occur
- Operations to support rapid recovery and a return to normal production can minimize the impact on SMEs, many of which are critical suppliers and thus key to longer-term economic strength

Secondary Impacts, including Reputation Loss and Loss of Market Share

Businesses establish a market base upon which their revenue is drawn by attracting customers and establishing loyalty among them. These relationships may be contractual, such as in the case of a bakery that supplies bread to area restaurants, or more informal such as a regular patron at a vegetable market. When business operations are impacted by a disaster, without proper contingency plans in place a business may become incapable of delivering required products or services and customers may elect to go elsewhere out of need or preference. Once customers establish a relationship with a new source of products or services, it may be difficult or even impossible to draw them back, thus making the process of recovery more difficult on the account of longer term reductions in revenue.

In some situations, production may not have fallen but customer loss occurs simply because the business' reputation has been marred. If customers or the society in general are worried about or unsure of the safety of a product, they are unlikely to purchase it. Following the Fukushima Daiichi Nuclear Power Plant accident, more than 60 countries placed restrictions on the import of Japanese food products (Farr, 2011). The Government of Japan made a concerted effort to ensure that restrictions were based on scientific evidence and helped to reestablish trust in Japanese food products within just a few months. Efforts to preserve or repair the reputation of businesses' products or services following a disaster do not always produce such rapid results. Following the 2004 tsunami in Thailand, fear of a repeat disaster kept many tourists from utilizing a sector that contributed a full ten percent of the nation's economy. Wide availability of graphic images likely contributed to high levels of fear among potential travelers, and the number of tourists fell dramatically. Many hotels that were not directly impacted by the events had to close nonetheless after failing to attract new customers (Flamm, 2005). During the 12 months that followed the tsunami, there was a 40% reduction in tourists which was blamed on a "negative image" that was difficult to overcome (Nidhiprabha, 2005).

Recovery Principles

The health of most nations' economies is closely tied to or outright determined by the strength and success of their private sector. In addition to providing employment and thus income for residents, the private sector drives urban development. Quality of life is dictated in large part by the quality, variety, and access to the goods and services that characterize a modern functioning society and which are chiefly the product of private sector innovation and production.

Some large multinational companies generate revenues which exceed the GDP of entire nations, and thus there is much competition among countries hoping to attract and keep such companies operating in support of their economies. The damages and losses experienced by businesses therefore influence the viability of the populations they serve and the communities where they operate.

Community or national economic resilience is predicated on the achievement of private sector resilience, including adaptability to the effects of climate change. In the aftermath of a disaster, successful recovery outcomes for business sector entities requires much more than simply reconstructing lost facilities, resuming business operations, or restoring access to goods and services. Recovery must adhere to a set of principles that ensure the outcome is positive both throughout the sector and the community at large.

Private sector disaster recovery is notably complex because of the presence of so many competing interests and inter-sector dependencies. For instance, business

employees and customers may not be able to return to the impacted area if housing recovery is stalled. Moratoria imposed by local or national government will prevent facility repair or reconstruction. In the case of catastrophic events, recovery efforts of the community can potentially be in conflict with the recovery efforts of businesses, or the private sector as a whole, in terms of vision and activities due to diefferent interests.

Pre or post-disaster recovery planning focused on private sector entities and issues should assume a holistic stance considerate of the wider spectra of recovery functions (rather than considering the progress and outcomes of single entities or industries), and should adhere to common recovery principles. These include:

- Recovery Must Pursue Risk Reduction
  Businesses pursuing recovery must measure risk and consider existing and new vulnerabilities in order to ensure that the cause of the disaster and any other existing and future hazard risks are addressed in recovery plans and actions, including those that threaten business facilities and operations, employees, and other community features.

- Recovery Must be Equitable, Inclusive, and Address the Greater Good
  Businesses should pursue recovery that does not infringe upon the ability of other businesses, other entities, or individuals to affect their own recovery, and the wishes of the affected population should be are heard, understood, respected, and incorporated into recovery strategy decisions.

- Recovery Must be Sustainable
  Business entities must pursue post-disaster strategies that enable long-term viability given the conditions that present now and in the future from climate change and market driven effects.

- Recovery Actions Must Preserve Livelihoods and Economic Drivers
  Businesses must be certain to pursue recovery in a manner that preserves the ability of employees and community citizenry as a whole to retain viable livelihoods, and for prosperous market conditions to exist. Likewise, recovery must be efficient and effective in terms of both transportation and operational infrastructure (e.g. power, water, wastewater, and sanitation).

- Recovery Must Follow a Coordinated Vision
  The recovery vision of each company should be coordinated with that of other businesses, other sectors, and with the long-term vision of the community and its residents.

- Recovery Must be Environmentally Sound
  Recovery solutions should not have a negative effect on the natural environment, and should address any environmental impacts that are caused by the disaster itself and move towards sustainable recovery.

- Recovery Must Support Long-Term Development
  Ongoing long-term development progress must be continued, and long-term community goals should therefore never be sacrificed for short-term individual benefits.

Obstacles to Private Sector Recovery

There are a number of common obstacles that threaten to hinder private sector recovery efforts. Disaster impacted businesses and planners can reduce or eliminate the impact of these by recognizing them and addressing their root causes.

- Businesses have little tolerance for operational interruptions
  When businesses are prevented from conducting critical business operations, especially those that generate revenue, they may have little chance for survival. This is especially true for SMEs that have few capital reserves. The financial implications of business interruptions are much more involved than simply managing lost orders. Leased facilities and equipment, employee salaries, contractual obligations, and other expenditures rarely stop in the face of a disaster, and the loss of income generation disturbs the financial balance. How much time a business is able to sustain such losses is heavily dependent upon the actions that have been taken in advance of the disaster to buffer those impacts. Generally speaking, longer interruptions will result in greater numbers of failed businesses. As such, there is without exception an overwhelming need for businesses to resume operations as soon as possible. This need is irrespective of their capacity to endure interruptions as it is tied to the very reason the business exists. Businesses may therefore be unwilling or unable to take immediate measures to address the risk or vulnerability factors that resulted in the disaster, and thereby will contribute to risk retention. While it may be possible for a government to place moratoria on recovery operations (e.g. temporary prohibition of SMEs to do business), in most cases, businesses will be under no obligation to suspend recovery activities (and in fact, failing to acknowledge and address the immediacy of their needs is likely to contribute to their failure).

- Businesses may be reluctant to coordinate or collaborate
  The private sector is the driving force behind most communities' economies, and as such businesses maintain significant influence over the speed and

nature of a community's recovery. At the same time, competitive business environments may inhibit collaborative action. Businesses may resist sharing information they feel has the potential to harm their brand, worry their customers or suppliers, or give competitors any potential advantage. Without a clear appreciation of how coordinated efforts can benefit them, some businesses may resist subscribing to collective coordination mechanisms.

- Businesses may fail to appreciate the ongoing presence of risk and/or vulnerability, or simply choose to accept it wholesale

  Perhaps the most troubling obstacle stems from a lack of appreciation or awareness of risk and of the options that are available to businesses wishing to address it. Historically the vast majority of MEs and SMEs have done little or nothing to plan for disasters before they have been impacted by them, leaving them with little or no capacity to handle the response and recovery needs that arise. Some businesses are fully aware of the risks, and still choose to operate in the same high-risk location out of fatalism or a lack of concern even after they have been impacted. The survey conducted by Japan's Ministry of Economy, Trade and Industry (METI, 2011) – which looked into 67 companies impacted by the 2011 Thailand Floods – found that 68% of them reported they would not change their plans for reinvestment in facilities and equipment as a result of the impacts that the floods had on their business. In other words, there is a need for government legislation and regulations to compel businesses to do their share in disaster risk reduction. Otherwise, businesses will just be motivated by financial concerns and are guided by self-set levels of risk tolerance that may have negative repercussions on vulnerability of the wider industry and community.

- Businesses may lack the technical or financial capacity to mitgate risk

  Risk reduction typically requires dedicated cash investments that many businesses, especially MEs and SMEs, are unable to make. For instance, a survey conducted by the Japan External Trade Organization (JETRO) in the aftermath of the 2011 Thailand Floods found that 39 of 50 (78%) directly impacted companies continued to operate in the same location after the disaster, and for many, this was simply a matter of insufficient financial capacity (Haraguchi, 2013). Many business owners feel they are sufficiently protected by their insurance policies, even after being impacted and the nature of their expenses resulted in higher rates of coverage. Unfortunately, there are also a number of cases where the financial capacity exists to manage business risk, but the business owner does not understand what mitigation options they have and/or does not have access to the technical resources required to act on these needs.

- Businesses may be deterred by exaggerated perceptions of risk
  Just as fatalism can cause unwise recovery decisions, fear can cause unnecessary or unwarranted economic impacts for the impacted community. Whether they have been directly impacted by a disaster or are considering new investment opportunities, businesses may be reluctant to build or rebuild in disaster affected communities due to the perception that the community is high-risk or even "cursed" (Demetriou, 2012). Without credible assurances that community risk has been or will be addressed, or the presence of incentives strong enough to counter negative perceptions, impacted businesses may elect to permanently relocate rather than remain in the impacted community.

- Market shock and reverse market shock can deter reconstruction
  Reconstruction efforts often place significant demands on local materials and labor. Local employment and supply markets are based on non-disaster orders, which represent a fraction of what is required post-disaster. Once reconstruction begins these thin resources may be immediately stretched to their limit, causing a recovery bottleneck that can only be relieved through external sources. Additionally, the high-demand on such limited labor and materials can cause a shock to local markets, resulting in a spike in construction costs. On the other hand, a market glut caused by excessive donation of materials and labor can eliminate all demand for local products and labor and put local companies and laborers out of work.

- Recovery activities may compete with the local job market
  During long-term recovery, there are often many recovery related employment opportunities that compete directly with existing jobs in the community. Higher wages may entice employees out of their regular jobs, leaving businesses unable to manage their operations. Businesses may have no choice but to raise their employees' wages, thereby risking their long-term viability, or curtail their operations.

- Businesses may face a shortage of land zoned to meet their requirements
  Major disasters can drastically alter the landscapes they affect. Rivers can change course, coastlines can change shape, landslide-induced dams can inundate entire communities, and whole coastlines can become inundated by sea level rise or plate tectonics. These and other processes can claim previously developed land, leaving nowhere within the community for businesses to relocate. New information about risk can also lead to changes in land use restrictions. In such cases, new land must be located, and the process by which that is successfully accomplished can be prohibitive, especially for many SMEs. In some communities, these issues were considered in advanced along with proactive actions, such as securing a

prime real estate suitable for commerce and/or manufacturing (or other commercial uses) before the disaster.

- Dependence on infrastructure and wraparound services (that may no longer exist)
  Businesses have come to realize they are not islands when it comes to disaster recovery. Even if facilities and equipment were fully protected from the disaster, and their employees all weathered the event with little consequence, they may face immense difficulty resuming their operations in the absence of critical infrastructure and wraparound services. Businesses require various functional and supportive "wraparound" services that enable operations to occur, employees to work, communications to be established, and sales or deliveries to take place. Community recovery actions that fail to foster private sector recovery progress (e.g.inclusive of prioritizing the resumption of critical infrastructure to business districts, ensuring access, and establishing safety and security in the area) may result in dire economic consequences for the community.

Why Private Sector Engagement is Critical

Investigations of recovery conducted in the aftermath of recent mega disasters, including the Great East Japan Earthquake of 2011 and the Indian Ocean Tsunami of 2004, indicate that the private sector is working to increase their own recovery capacities, and is also increasingly engaging in wider community, national, and international post-disaster recovery operations. For years, businesses have to varying degrees prepared their facilities and operations for disasters and mitigated possible consequences of realized events by performing risk management and business continuity planning. But more recently, governments and businesses have each recognized the potential benefits both stand to gain by expanding business sector response and recovery responsibilities beyond simple self-preservationist activities. Instances of public-private collaboration in disaster risk management, including recovery, are much more common than even just a decade ago, yet their prevalence remains far from ideal.

In recognition of the important role of the private sector in recovery, and the importance of effective recovery of the private sector following disasters, it is incumbent on the disaster risk management community to develop and act on effective models of private sector engagement and to support the formalize the inclusion of private sector entities in local, national, and regional management plans and structures.

As the global DRM community transitions into the next phase of action *vis-a-vis* the Sendai Framework, the opportunities that exist to clarify and formalize the role of

the private sector in recovery are more readily available than ever before. This helps ensure that the greater community of stakeholders is conceptually and philosophically prepared to foster the expected change. As businesses grow in their ability to manage their own recovery needs and to facilitate that recovery when required, there is much reason to engage them in the drive to push for more resilient, climate adaptive, and sustainable solutions.

The Disaster Recovery Role of the Private Sector

Chapter 2

Both business and emergency management communities have only just recently begun to appreciate the prominent role that private sector entities can play in improving disaster risk management capacity at all levels. Businesses remain vital to and influential in the communities where they operate, and accordingly their collective ability to prepare for, respond to, and recover from disasters represents a pillar of community resilience. Despite their typically competitive nature, the expanding pursuit of practices founded on corporate social responsibility (CSR) has propelled the response and recovery roles of businesses beyond acts of simple self-preservation and has likewise extended their concern beyond the community level.

There are a number of reasons why businesses participate in disaster response and recovery activities. Zyck and Kent (2014) noted that socially responsible actions by businesses during and in the aftermath of disasters to support disaster risk management often carry many associated benefits for the companies that perform them. Examples include an increase in staff morale and retention, elevation of brand and reputation, greater success in recruiting competitive personnel, and opportunities for staff innovation and development. Participation in disaster response and recovery also enables businesses to gain new customers, especially when their actions directly benefit the impacted population and in the process expose them to their brand, their products, or their services. Such pursuits are certainly a motivating factor for private sector participation in disaster recovery, but should not be automatically construed as profiteering or immoral given that aid recipients tangibly benefit from such aid and are almost exclusively under no obligation to purchase products in the future. In fact, many development organizations and nonprofit organizations that are dependent on brand loyalty among donors pursue similar gains by branding disaster assistance, staff uniforms, and vehicles with logos and other visible representations. Perhaps the most convincing case for private sector involvement in disaster recovery is that businesses must recognize the links that exist between the success of the community and their own ability to survive and thrive.

The private sector is positioned, equipped, and to a growing extent, motivated to

support the protracted and complex activities that define successful disaster recovery. Modes of assistance are diverse and range from philanthropic giving and partnership for humanitarian action to operational and technical support and direct commercial engagement. Many of the cultural, procedural, legal, and logistical obstacles that prevented greater private sector involvement in the past have diminished rapidly on account of changing attitudes among both businesses and the traditional emergency management stakeholder communities who have much to gain from their support. This section explores each of the mechanisms by which private sector entities contribute to disaster recovery.

Protection and Preservation of Business Operations

The most common and perhaps the most impactful way that private sector entities support community recovery is by operating in a manner that reduces or eliminates their own need for post-disaster recovery assistance. Businesses achieve this through a number of mechanisms which include mitigating hazard risk and ensuring that employees and their families are prepared for disasters.

A business is much more than the land and facilities it occupies, the equipment it utilizes, and the products and services it offers. In the communities where they operate, businesses also provide many or most employment opportunities, generate a significant portion of public sector tax revenues, boost civic vitality, and are oftentimes central to the collective community identity. But businesses are exposed to many if not most of the same damaging forces that affect citizens, schools, government, and the environment, so any deficiency in business disaster response or recovery capacity jeopardizes the community's economic and social stability. Moreover, business often maintain extended supply chains and transportation networks that similarly provide employment and economic stimulation to local, regional, and national economies.

Approximately 20% to 30% of businesses suffer a major disruption in any given year, and many of these disruptions are the result of major emergencies and disasters. While disaster impacts are negative for all entities that sustain them, micro-enterprises and SMEs are most profoundly affected. In fact, about 25% of impacted SMEs (perhaps even more due to underreporting) remained permanently closed or had failed to open within a year. In large scale disasters where interruptions are prolonged and their effects complex, closure rates are even higher. Businesses that neglect to implement protection measures are markedly more vulnerable and as a group experience failure rates approaching 90% for SMEs and 60% for larger businesses (Kataria and Zerjav, 2013).

Protections are most effective when implemented prior to a disaster. The most common pursuits are Business Continuity Planning (BCP) – which is also called Business Continuity

Management(BCM) – and Enterprise Risk Management (ERM).

Business Continuity Planning is defined as the process by which companies of any size identify the risks threatening their business operations; determine what solutions exist to either eliminate or reduce the risk; and formulate plans and procedures to ensure that critical business functions may be maintained or resumed in the event of an emergency or disaster (whether of internal or external origin).

Enterprise Risk Management is the strategic business discipline that supports the achievement of an organization's objectives by addressing the full spectrum of its risks and managing the combined impact of those risks as an interrelated risk portfolio. ERM:

1. Encompasses all areas of organizational exposure to risk (financial, operational, reporting, compliance, governance, strategic, reputational, etc.);
2. Prioritizes and manages those exposures as an interrelated risk portfolio rather than as individual "silos";
3. Evaluates the risk portfolio in the context of all significant internal and external environments, systems, circumstances, and stakeholders;
4. Recognizes that individual risks across the organization are interrelated and can create a combined exposure that differs from the sum of the individual risks;
5. Provides a structured process for the management of all risks, whether those risks are primarily quantitative or qualitative in nature;
6. Views the effective management of risk as a competitive advantage; and
7. Seeks to embed risk management as a component in all critical decisions throughout the organization (Risk and Insurance Management Society, 2014).

Case 11: Resilience of Suzuki Kogyo Co. Ltd. Great East Japan Earthquake, 2011

Topic: Self Preservation

Sendai (Japan) based Suzuki Kogyo Co. Ltd is an SME employing approximately 65-70 people that provides industrial waste collection, transport, processing and recycling services. The company also manages water supply treatment and sanitation services. Given the nature of the company's business, recovery speed is critical not only to their own ability to survive the disaster event but also to the

ability of the wider community to achieve a more efficient and effective recovery.

Several years prior to the 2011 event, the company conducted business continuity planning. Company executives were aware of the significant earthquake and tsunami risk that existed in the region, and had witnessed similar companies failing in the aftermath of disasters that occurred elsewhere. The decision was made in 2007 to develop a plan, which was completed in 2008. Plan development processes included upper-level management staff, and they were supported by a number of seminars and drills as well.

Despite that the company was location close to the water and well within the tsunami risk zone, evacuations transpired as planned and no employee lives were lost. Of the three facilities the company maintained, one was completely destroyed by the tsunami, and two were damaged by the earthquake. Machinery, vehicles, computers, and equipment were damaged and/or lost. Moreover, the firm's incinerator and water processing facilities were heavily damaged by flooding and debris. Despite the severity of damages to all of the company's facilities, operations were resumed in full within one month of the event. Previously established contracts with construction and repair technicians were activated via satellite phones, and repairs began within one day. Central communication systems were recovered within five days, and industrial waste collection, processing, and recycling efforts resumed within one week.

Source: UNDP, 2013; Suzuki, 2011

Lessons:

- Although the event was more severe than planned for, employees recognized their disaster roles and responded in a manner that limited long-term impacts and supported a faster recovery
- Pre-established agreements with vendors, customers, and local government helped to shorten the recovery process
- Redundant sources of critical infrastructure, including electricity and communications, helped the company to recovery much faster
- The ability of companies involved in recovery specific services to quickly resume operations is directly linked to community resilience

Businesses also enhance their own recovery capacity, and by extension that of the community, by supporting pre-disaster disaster preparedness activities. This includes the provision or facilitation of training for employees. Businesses recognize that helping employees to reduce risks at home increases the likelihood that these same employees will remain at work or return more quickly from disaster related absences.

Encouraging employees to avoid the impacts of disasters by stockpiling critical commodities, making household disaster plans, and identifying and addressing household disaster risk has the dual benefit of decreasing the burden on local response resources given that many fewer individuals will be overwhelmed by the event.

Case 12: Sekisui House Employee and Community Preparedness

Topic: Employee and Community Preparedness

Sekisui House is a large business in Japan engaged in the manufacture of building supplies, prefabricated homes, and also provides construction services. The company has over 15,000 employees country-wide. In order to address its operational resilience from the high risk imposed by regional seismicity, Sekisui House developed and implemented a new "Disaster Proof Factory" concept at one of its facilities in the Tohoku region.

The disaster proof concept hinges on three objectives. These objectives, which help insulate operations from emergency and disaster events ranging in scope from prolonged power outages to major earthquakes, include:

- Freeing the factory from reliance on electrical infrastructure: This was achieved by installing redundant power generation and storage systems, inclusive of a solar panel array, gas generators, and chemical battery banks. Reserve gas is stored onsite. The system is able to provide enough electricity to power more than 220 households for a week or more in the event of a power outage. During non-disaster times, it helps to reduce electricity costs and demand on the power grid.

- Decreasing vulnerability to commodity shortages: The company has established large onsite emergency stores of shelf-stable food and water.

- Decreasing employee and community vulnerability: The company supports the facilitation of disaster preparedness informational and hands-on (e.g. AED and collapsed structure rescue) training sessions in the community, and conducts full scale disaster exercises in conjunction with local emergency responders on factory grounds.

After the 2011 Great East Japan Earthquake, the company entered into a Public-Private Partnership with the town of Shikama to provide shelter for 250 residents for up to seven days, and to equip the factory to serve as the alternate location for the community's emergency operations center in the event that the primary site (the town hall) is damaged or destroyed by an incident.

Source: Sekisui House, 2014; GE Japan, 2015

Lessons:

- Business continuity and disaster recovery planning activities may have associated non-disaster financial benefits
- Businesses are less likely to experience business interruption if their employees and the community at large are resilient to disaster impacts

Any disruption has the potential to adversely impact a business, and a lack of planning leaves them exposed. This is particularly true for MEs and SMEs with few cash reserves. Continuity plans enable business owners and operators to better manage their customers', creditors', and suppliers' needs while simultaneously guiding the business in assessing and addressing facility, inventory, equipment, and staff recovery requirements.

The degree to which businesses conduct BCP or ERM activities varies significantly by business size, sector, and the country where it is located. Even in wealthy countries where BCP practices are most prevalent, 14% of large businesses and over 50% of small businesses have no plans in place (AT&T, 2012; Travelers Insurance, 2014). At the time the Great East Japan Earthquake struck Japan, only 40% of Japanese small businesses had continuity plans in place. Among APEC countries, the number of small businesses with such plans is reported to be only 17% (APEC, 2013).

Business as a Source of Philanthropic Humanitarian Support

In addition to protecting their facilities, operations, and employees and facilitating their own recovery when impacted, many businesses also play an active role in helping others recover. Businesses have a long history of providing cash and in-kind assistance in disasters, much of which supports long-term recovery.

While monetary and material donations are the most basic form of support, they are nonetheless critical to recovery success and the private sector contribution in this regard often exceeds all other sources (UNOCHA, 2013). Like the media, corporate philanthropy is most active during the response period when lifesaving and life sustaining operations are ongoing, mostly because this is the time when disasters capture the most attention. Approximately 21% of cash donations directly support longer-term recovery issues that include reconstruction, recovery, and risk reduction (Foundation Center, 2014). Unlike with other stakeholders, private cash donations are more difficult to track and highly detailed data and statistics therefore do not exist, especially in terms of SME contributions. Larger businesses often provide financial support through a distinct philanthropic foundation or division, while most SMEs that lack such structures simply pull from capital reserves. Private sector financial contributions are often focused on the communities where they are directly invested.

Businesses also donate the products they sell or the services they offer, many of which have wide applicability in the recovery context. Examples include food and water, clothing, construction supplies, pharmaceutical and medical supplies. In many cases, contributions of goods and services are much easier for companies to make than direct cash contributions.

Case 13: Good360 Product Matching, Oklahoma Tornado,2013

Topic: Product Donations

Good360 is an international nonprofit organization that supports disaster response and recovery by acting as a conduit between corporate donors and humanitarian organizations. The organization was created in 1983 and has since formed a network of hundreds of companies and over 40,000 humanitarian organizations. Good360 encourages companies to donate slow moving, obsolete, and seasonal inventory to charitable organizations. Items must be new and nonperishable, and have included such things as clothing, books, toys, personal care products, mattresses, school supplies, computers, office equipment, and more. The organization uses technological solutions to match donated goods with specific requests in order to limit the number of inappropriate donations which typically end up in landfills.

In 2013, a major (F5) tornado struck Moore, Oklahoma in the United States, destroying many homes and leaving victims with few possessions. Good360 initiated the "Student Strong" program to help impacted students to resume their education. The organization worked with a number of local nonprofit organizations to identify product needs, and then worked with their network of companies to source in-kind donations that matched those needs. Companies Nike, Burt's Bees, and Thirty-One Gifts supplied clothing, personal care products, and school bags to assist more than 4,000 students. Transportation of the products was also donated by shipping firm UPS. Students who attended the recovery assistance programs were also offered free hairstyling from Paul Mitchell Salons and eye screenings from an eye clinic run by nonprofit Feed the Children. In total over USD1 million donated products were distributed.

Source: Good360, 2014

Lessons:

- Companies are often willing to provide in-kind donations of their products but simply lack the knowledge of what is needed or the means to deliver them
- In-kind philanthropy is more impactful and less disruptive or wasteful if mechanisms are in place to match needs with offers

Businesses can provide both in-kind donations of products (e.g. heavy lifting equipment, construction supplies, pharmaceutical and medical supplies, and food) and services (e.g. the transport of supplies or people or the warehousing of donated goods) as well as direct contributions of cash. Zyck and Kent (2014) note that there are several forms of in-kind assistance that only the private sector is equipped to reliably provide. This includes communication services, mobile money platforms, imaging technologies, and others.

Case 14: UPS Response to Haiti Earthquake

Topic: Philanthropic Support, Specialist Skills and Services

Postal and package delivery company United Parcel Services (UPS) is a global firm employing over 237,000 people in over 200 countries and territories. The company has developed plans and procedures to support disaster response and recovery operations through its logistics and supply chain networks. Support is funded through its philanthropic UPS Foundation.

When Haiti was struck by an earthquake in 2010, UPS responded with USD500,000 in financial assistance. However, the company also responded to the needs of the disaster impacted nation in a manner that fell directly within their product line and which greatly exceeded the cash donation in financial value. Just two days after the earthquake, UPS tasked a team of logistics experts to serve on the UN World Food Programme through the UPS Logistics Emergency Teams (LETs) program. The LETs initiative involves providing "loaned" logistics experts to oversee on-site disaster response, normally for a deployment of three-to-six months. These experts assisted in setting up warehousing and distribution operations in neighboring Dominican Republic until the Port-au-Prince airport was again operational. They also worked with officials from a number of NGOs and international humanitarian relief organizations to strengthen their supply chain management, distribution, and logistics capabilities. By the end of operations, the UPS LETs team had assisted the World Food Programme (WFP) in the dispatching of 607 truckloads from Santo Domingo to various destinations in Haiti, transporting 1,835 metric tons of food and 14,328m³ of non-food items for 52 different organizations.

Source: Foundation Center, 2014; Treacy-Lenda, 2010

Lesson:

- Businesses can often supplement the work of traditional humanitarian actors through their products and services in a manner that is more efficient and effective than if those organizations or entities attempted to conduct the activities or purchase the products themselves

Many companies have come to recognize the relevance of their core business lines in the disaster recovery context, noting that they are perhaps better suited to perform these tasks than government or NGO entities. Moreover, many businesses are institutionalizing these capacities in order to better complement the activities of government and nonprofit counterparts. Examination of recent disasters reveals private sector partners participating in response and recovery activities from the earliest moments after recognition occurs. Businesses provide both life saving and life sustaining resources to victims in the short-term, and many remain engaged for the duration of recovery that follows.

Businesses are also capable of assisting in or even leading various disaster response and recovery functions. Disaster logistics is just one area where business capabilities can far outpace those of governmental and nonprofit actors. At present, only militaries come even close to matching the logistics capabilities of the private sector, yet only in rare cases have businesses been tapped to coordinate this function. Companies, particularly large enterprises, have perfected the processes of sourcing, inventorying, warehousing, transporting, and distributing goods, and they maintain the facilities, equipment, and expertise to perform all of these tasks on an ongoing basis. For many large enterprises, conducting disaster logistics is little more than a shift in regular business practices.

The private sector is also equipped to handle the distribution of mass care commodities like shelf-stable food, water, hygiene supplies, and clothing, especially since most of these resources are derived from the public sector itself. Government efforts to stockpile goods are often technically difficult and financially questionable and therefore rarely match the efficiency or capacity achieved through on-demand sourcing from the private sector. United States based retailer Walmart exemplified private sector disaster sourcing capacity when in the just the first two weeks of the Katrina disaster it moved over 2,500 containers of response and recovery supplies into the impacted areas. The company also allowed disaster responders to draw freely from the stocks contained in their network of stores dispersed throughout the impacted areas, provided trucks and drivers to other humanitarian organizations that had collected relief supplies but were unable to transport them to the affected area. Companies like the United Parcel Service (UPS), Home Depot, and many others have assumed similar functions to supplement overwhelmed governmental and nongovernmental resources.

Case 15: Actions of Telkomsel Support Early Recovery , Jakarta Floods, 2013

Topic: Philanthropic Support, via Business-Related Response Activities

In January of 2013, Indonesia's capital Jakarta and the surrounding areas experienced heavy flooding. Because the event occurred along some of the city's main thoroughfares, the economic impact of the flooding was severe. Telkomsel,

the largest cellular operator in Indonesia with over 122 million subscribers, became heavily involved in response and recovery operations given that telecommunications networks were impacted.

Telkomsel had previously made the decision to invest in disaster capabilities, including the establishment of a disaster team called Telkomsel Recovery Emergency Response Activity (TERRA). Over 300 team members were provided with special response and recovery related training, and regional offices were stocked with requisite equipment (including inflatable boats, generators, and large tents capable of housing field operations).

When the disaster became imminent, the TERRA team was mobilized and began assessing and repairing the damaged communication network components. However, in addition to addressing their own needs, the team supported the evacuation of residents and provided food and other relief commodities to those affected. Free telecommunications services that the company provided for several weeks following the onset of the floods supported ongoing response as well as early recovery efforts.

Source: Burke and Fan, 2014

Lessons:

- Businesses should view the development of their own emergency response capabilities as a critical part of ensuring access to the services or products they provide for their clients and for the public, therefore constituting a major factor in the survivability of the business
- These emergency response capabilities should be defined and developed in cooperation with local government officials so as to leverage full potential for rapid recovery

By definition, a disaster is a situation where response and recovery requirements are far greater than the existing capabilities in one or more functional areas of the jurisdiction where the disaster was declared. The community's or country's capabilities, therefore, are as influential in determining vulnerability to disaster as are the consequences of the event. Therefore, by formalizing the private sector role in hazard risk management, communities can instantly reduce disaster risk and vulnerability by increasing the capacity against which response and recovery requirements are measured. Other functional areas where the private sector has been found to be well-suited to support governmental and nongovernmental response and recovery capacity include damage and needs assessments (especially inspections), information and knowledge management, interim and permanent housing, communications, debris management, infrastructure, and land- use planning, to name a

few. Communities that formalize the private sector role are less likely to become overwhelmed.

Case 16: IBM and Typhoon Haiyan Response

Topic: Philanthropic Support, Technical Assistance

IBM is an international technology and consulting company with over 435,000 employees worldwide. The company characterizes its philanthropic response and recovery strategy as follows: "we listen for the critical unmet needs that directly affect lives and livelihood, and we act quickly when our technology and innovation can make a difference". This typically involves the deployment of employee volunteers who have the specific skills and expertise to deploy and establish their in-kind support.

Well before Typhoon Haiyan had made landfall in the Philippines on November 8, 2013, IBM had taken actions in the region to manage what it considered high natural hazard risk. This interpretation was the result of several previous typhoons, and most recently the 2006 catastrophic landslide in Leyte Province. These events had prompted IBM to work with the Government of the Philippines to establish a number of Corporate Service Corps teams equipped to enhance available capacity in all phases of disaster risk management. The company also worked closely with the Government of the Philippines to customize and deploy an open source disaster management software application called Sahana designed to help reunite families and track needed supplies.

When Typhoon Haiyan struck, IBM teams in the United States and Philippines used the disaster as an opportunity to additionally deploy and test cutting edge technology tools to enhance the government's need for decision-making support. Because an active partnership was already in place between the Philippines government and the local IBM Philippines team, the company was able to quickly mobilize its global operations to launch two solutions:

- Integrated Communications: Within two weeks, IBM began deployment of an Integrated Communications System which enabled cross-radio frequency communications (radio-over-IP) that addressed the communications needs of first responders and emergency personnel. It gave field operators real time push-to-talk voice communications with the command center and with each other using two-way radio systems, smartphones on mobile data, and workstations with satellite uplinks.
- Intelligent Incident Command: Also within weeks, IBM established an Intelligent Operations Center (IOC) with a robust platform of hardware, software, and analytics, supplemented with software called Touch Assisted Command and Control System, or TACCS™ from another IBM

business partner, Priority 5 Holdings, Inc. The integrated IOC solution provided emergency management operations capabilities that streamline and integrate government response field operations. It pulled data from disparate sources into a common operating picture. It also provided real-time situational awareness, and allowed the Philippines Department of Science and Technology (DOST) and the National Disaster Risk Reduction and Management Council (NDRRMC) to work seamlessly in planning recovery operations.

By April 2014, the IOC for emergency management solutions was fully operational at DOST. With these tools in place, it allowed the team at DOST to identify scenarios for planning based on numerous projected storm tracks when Tropical Depression Domeng (Peipah) was approaching. Using data from Project NOAH – the Nationwide Operational Assessment of Hazards that provides research in natural disaster risk mitigation in the Philippines –the team was able to quickly assess locations at greatest risk. IBM provided a grant that covers full skills transfer and two years of support, including an IBM led transition team for six months to ensure that the government will continue to maintain the skills and expertise needed to fully maximize the power of this new technology for the good of the Filipino people.

Source: US Chamber of Commerce, 2014

Lessons:

- Pre-existing relationships between businesses and government are invaluable to designing post-disaster recovery solutions
- The private sector may be best positioned to develop and deploy cutting-edge recovery support technologies

Many large businesses have such well-established response and recovery capacities that formal emergency operations centers (or similar structures) have been formed to provide direction and coordination. Like similar structures in government, these EOCs are typically directly governed by an emergency operations plan and associated standard operating procedures (SOPs), are equipped with specialized equipment for communications, information management, and other needs, and are tested through exercises and drills. For some companies, the structure exists solely to address business continuity issues, but for many businesses that have become much more involved in humanitarian efforts the operations housed in these EOCs run parallel to those in the public sector.

Case 17: Corporate Emergency Operations Centers (EOCs)

Topic: Private Sector Humanitarian Response

Many businesses have established formal Emergency Operations Centers (EOCs) in order to provide structure for operational processes and actions outlined in the business continuity plan (orother emergency plans maintained by the company). US based home improvement retailer Lowe's, which often plays a significant role in community recovery on account of the reconstruction materials and equipment that are sold in its stores, has a robust business EOC in place. The Lowe's Command Center, which is located in Mooresville, NC, provides ongoing situational awareness from the moment an impending event is recognized and then throughout the duration of the disaster. The Command Center was activated in response to Hurricane Irene (2011), which impacted more than 100 of the company's stores. During this event, the Command Center manager activated the center before the storm made landfall and brought in representatives covering a wide variety of functions like HR, public relations and community relations as well as a repair, building and construction specialist to advise on moving products to support the stores impacted by the hurricane.

US based retailer Target took a slightly different approach by establishing a Corporate Command Center (C3) that is operational 24 hours a day. The Minneapolis based C3 has remained operational since opening in 2005. The center enables the company to maintain strong environmental surveillance and its staff monitors any possible business disruptions.

Source: Pittman, 2011

Lessons:

- Businesses can improve their operational response and recovery readiness and effectiveness by establishing special operations centers
- Business EOCs can serve as an effective point of engagement and coordination with government, nonprofit organizations, and other DRM stakeholders

Provision of Training or Other Pre-Disaster Recovery Capacity Building Assistance

The area for which businesses have perhaps the most to offer in support of community sustainability is in the sharing of their disaster risk reduction skills and expertise. The private sector is a tremendous source of innovation in both structural

and nonstructural mitigation methods given their need to manage their own hazard risks, including those associated with consequences that have the potential to spill over into the surrounding community. The Bhopal disaster in India, the San Juanico propane explosions in Mexico City, the BP oil spill in the United States, and the Fukushima nuclear disaster are but a small list of examples where business related risks were poorly managed, and each reminds us of the breadth of risk management activities businesses conduct on a regular basis. However, businesses are also behind a majority of the innovative technology and techniques used to minimize community disaster risk, including construction standards and methods, infrastructure protection measures, hazard modeling and detection systems, and public notification systems. Businesses also increase or decrease community and national risk depending on how they incorporate disaster risk reduction methods and mechanisms into the products they manufacture and the construction projects they complete (both structures and infrastructure). The disaster risk reduction knowledge and capabilities maintained in the private sector to address these and other hazards is a goldmine waiting to be tapped.

Case 18: AON Insurance

Topic: Technical Assistance

AON is a leading global insurance broker and risk management consultant. Following disasters, the company offers its clients a broad range of risk expertise and services to help them recover financially and operationally and to address risk from similar or other events in the future. The company deploys risk and insurance professionals throughout the world when disasters strike. Personnel advocate on behalf of clients to ensure their loss claims are properly documented, and with insurance carriers to ensure appropriate payments are delivered quickly. They have provided this assistance in the aftermath of Hurricane Katrina in the United States; the Thailand Floods of 2011; the Great East Japan Earthquake of March 2011; the Joplin, Missouri (USA) Tornado of 2011; and the US Midwest Tornado outbreak of May 2013.

In early 2013, AON executives began working with the nonprofit recovery organization St. Bernard Project (SBP). The mission of SBP is to ensure that disaster impacted communities recover in a prompt, efficient, and predictable way. AON supported SBP efforts by providing technical assistance on issues of risk planning and response at the community and local government levels. At the core of the discussion was SBP's Disaster Recovery Lab (DRL), a results driven model designed to ensure that disaster impacted communities have a prompt, efficient, and predictable path to recovery. Pre-disaster, DRL's goal is to educate communities about risks and how to best mitigate them. After a disaster, DRL shares its model with local communities so that nascent recovery organizations can use SBP's standardized, scalable, and replicable model. As a strategic partner

of SBP, AON now plays a central role in strategy and execution, with a primary focus on the pre-disaster component of DRL. AON risk management experts are also creating a series of disaster planning educational guides specifically geared to the needs of homeowners, small business, and local government. These include:

- "Be Prepared" Checklist: Catastrophe Planning for Small Businesses
- Understanding the Value of Your Business: Risk Exposure Analysis Guide
- How to Successfully Partner with Your Insurance Carrier: Tips and Tricks
- Capabilities and Qualities of a Restoration Firm: A Guide to Your Recovery
- A Comprehensive Guide to Understanding Your Insurance Policy
- An Introduction to Risk Management for Small Business Owners, CFOs, and COOs

As further outgrowth of the strategic partnership, the AON team members have become involved in SBP's mentorship program. The intent of this program is to better arm SBP team members with the knowledge base to drive further awareness on the fundamentals of specific risk management functions.

In October 2013 and March 2014, teams from AON and Zurich Insurance participated in several SBP sponsored home rehabilitation projects on Staten Island to rebuild houses impacted by Superstorm Sandy. The dedicated team of risk and insurance professionals applied elbow grease and unwavering commitment to demolish, drywall, and paint these houses, making them once again habitable for their displaced owners.

Source: US Chamber of Commerce, 2014

Lessons:

- Insurance companies are perhaps the most vested stakeholder in business disaster resilience, and may be willing to invest in community-wide disaster risk reduction and recovery capacity development programs
- Government can partner with the insurance industry to develop mechanisms through which the recovery of disaster impacted businesses is enhanced in both its effectiveness and efficiency

Direct Commercial Engagement

Burke and Fan (2014) explain that businesses may also "engage in crises in the context of a specific programme, [including] collaboration with national and local

government authorities or with international NGOs". Research following disasters in Indonesia, Haiti, Jordan, and Kenya found many examples where businesses provided post-disaster assistance that was in line with their core business functions, including tasking employees to governmental or nongovernmental agencies involved in recovery efforts, by providing joint training or technical services (e.g. in logistics and supply chain management or in technical skills including communication and construction). This assistance is typically formalized through pre-established agreements or partnerships. Burke and Fan (2014) explain that the distinction between this type of engagement and typical philanthropic corporate social responsibility is derived from distinctions in the motive for engagement. Rather than for charitable reasons, the assistance is seen as being closely aligned with the businesses' core functions and concerns.

Private sector entities are the primary source of products and services in the non-disaster economy, especially in the majority of cases where such products and services are either not offered by the public sector or cannot be produced and delivered in an efficient and economical way. It makes little sense for the government to conduct research and development or to invest in the production and logistics capacity when the private sector leads in innovation and has the overwhelming advantage in achieving supply chain efficiency and long-term marketability. Government agencies can rarely afford such investments as are required to recreate such capacity on the infrequent occasions when a disaster has occurred, nor can they justify the purchase and/or maintenance costs, especially when considering perishable items or high-tech systems.

During recovery, there is a remarkably high demand for private sector goods and services, including construction equipment (e.g. cranes and excavators), supplies (e.g. lumber, cement, hardware), and skilled labor. This includes the use of private sector consultants for long-term recovery planning efforts, given that consultants are typically less subject to political pressures and may be better positioned to provide unbiased plans and recommendations. They also have many specialized skills that communities not often impacted by large scale disasters are unlikely to have. The US Federal Emergency Management Agency (FEMA) identifies a number of recovery related skills and resources that are generally more economical when sourced from the private sector, including:

- Construction firms can provide specialized equipment to remove debris, move earth to create or reinforce levees and other barriers, transport material, repair damaged infrastructure, and to train equipment operators and advise volunteers on safety procedures
- Engineering firms can provide expert advice on building standards and practices, as well as advice and assistance in assessing damage to structures
- Universities can organize volunteers, provide training for emergency

personnel and public officials, provide public education on hazards and appropriate mitigation measures, provide job counseling for those left unemployed, and provide temporary shelter to disaster victims, as well as technical assistance

- Hotels can provide interim shelter options for disaster victims and emergency responders
- Hospitals can provide counseling services, medical care, and training
- Freight companies and distributors can transport food and water, clothing, building materials, and other commodities
- Building supply companies can provide lumber, plastic sheeting, and other building materials
- Retail stores can assist with the transport and distribution of food, water, ice, and other essential items

Zyck (2014) found that businesses are increasingly developing commercial models that are capable of addressing humanitarian needs and reducing vulnerability from future disasters. Businesses have long supported humanitarian response through sales of products and services, and aid agencies have traditionally spent half (or more) of their funds on the purchase of goods and services from businesses. Forums dedicated to sourcing in this manner have emerged, including the AidEx (Brussels and Nairobi), the Dubai International Humanitarian Aid, and the Development Conference and Exhibition (DIHAD).

Case 19: Home Depot Disaster Recovery Operations

Topic: Providing Access to Needed Recovery Resources

The Home Depot is a home improvement retail supply company with over 2,200 stores and more than 300,000 employees. In recognition of the criticality of their product line to recovery operations, specifically that of construction supplies, tools, and other equipment, the company's involvement in disaster operations has grown significantly. Support is provided through employee volunteerism, cash and in-kind donations, partnership with private, NGO, and public sector entities, and rapid resumption of product availability in disaster impacted markets.

Volunteer recovery support is structured under a program called Team Depot, which is employee-led and has existed since 1992. The program uses a decentralized approach for recruitment and team organization wherein each of the company's retail outlets has a distinct team. Employee volunteer groups led by trained Team Captains provide technical assistance and construction labor following disasters to repair and reconstruct damaged homes. These efforts are supported by the Home Depot Foundation with cash and in-kind donations of tools and building materials. The teams have also formed partnerships with

groups engaged in similar activities, including nonprofit organizations. To date, Team Depot members have provided several million hours of recovery assistance to impacted communities.

The Home Depot also supports recovery by having robust business continuity plans in place which ensure that stores remain open during disasters or are able to reopen quickly thereafter. Home improvement products are in very high demand following a disaster, and recovery can become stalled if access becomes limited. Stores also provide technical assistance to customers engaged in repair and recovery efforts of their homes or other structures. Merchandising and supply chain teams are pre-positioned with surge quantities of high-demand recovery supplies (e.g. tarps, generators, wet vacuums, and water pumps) in order to meet resident clean-up support demands. The company collaborates with similar or complementary businesses by setting up retail resource centers in the store's parking lots which help to simplify the rebuilding process.

The Home Depot contributes regularly to NGOs engaged in emergency management, including an annual contribution of USD500,000 to the American Red Cross.

Source: Home Depot, 2015

Lesson:

- Resilience of businesses that sell recovery specific products and services can increase the pace of recovery

Case 20: Xylem Disaster Services in 2013 Argentina Floods

Topic: Private Sourcing of Disaster Assistance

In May of 2013, after 40 centimeters of rain fell in Argentina's Buenos Aires Province in less than two hours, flash floods and widespread flooding occurred. Drainage systems were quickly overwhelmed, and many homes were flooded (some up to the roof). The Argentine government called the storm an "unprecedented catastrophe", and more than 3,000 people were evacuated and tens of thousands left without electricity. The country's largest oil refinery (Ensenada Station), which is located in the area, sustained 1.7 meters of water.

Xylem was one of the companies that both public and private sector entities secured contracts with to remove floodwater from buildings and many underground structures. The company was able to deploy a staff of six that provided 24 hour service throughout the crisis. The company's pumps removed approximately 30,000 cubic meters of water in Buenos Aires city, 29,000 cubic

meters in the Barrio Privado San Andrés, Tigre neighborhood, and 9,000 cubic meters in Pasionaria, San Isidro. Xylem was also contracted by the oil refinery to remove 4,000 cubic meters from the refinery's pump house and 205,000 cubic meters from the streets and area around the plant.

The company had been involved in disasters prior to this event, including Hurricane Sandy. In that event, the company had time to preposition a cadre of technicians and hundreds of pumps in anticipation of needs that would likely arise. They have since formed a crisis committee that has helped to standardize and improve disaster related services.

Source: Xylem, 2012; Cho, 2013

Lessons:

- Private sector contracting is a way to increase recovery capacity without having to invest in specialized equipment prior to an actual disaster. It also prevents the need to stockpile and maintain specialized equipment that may have few other uses for the public sector
- When disaster contracting becomes mainstreamed, it becomes more economical for both the public sector that sources such contracts and the private sector which fulfils them. Investments become more attractive and thus more likely if the private sector has evidence that their risk will pay off in the event of a disaster

Case 21: Private Sector Contracting following the 2011 Great East Japan Earthquake

Topic: Limits of Private Contracting

Following the 1995 Great Hanshin-Awaji Earthquake, the Government of Japan contracted several private sector facilities equipped to process debris into construction materials. Several of these were cement companies, which turned the processed debris into aggregate, which was suitable for use in reconstruction efforts. In addition, to meet the increased demand for construction materials which increased several fold in the months and years following the disaster, these companies made significant capital investments in facilities and equipment to meet the increased demand. During this time, the investments resulted in profit for the company, rapid and reliable availability of construction materials to support recovery, and an economic boost for the local economy.

However, as reconstruction progressed and the demand for these materials declined, many companies ended up having to either shrink their operations or go out of business. Given this precedent, no matter how drastic demand for aggregate and concrete have increased in subsequent disasters, there has been a

remarkable lack of companies willing to take the steps necessary to invest in business expansion in order to meet disaster related demands. These sentiments were in addition to the fact that an extended period of contraction in the construction sector had left few businesses capable of making such an investment even if they saw fit to do so.

When the Great East Japan Earthquake struck, severe resource shortages struck Miyazaki and Iwate prefectures beginning in the summer of 2012. These shortages were particularly severe in terms of aggregate (sand, gravel) and concrete. Aggregate used to raise ground levels in coastal areas were also of limited supply.

Source: Hisada, 2013; Bullock & Haddow, 2013

Lessons:

- Private sector capacity to meet demand for goods and services may not be capable of surpassing normal production levels
- Businesses may be unwilling to invest their capital reserves into production or operational capacity if they feel that long-term revenues are unsustainable

Case 22: Ryder Truck Transportation and Logistics Support

Topic: Providing Access to Needed Logistics Support and Services

Ryder Systems is a global leader in fleet management and supply chain transportation services. It has annual revenues exceeding USD6 billion and it has operations in North America, Europe, and Asia. It maintains a fleet of trucks and warehouse space. The company bills its disaster recovery operations as "helping businesses get back to business", which it sees as critical component of rapid economic recovery for communities. Ryder maintains internal disaster and business continuity plans to protect their own operations, facilities, staff, and vehicles, and assists their customers with preparing for and recovering from disasters as well. Because they provide supply chain support to a wide range of industries, including food distribution, pharmacies, and construction supplies, among others, they consider their efforts critical to community recovery. In advance of notice events (e.g. cyclonic storms), the company pre-positions vehicles closer to impacted cities to support increased demand for transportation from local businesses and NGOs managing recovery. Many vehicles are equipped with onboard telematics which address road closures and other disaster related logistics issues, and the company maintains its own stocks of fuel which are topped off prior to storms in order to offset local energy supply problems. During the emergency period the company constantly monitors fuel availability and redistributes as needed to meet demand.

The company also supports supply chain reliability by providing technical assistance to customers. Ryder logistics engineers work with clients to move critical freight forward, to find alternate suppliers, and to divert shipments where feasible. Prior to Superstorm Sandy in the United States, Ryder repositioned inventory for a home improvement retail customer and shipped 90 truckloads of relief commodities (e.g. bottled water and gas cans) three days prior to the storm. They worked with their commercial customers, including an automotive manufacturing firm, to identify the most critical inventory and pull ahead material from suppliers in the path of the storm. A transportation management team worked to secure carrier capacity so customers could move freight as soon it was safe to do so.

Source: US Chamber of Commerce, 2014

Lessons:

- Private sector entities involved in community recovery assistance stand to benefit from hazard and event specific data and information generated or collected by government
- Businesses may work together in disasters in a manner that greatly enhances community and national government response and recovery capacity

Engaging the Private Sector in Disaster Recovery

Chapter 3

The private sector is a driver of community, national, and in some cases international recovery and thus direct collaboration is a must. Since majority of disaster damages are sustained by the private sector (including individuals, households, and businesses), the cost of recovery and likewise determinations about how the community is rebuilt rest with these stakeholders. In fact, during the 2009 Typhoon Ondoy in the Philippines, the 2010 Pakistan Floods, and the 2011 Thailand Floods, the private sector sustained 90%, 70%, and 95% of disaster losses respectively (Asian Disaster Preparedness Centre, 2013). The business role in disaster recovery should not be underestimated. While communities and countries would like businesses to make every effort to build back better, private sector entities are obligated to take only those measures dictated by laws, regulations, or ordinances.

Businesses are acting on a collective willingness to support disaster recovery efforts in the communities where they operate as well as farther afield. Their contributions are diverse, and range from self-preservation to direct philanthropic humanitarian interaction. Having already proved to be a formidable and established player in multiple disaster events, businesses can no longer be viewed as a great untapped resource. Despite these successes, businesses remain largely outside of most incident management systems, and are seldom included in recovery decision-making structures. Oftentimes, businesses are absent from (ex-ante) community recovery capacity development efforts. Moreover, they are almost never given an equal voice in planning, if they are given any voice at all. There are even organizations and individuals that still perceive private sector interest in disaster operations and services as a conflict to the interest for both the people and the institutions impacted by disaster.

Just as the options for business sector support in disaster recovery are diverse, so are the opportunities for business sector engagement. The strategy utilized ultimately depends heavily upon the nature of the business, the type of assistance sought, the coordination structures involved, and several other factors unique to each event and every opportunity.

Zyck and Kent (2014) explain a number of strategies that can be used to create or otherwise enhance engagement opportunities. These include:

- Helping the private sector and aid agencies to understand each other's structures, processes, terminologies, and potential contributions whether through the release of publications, the provision of training, the release of videos, or other methods
- Facilitating or otherwise supporting regular in-person dialogue on strategic and operational issues with private sector actors and other humanitarian stakeholders in order to build relationships, including meetings that occur on both the technical and the strategic levels
- Ensuring that local governments and humanitarian agency country offices are prepared and able to draw upon and "activate" existing global partnerships, and that clear and widely understood policies and procedures exist
- Establishing private sector focal points in government and in the humanitarian sector in order to better establish, foster, and maintain dialogue with businesses in the midst of a disaster event
- Developing information sharing systems and portals to link businesses and other entities in disaster recovery, which allow businesses to both support and benefit from ongoing assessments, analyses, operational awareness efforts, and evaluation of ongoing recovery
- Initiating programs that support staff exchanges between businesses, government, and aid agencies in order allow each to gain a better appreciation for their respective approaches and identify opportunities for collaboration or mutual learning (e.g. promoting staff exchange through business-to-business humanitarian and preparedness efforts)
- Analyzing and promoting incentives for joint approaches to humanitarian crises, resilience and sustainability, namely those that encourage businesses and aid agencies to collaborate as partners or as separate but aligned actors (e.g. innovation hubs between businesses and aid agencies that address the key problems facing humanitarian action)
- Investigating ways to support SMEs in their efforts to increase their ability to recover quickly from disasters and to encourage their participation in disaster response and recovery efforts

Given the skills, knowledge, finances, equipment, and motivation that exist in the private sector, the benefits of increased involvement are tremendous. The private sector holds a wealth of potential as a disaster recovery asset, but both the businesses themselves and those tasked with hazard risk management must appreciate the benefits of engagement and the means to do so effectively if this role

is to be properly established. While instances of public-private collaboration in disaster risk recovery are much more commonplace than even just one decade ago, their prevalence remains far from ideal (UNISDR, 2014). It is incumbent upon all traditional partners in the disaster risk management community, including government and the nonprofit sectors, to develop and apply new models of engagement.

This section presents and explains several common avenues for engagement.

Engagement through Planning and Preparedness

Businesses are no strangers to the management or risk and planning for recovery. Most large companies, and many SMEs, make plans and develop capacity to deal with adverse events. As described throughout this guidance note, these entities become an integral part of community response capacity simply through their ability to minimize impacts to their operations, to continue providing their goods and services soon after the disaster has ended, and in many cases to begin providing critical response and recovery assistance.

Businesses constitute an important component of any community's or nation's disaster risk management capacity. Despite this, businesses have traditionally not been a party to formalized community or country-wide efforts to develop response or recovery plans, and are not typically invited to participate in disaster drills and exercises. Neglecting to include adequate private sector representation in these efforts has a number of negative effects both for the quality of the planning and preparedness achieved and for the resilience of the businesses themselves. For starters, the knowledge and experience of businesses on risk issues is expansive and without question offers a number of positive benefits. Second, by failing to include businesses in the process, assessment of the impacts to, action of, and assistance from the business sector will be built largely upon assumptions rather than validated fact. Thirdly, the businesses themselves stand to gain considerable training and education benefits, with regards to better understanding public and nonprofit sector response and recovery systems and structures, and philanthropic or for-profit business opportunities with regards to exisiting niches and gaps, by participating in planning and preparedness efforts. Finally, the relationships that effective response and recovery systems rely on are not established in the aftermath of a disaster, but in the relaxed and low-stress planning and preparedness environment.

Government and the nonprofit sector can immediately or incrementally increase the representation from and participation of private sector entities in many aspects of the planning process. Opportunities include:

- Mitigation Planning
- Response Planning
- Recovery Planning
- Recovery Coordination
- Community preparedness programs
- Tabletop exercises
- Drills, functional exercises, and full-scale exercises

Businesses should also be invited into the post-disaster long-term recovery planning effort. Such plans have profound impacts on the survivability of businesses and businesses typically have strong sentiments about what is acceptable to them and what is not. Businesses are also among the largest sources of recovery funding, and they are typically limited only by existing regulations and their own budgets when it comes to rebuilding. Inclusion in the planning process increases the likelihood that community-wide recovery goals, including those of disaster risk reduction, climate change adaptation, sustainability, and others, are adhered to.

Case 23: Fiji Disaster Exercise

Topic: Engagement through Planning and Preparedness

Fiji has been impacted by a number of weather-related events in recent years, many of which have caused widespread and damaging floods. While population displacement and damage to infrastructure and homes are the most common impacts, businesses are often affected either directly or indirectly. Nadi City, which is the nation's hub for tourism and is where the international airport is located, was quickly inundated by flood waters during a tropical storm that struck in March of 2012. The Nadi River peaked during the nighttime hours at 6 meters above mean levels, breaching its banks and destroying a number of businesses. Because there were no preexisting relationships between government responders and the impacted businesses, there was little the government could do to provide the kind of warning that would have allowed many shop owners to move their goods and assets to higher ground. Almost every business was impacted, and the resulting financial impact was staggering. Moreover, because incoming tourists had no way to travel from the airport to their hotels once they arrived, the Nadi International Airport was closed to inbound passengers for four days – a first for the country.

Since the flood, the District Government has worked to increase collaboration between the public and private sectors on disaster related issues. One such effort includes the conduct of joint disaster exercises. In 2014, the Fiji Police Force and the National Fire Authority conducted a mock exercise in the town of Namaka, which is close to Nadi. In this event, firefighters and police officers simulated a disaster situation. The purpose of the event, according to the Superintendent of

Police, was to strengthen relationships between firefighters, police officers, and the business community.

Source: Dean, 2014

Lessons:

- Exercises are an effective way for businesses to better understand their own needs and the roles they will be expected to play in the event of a disaster
- Wide participation in exercises increases their accuracy in validating plans and capacity estimates
- Businesses that participate in disaster exercises may be more likely to take the actions necessary to ensure a more effective recovery once impacted by a disaster

Governments are electing to establish positions or offices that are dedicated to fostering engagement with the private sector and other nongovernmental partners. In doing so, they signal to the private sector that their engagement is valued, and create a single point of contact. Moreover, the scope of activities that many of these offices have implemented, which in addition to regular outreach, research, and relationship building, includes the provision of training, the hosting of collaborative workshops, conferences, and working groups, the planning and conduct of drills and exercises, and the provision of grants, merits a dedicated staff and budget. The UNISDR Private Sector Alliance for Disaster Resilient Societies (ARISE) and its regional and national Networks are an example of this type of engagement at the global, regional, and national levels.

Case 24: US FEMA Private Sector Division

Topic: Engagement through Planning and Preparedness

In December of 2011, the United States Federal Emergency Management Agency (FEMA) released a document that sought to formalize the role of the private sector in disaster risk management and to clarify the relationships that exist between the different stakeholders. This document used the term "Whole Community" to describe stakeholder involvement, and described the concept as follows:

As a concept, "Whole Community is a means by which residents, emergency management practitioners, organizational and community leaders, and government officials can collectively understand and assess the needs of their respective communities and determine the best ways to organize and strengthen their assets, capacities, and interests. Whole Community is a philosophical approach on how to think about conducting emergency management. There are

many different kinds of communities, including communities of place, interest, belief, and circumstance, which can exist both geographically and virtually (e.g. online forums). A Whole Community approach attempts to engage the full capacity of the private and nonprofit sectors, including businesses, faith-based and disability organizations, and the general public, in conjunction with the participation of local, tribal, state, territorial, and Federal governmental partners. This engagement means different things to different groups. In an all-hazards environment, individuals and institutions will make different decisions on how to prepare for and respond to threats and hazards; therefore, a community's level of preparedness will vary. The challenge for those engaged in emergency management is to understand how to work with the diversity of groups and organizations and the policies and practices that emerge from them in an effort to improve the ability of local residents to prevent, protect against, mitigate, respond to, and recover from any type of threat or hazard effectively".

Since 2007, FEMA has maintained a Private Sector Division that is tasked with establishing and maintaining relationships between government and businesses before, during, and after disasters. It is staffed by a team of private sector liaisons that connect with trade associations, corporations, academia and non-governmental organizations for disaster risk management activities. The mission of this office is, "to communicate, cultivate and advocate for collaboration between the U.S. private sector and FEMA, to support FEMA's capabilities and to enhance national preparedness, protection, response, recovery, and mitigation of all hazards, [and to] establish and maintain a national reputation for effective support to our private sector stakeholders through credible, reliable and meaningful two-way communication".

During disasters, this office reaches out to its private sector partners in order to determine damaged sustained by private sector facilities, understand what resources are needed, and identify what capabilities the private sector can contribute to the relief effort. In past events, this relationship has provided FEMA and local emergency officials with more effective situational awareness about utilities, communications, medical facilities, the availability of food and supplies, the condition of roads and transportation networks and other critical issues.

The Private Sector Division maintains a network of hundreds of private sector organizations and leads a LISTSERV that includes more than 30,000 businesses and organizational subscribers. After a spate of tornadoes struck the US Southwest region in 2011, this office tapped the partnership that had been formed with the Outdoor Advertising Association of America to post-disaster assistance information on 155 electronic billboards across six states for a month. Representatives also worked to keep more than 200 companies and organizations

informed with situation reports and status updates. The companies, in turn, provided essential information back to FEMA on store openings, closures, conditions and challenges.

Later that same year, the office again worked with the private sector when Hurricane Irene struck the US East Coast. Major power outages occurred, and many businesses needed to know where and when it would be restored so that they could begin restocking their stores accordingly. The pre-planning and the establishment of relationships that had both been supported by this office allowed that information to be quickly relayed.

To strengthen these relationships, the Private Sector Division organized a national exercise that addressed the response to a catastrophic earthquake. There were more than 3,000 people involved in the event, many from the private sector. The office also developed a number of different tabletop exercises focused on the business disaster role and offered them on the FEMA website. Over 8,000 downloads of this material were logged in the first few weeks alone. In 2011, this office organized and led the first national conference on public-private partnerships for disaster resilience, and more than 1,000 people participated (with over 500 coming from the private sector).

In the years since this Division was created, it has worked closely with major corporations, which include Google, Microsoft, and Facebook to explore new ways that the public and private sectors can work together to improve disaster risk management, and several company executives have accepted invitations to work as full partners alongside agency employees during three-month rotations at the FEMA National Response Coordination Center. These private sector employees are funded by their employers during the rotation. They work together with public sector employees both during disasters and in the quieter times between them. During these quieter times, they are able to contribute to and learn from national level projects related to planning, training, exercises, preparedness, and mitigation activities.

Source: Partnership for Public Service, 2012; FEMA, 2011

Lessons:

- Private sector engagement is an involved and ongoing process that merits dedicated government resources
- The effectiveness of private sector engagement may be increased by having a unique office that serves as a focal point of activities and communication

Formal Inclusion in Government Disaster Risk Management Structures

Direct involvement of private sector representatives in formal command, control, and coordination structures can improve recovery efficiency and effectiveness. As a major recovery stakeholder, the private sector has valuable insight and information to provide. While relationship building as described in the previous section does allow for such exchanges, businesses are more invested in the process and are much better able to contribute if they feel they are an equal partner and are directly involved in all discussions and operations.

However, government holds the key to creating the access vehicle of private sector involvement, as government is the gatekeeper to disaster response and recovery command structures that business participation seeks to support. As the traditional and dominant emergency management stakeholder, it is contingent upon government to formalize the involvement of businesses in disaster planning efforts (including pre-disaster recovery planning) just like what has occurred for decades with community development planning efforts.

Inclusion is not a matter of simply inviting businesses to join the emergency team. Rather, there should be systems and structures established to formalize involvement, and this is typically done in a similar manner to the involvement of the nongovernmental sector which involves representation. It would be impractical to involve all businesses in the command structure, but representation through either a business association or a prominent business entity can be a very efficient way to foster inclusion. As post-disaster period is much too late to begin, developing such relationships and structures need to be put in place during the low-stress ex-ante environment, where trust can be built, concerns can be heard, and the sharing of knowledge can take place.

Case 25: Private Sector Participation in National Disaster Management Structures, USA

Topic: Formal Inclusion of the Private Sector

The US Federal Emergency Management Agency (FEMA) currently maintains two programs that formalize the role of the private sector in disaster response and recovery. The first is the Private Sector Seat in the nation's National Response Coordination Center (NRCC), and the second is the National Business Emergency Operations Center (NBEOC).

The NRCC is a facility within the agency's headquarters that monitors potential or developing incidents, coordinates and supports the US Government's national and regional disaster management efforts, maintains situational awareness, conducts operational planning, deploys national level teams and assets, and

collects and disseminates incident information as it builds and maintains a common operating picture. It is activated and staffed during disasters, which occurs approximately 60-80 times per year.

Businesses and other private sector entities are invited to apply to have one of their employees serve on a 90-day rotation as a private sector representative in the NRCC. The Private Sector Seat, as it is called, helps support coordination, communication, and collaboration with the private sector in order to:

1. Leverage private sector coordination and collaboration capabilities to contribute to the overall response and recovery during an event
2. Maintain visibility over the status of private sector facilities in impacted areas in terms of inventory levels and facility damage reports
3. Maintain visibility over private sector requirements (e.g. emergency power, security, and access) in terms of what it will take to get them up and running

When not activated for disaster response, the private sector representatives work directly with the FEMA Private Sector Division in the Office of External Affairs. Salaries and expenses of the representatives are paid by their employers, while FEMA provides office space, furniture, and necessary support services. Representatives work at the agency's headquarters in Washington, DC, and act as a liaison to and representative of the private sector at large. They are given training prior to their rotation, and participate in operational training programs and exercises as needed during the 90-day period.

The second program is the NBEOC, which is described as a "virtual organization that serves as FEMA's clearinghouse for two-way information sharing between public and private sector stakeholders in preparing for, responding to, and recovering from disasters". The operation of the center is closely tied to the work of the representatives sitting in the NRCC Private Sector Seat such that the representatives have increased support from businesses. The current representative sits as the NBEOC Director. Participation is open to all businesses, and participation is conducted via conference calls, email, and online video conferencing.

Regional (state) governments have begun to create similar structures in their own governments to match that of the National level structure. For instance, in the US state Louisiana, a state BEOC was established through the efforts of the Governor's Office and the University of Louisiana at Lafayette. The LA BEOC allows businesses and other nongovernmental actors to communicate, collaborate, and coordinate with government before, during, and after disasters.

During Hurricane Gustav (2008), the Governor used the BEOC to locate and support meal providing operations through local sources. These efforts helped to infuse revenue into the hurricane damaged economy, and allowed the provision of cooked meals instead of the typical meals-ready-to-eat (MREs) saving over USD1.5 million in the process.

Source: FEMA, n.d.a.; FEMA, n.d.b.; US Chamber of Commerce, 2014

Lessons:

- Formal incorporation efforts can utilize both physical and virtual methods
- National level inclusion can help promote public-private partnerships at regional and local levels
- Representation of the private sector in formal coordination systems can minimize or eliminate duplicative partnership development efforts
- Situational awareness is greatly improved by having direct involvement of the private sector in the EOC

Case 26: Peru National Institute of Civil Defense

Topic: Formal Inclusion of the Private Sector

In 2007, Peru was struck by an 8.0 magnitude earthquake, known as the Pisco Earthquake. Very little collaboration between the public and private sectors took place in response and recovery because there was a total lack of integration between the two sectors prior to the event. This resulted in poor understanding and appreciation of technical and operational capacity of the private sector to address its own recovery needs and to support the general recovery efforts going on the in the impacted communities. It also led to poor understanding of the impact to and resilience of privately owned and operated critical infrastructure facilities. Private sector entities made efforts to participate in response, but these were not well integrated given they were disassociated with official national and local government efforts.

In response to these issues, the Government of Peru has set out to establish strategic partnerships with the private sector. A national level Task Force for Emergency Preparedness was tasked with making this happen. The result was to include the National Society of Industries (SNI), a national level business association, in the leadership of the National Institute of Civil Defence (INDECI). SNI is currently supplementing the efforts of the government on disaster response and prevention, which includes the conduct of a survey and inventory of privately owned equipment that can be appropriated during a disaster,

developing sector-specific plans (e.g. mining), conducting disaster mitigation and preparedness training, and creating a directory of main business focal points. In Peru, the private sector has agreed to be part of a working group within the National Platform for Disaster Risk Reduction (DRR).

Source: APEC, 2010

Lesson:

- Formalized integration of public and private sector in emergency management structures allows for more accurate pre-disaster estimates and post-disaster assessments of businesses' disaster recovery needs

Despite the presence of structures that enable formal inclusion, cultural and other differences between the sectors, and the lack of a mandate to participate in them, can act as a barrier to their success.

Case 27: Formal Inclusion of the Private Sector in Indonesian EM Structures

Topic: Formal Inclusion of the Private Sector

Following the 2004 Boxing Day Tsunami, the Government of Indonesia established a structure in its National Disaster Management Agency (BNPB) designed to integrate private sector efforts into operational emergency management work. The role of the private sector was prominently featured in a Disaster Management Bill passed in 2007, and was further enhanced as a priority for action under the 2010-2014 National Action Plan for Disaster Risk Reduction. Notable among the provisions was a movement to integrate private sector stakeholders into the formal coordination mechanisms implemented during long-term disaster recovery and reconstruction activities. Private sector representatives were involved in the crafting of the 2007 Bill, and as a result it placed the responsibility for establishing national resilience on all sectors rather than charging a particular government agency with the task.

In terms of disaster coordination, the BNPB retained the mandate to lead all disaster management stakeholders (including government agencies, NGOs, and the private sector). A pilot program was established under the new legislation, called the Rapid Emergency Response Stand-by Force, which draws human and other resources from each of these sectors.

Source: Burke and Fan, 2014

Lessons:

- In reality, the coordination of nongovernmental stakeholders, namely those

in the private sector, proved challenging because even with the structures in place many businesses choose to operate independently

- At the regional and local levels, where authorities often face the dual task of managing complicated policy and fiscal relations with the central government and coordination with non-governmental actors, coordination can be especially difficult
- Despite the mandate for and presence of formal participatory systems and structures, after-action research following subsequent disasters found that private sector engagement in disaster relief was largely conducted in an ad-hoc manner with little or no documentation of contributions
- When the system was implemented in disasters, cooperation and coordination between the private sector, the government, and the civil society was poorly structured and difficult to sustain
- Weak capacity of the local disaster management agencies as well as differences in how the respective roles of the government and the private sector were perceived contribute to poor coordination
- PPPs need to be mainstreamed into national and local planning
- Emergency warning system costs must be shared by both public and private sector entities as the benefits are likewise shared

It is important to note that these programs are effective at the regional and local levels as well, and in fact the relationships can be even more effective given the scope of representation is much smaller than what is required at the national level. The New York City Office of Emergency Management, for instance, invites private sector representatives into its crisis command center during disaster evacuations, and a number of major employers are able to plug into this structure. In most cases, these efforts are found to result in significant benefits for both sectors. Businesses find that one of their own is physically present when and where the important decisions that will undoubtedly affect their operations are being made, and they are able to get firsthand information and reports. For the city, there is much to be gained by leveraging their private sector partners' access to information, resources, and subject-matter expertise.

Case 28: Council Australian Governments

Topic: Formal Inclusion of the Private Sector

The Council of Australian Governments (COAG) is an intergovernmental forum whose membership includes the Prime Minister, the State and Territory Premiers and Chief Ministers, and the President of the Australian Local Government

Association (ALGA). The role of COAG is to promote policy reforms that are of national significance, or which need coordinated action by all Australian governments. In December 2009, COAG elected to adopt what it termed a "whole-of-nation resilience-based approach to disaster management". This action made official recognition that a coordinated national approach that is inclusive of all stakeholders, including government, businesses, NGOs, individuals, and others, is required for effective disaster preparedness, response, and recovery.

The agreement included the establishment of a new National Emergency Management Committee (NEMC). This committee has a mandate to drive and coordinate national policies and capability development in relation to emergency management. The first task assigned to the NEMC was to bring together the representative views of all governments, business, the non-government sector and the community into a comprehensive National Disaster Resilience Strategy.

Source: Council of Australian Governments, 2009

Lesson:

- Policies that aim to promote inclusiveness of all community stakeholders, including private sector entities have helped to expand community DRM capacity and foster more cooperative DRM efforts (including during recovery)

Engagement through Public Private Partnerships (PPPs)

Governments and businesses often desire to work together and to support each other, but don't know where to start. Post-event contracting for response and recovery assistance has always existed as an option, but problems intrinsic to the contracting process limit the efficiency and effectiveness of goods or services provided. For starters, contracts require time to study and develop performance parameters, deliverable expectations, liability provisions, and other factors to which each party must agree. Because contracts typically represent new relationships, there is no inherent familiarity between counterparts and a lack of established trust. Also, contracts tend to frame assistance as a defined transaction, thus limiting collaborative and innovative behavior.

Formal partnerships, on the other hand, tend to offer much more to all of parties involved, even when they are built upon a pretext of financial exchange between the various parties involved. The United Nations, the International Association of Emergency Managers, and many other international, governmental, and other organizations have each gone to great lengths in recent years to promote the rewards both public and private sector entities stand to reap by formalizing their

relationships. By working together to problem solve and by pooling financial resources and expertise, the delivery of basic goods and services during the emergency phase and the ability to progress quickly and sustainably towards long-term recovery are both greatly enhanced. Only in the past two decades have partnerships-based relationships between public and private entities been pursued with regularity in the context of disaster risk management. But today, there is abundant will to form them, and typically all that is lacking is the knowledge of how to make it happen.

There are multiple definitions for the term public private partnership, and PPPs are used for many functions outside of the disaster setting. Simply stated, a PPP is an arrangement between the public and private sectors whereby some of the service obligations of the public sector are provided by the private sector, with clear agreement on shared objectives for delivery of public infrastructure and/or public services. They are differentiated from public procurement projects, which are contracts for services, products, or projects such as in construction (World Bank, 2015b). Pittman (2011) writes that it is not, "an agreement about selling merchandise, but about sharing the responsibility to recover". And that, "[t]his lets stores become operational quickly, providing a place for people to get supplies and getting employees back to work... [a]lthough the public and private sectors differ, when it comes to supporting communities and recovering from a disaster, they have the same goal – return a community to normal as quickly as possible to support residents and the local economy". In her 2012 address at Pace University, then Special Representative of the UN Secretary General for Disaster Risk Reduction Margareta Wahlström echoes these sentiments, and identifies a number of benefits to be gained by pursuing PPPs including:

- PPPs give governments, both national and local, a more sustainable financial base, while helping governments, companies and ordinary citizens to fulfill their moral and business interest, protect employees, consumers, communities and the environment
- PPPs reinforce the social bond among community members and reduce real and perceived inequalities among the local government, the business community and the general public
- PPPs facilitate the government's job by making compliance with regulatory and safety requirements everybody's concern, and can increase oversight to prevent corruption which remains a major risk to trigger disasters
- PPPs enhance both the government's and companies' ability to recover from financial losses, loss of market share, damage to infrastructure, equipment, products or business interruption, by putting resources and forces together, making preparedness a win-win option

In addition to those mentioned by Margareta Wahlström, PPPs also help to facilitate

cooperation and sharing of resources, encourage disaster planning and mitigation efforts, and develop a broad constituency within the community for hazard mitigation and disaster preparedness.

Establishing PPPs requires significant effort, and this is best performed prior to the onset of disasters when the time constraints are greatly reduced. All parties to the agreement must fully understand and agree to their role in the partnership, and these roles should be formalized through the signing of a memorandum of understanding or agreement, or a similar contractual arrangement that minimizes vague references. The most effective frameworks for enabling the formation of PPPs occur in situations where government has approached the process following the mnemonic PADRES (Kolloru, 2012):

- **P**ublically **A**ccessible: The contacts, leadership, skills, and capabilities of the partnership are known, available, and accessible by the general public. This ensures public trust in the partnership that it can provide meaningful service in support of protecting life and property.
- **D**edicated: Full time liaisons and/or staff manage the public-private partnership, and implement the partnership's strategic plan.
- **R**esourced: Funding, facilities, tools, and staffing are made available to support PPP efforts.
- **E**ngaged: Engaged and active public and private sector leadership and members are a necessity for a successful partnership – a partnership that trains, exercises, prepare, responds, recovers, and mitigates actively.
- **S**ustainable: The partnership has the necessary strategic planning, funding, and resourcing for long-term viability. Partnership activity should take place around the year, and throughout the emergency management cycle.

One particular program noted for its success in building PPPs at the community level in North and Central America was the US Federal Emergency Management Agency (FEMA) program, "Project Impact: Building a Disaster Resistant Community". Under Project Impact, private businesses assumed a central role in identifying community risks and selecting options to minimize or eliminate them. With their participation in the planning process, they were much more willing to fund these efforts, and both government and the private sector benefitted tremendously from the sharing of the hazard knowledge and data each possessed. Through the development of PPPs, Project Impact created a more comprehensive approach to disaster risk management because all community stakeholders were involved in a single planning structure.

Topic: Public Private Partnerships

Xavier University (XU) is a private institution located in Mindanao, Philippines that has a student body of 10,000 and 750 faculty and staff. The university leads a Sustainable Sanitation Center (SuSan Center) which has 216 partners inclusive of NGOs, academia, and businesses.

When Typhon Washi struck in 2011, the University was impacted and many employees and community members were displaced. The University understood that it would have to support resettlement efforts if it was to remain in operation, and thus developed the "Ecoville Project". The project's goal was to ensure that those whose homes were destroyed or uninhabitable were able to remain by providing a diverse range of housing and livelihood options through the creation of "Xavier Ecoville".

The University tapped into its own networks and raised ninety percent of the required funding and pro bono services from private sector donors. Five hectares of university property were allocated to create a temporary village, which was assessed and approved by XU engineering faculty and verified by local representatives. Temporary bunkhouses were created to provide short-term shelter in cooperation with the Military Engineering Corps and funded by the Department of Social Welfare and Development (with contributions from the International Organisation for Migration). Walter Brown Inc., a private developer, created a comprehensive and sustainable development master plan, including plans for water and solid waste recycling, solar energy, and community gardens. XU partnered with Habitat for Humanity Philippines to construct permanent houses at Xavier Ecoville using funding from Union Bank and other donors. A central community hall was also constructed that could be rented out to generate income for the community.

To support livelihoods, the university initiated a livelihood center that was managed by the Xavier Ecoville Multipurpose Cooperative (Xempco) and funded by the Peace and Equity Foundation and other donors. Capacity building and skills enhancement seminars, which included training on good governance and community leadership, were organized for residents. Meetings with the local village (Barangay) council and police were regularly scheduled in order to ensure that the community was safe and secure.

Source: Kings College London, 2013

Lessons:

- The project depended upon close cooperation with other universities, local community, international organizations, businesses, military, and government

- Engagement of young people in local disaster planning and response is essential, with social media playing a key role in efficient and effective communication between peers
- Partnerships were sustained through transparency and constant communication, which was facilitated through a dedicated website, social media platforms (Facebook and Twitter), and guided tours and informal meetings
- The project was successful in engaging multiple actors from various sectors including health and water, sanitation and hygiene, education, shelter, and livelihood development, and ultimately oversaw the community's long-term recovery and reconstruction needs

Case 30: The Safeguard Iowa Partnership

Topic: Public Private Partnerships

In 2007, an association of businesses in the US state of Iowa called the Iowa Business Council, in partnership with individual businesses and representatives from state government agencies, created the Safeguard Iowa Partnership (SIP). Recognizing that government alone is insufficient to deal with the impacts of most disasters, the nonprofit corporation set as its mission to strengthen the in-state capacity to prevent, prepare for, respond to, and recover from disasters through public-private collaboration. SIP was created to serve as a vehicle for effective response and recovery assistance from the private sector. The Iowa Business Council, which is made up of 22 companies' CEOs, the Iowa Bankers Association, and the presidents from the state's three universities, sponsors the PPP and provides advisory support.

When disasters occur, SIP facilitates the unified management of private sector capabilities. Partners provide cash, in-kind resources, volunteer assistance, technical assistance, and more. Annual partnership fees also help to generate financial assistance to the impacted areas. The organization also maintains a secure, web-based catalogue called the Business Resource Registry that identifies the volunteer and for-hire emergency assets of private sector organizations. Assets are organized according to location, availability, and quantity so that they can be procured relatively easily during emergencies.

One of the most useful recovery-based capabilities of the program is the Business Damage Survey. SIP has performs a damage assessment through the means of an online survey. The survey is administered in partnership with the Iowa Emergency Management Association, and is effective at capturing business disaster impacts. Survey results are used both internally and externally to

support all recovery partners. To increase participation, data is aggregated and does not provide individual organizations or businesses information. The data is shared with local and state emergency management officials to be incorporated into requests for federal assistance.

Source: U.S. Department of Homeland Security, Federal Emergency Management Agency (n.d.)

Lessons:

- Businesses can self-organize and coordinate during recovery through the vehicle of a business association
- Business associations are uniquely positioned to gather damage assessment data because they have pre-established relationships with impacted businesses and are thus able to quickly contact them and assess their needs

Case 31: Capital One Philanthropic Efforts

Topic: Partnership with Nonprofit Organizations

Capital One Financial Services is a major banking sector firm based in the United States with approximately 41,000 employees. During times of disaster, the company adapts its standard financial systems in order to facilitate philanthropic giving by customers and employees to nongovernmental organization partners. When disasters strike, the company supports response and recovery by performing the following actions:

Firstly, by facilitating monetary donations to partner nonprofits by supporting no-fee customer donations through the company's "*No Hassle Giving"* website. After assessing the disaster, the company identifies which partner organizations they will promote to their customers and employees, and features them on the website. Matching donations are often provided to increase giving levels.

Secondly, by communicating corporate financial support to employees and customers and encouraging donations among both.

Finally, by coordinating with nonprofit organization partners for in-kind donations to ensure that the items donated by the company, employees, and customers are appropriate.

Source: US Chamber of Commerce, 2014

Lessons:

- Companies can facilitate philanthropic activities to both their customers and

their employees

- Partnerships between private and nonprofit sector organizations can help to ensure that transactions are cognizant of the collection and distribution models of the recipient organizations, increasing both efficiency and appropriateness of giving

Case 32: DHL and UNDP/UNOCHA Partnership

Topic: Partnership with International Organizations

DHL is a global shipping and logistics business with offices in 220 countries and territories and a workforce of more than 325,000 employees. The company has a long history of corporate philanthropy. In 2003, the company's employees and management witnessed the difficulties that typically arose in the aftermath of disasters when global shipping trends shift on account of an influx of humanitarian relief. Following the earthquake in Bam, Iran, the international airport was completely overwhelmed with an influx of goods given there were no plans in place to address the logistics requirements.

To address these needs, DHL established a partnership with UNDP and UNOCHA and signed a memorandum of agreement to address multiple issues in disaster logistics support that fell squarely within the company's expertise and capabilities. Under the agreement, the UN requests assistance from DHL when logistics assistance is needed. DHL responds by providing technical expertise and assistance through its global network through a number of programs:

- Get Airports Ready for Disasters (GARD): This program is managed in partnership between UNDP and DHL that provides training to airport staff in order to enable them to better respond to the influx of emergency personnel and goods that occurs during disaster response and recovery.
- Disaster Response Teams (DRTs): In partnership with UNOCHA, DHL facilitates rapid delivery of supplies and people to areas struck by major disasters. There is currently a global network of over 400 specially trained DHL employees, organized into three regional DRTs, that volunteer their time as required. When requested by UNOCHA, DRT members travel to the disaster-site and are in operation at the airport within 72 hours. The DRTs provide logistics support including unloading cargo planes and providing warehousing and inventory services for incoming relief supplies. These services are all provided free of charge.

By the end of 2014, 28 airports had been served by the GARD program, and DRTs had been deployed 29 times. DHL has also begun forming partnerships with

national governments in disaster-prone regions in order to better facilitate the immigration and customs issues faced by DRT members. Eleven countries have participated in this manner. Partner governments also have the option to contact DHL directly to request assistance when needed.

Source: DHL, 2015

Lessons:

- While businesses may not have been involved in disasters in the past, the actions they take on a regular basis may be highly applicable to the disaster setting
- The ability of DHL to prepare warehousing options for relief supplies (including cold storage for medical supplies) and to manage airport electric power supply and communications infrastructure provided lessons on how to handle strained government resources
- Not everything can be addressed by the private sector (e.g. security concerns such as looting), especially when facilities were not properly protected by local authorities
- Focus on specific elements where the group's expertise can be leveraged, and select partners whose strategic focus areas are a good fit
- If the engagement is pro bono, this should be communicated to other actors in the field to increase the likelihood of acceptance by humanitarian actors
- All parties need to secure the support and recognition of senior management
- Trust between partners and a common long-term vision of the partnership and the intended outcomes of the collaboration are of critical importance

Case 33: GSMA and UNDP Work Together in the Philippines

Topic: Industry-Driven Partnerships

The GSM Association (GSMA) represents the interests of mobile operators worldwide. The organization unites almost 800 operators with more than 250 companies within the context of mobile infrastructure (including handset and device makers, software companies, equipment providers and Internet companies, and other organizations with related interests). Because of the important role that wireless technologies play in the post-disaster response and recovery environments, GSMA has developed several partnerships to guide pre- and post-disaster activities. In fact, UNOCHA and GSMA had been working together for years to develop working relationships and just six months prior to

typhoon Haiyan had conducted a series of joint disaster preparedness workshops in the Philippines.

GSMA responded when Typhoon Haiyan struck the Philippines in 2013. Infrastructure was so badly damaged at this point that wireless technologies were the only communications options many governmental, international, and other organizations were able to access. GSMA staff traveled to the affected areas, and began acting and coordinating on behalf of the many GSM-related businesses inside and outside the impacted areas that were either impacted themselves or that wished to provide support to those people who were affected. Two local mobile operators, Smart Communications and Globe Telecom, relied upon GSMA to support and coordinate efforts as those companies dealt with their own impacts, and tried to accommodate the influx of new humanitarian actors who had arrived in the impacted area and required or requested support from these two companies for their communications needs. The requests of these organizations, which were primarily NGOs and international organizations, focused on network information, access, new services and partnerships.

By having GSMA in place, all requests for assistance or information from the mobile industry could be centralized and processed through a one-stop-shop. Requests were coordinated and aggregated to ensure that those in the humanitarian system needing this information got it where possible, and that the mobile operators and related businesses were not overwhelmed with the same or similar questions arising time and time again.

GSMA also represented the interests and capacities of the mobile operators to the UN Emergency Telecommunications Cluster (ETC) and with two working groups (the Cash Working Group and the Communications With Communities Working Group). GSMA staff collated information and provided status reports to their members about the requests that had come in and prioritized actions that could be taken to meet those needs. Building upon the familiarity and trust that had been gained through the pre-disaster workshops, ETC and GSMA were able to resume fiber-optic internet access within three weeks – a process that was typically delayed for at least six months in previous events.

The association also facilitated partnership opportunities as their need became apparent, and developed informational bulletins that explained recovery progress and the ongoing recovery assistance efforts that were underway in support of the remaining needs.

To improve efforts in the future, GSMA is working with UNOCHA, Qatar

Computing Research Institute (QCRI) and others to advocate for and implement a new SMS Code of Conduct that GSMA published last year. The Code of Conduct exists to "reduce duplication and fragmentation around one and two-way SMS services". The organization also creates and releases lessons-learned in order to support improvement throughout the industry.

Source: Reid, 2013; Son, 2014

Lessons:

- Industry associations can act on behalf of dozens or even hundreds of companies in their sector, thereby increasing the ability of all entities to coordinate with official government responders and to identify and meet response and recovery needs
- The ability to engage with industry associations needs to be verified well in advance of a disaster so that the level of provided support, the communication processes, and the coordination mechanisms are all understood

Perhaps the greatest benefit of partnership building between the public and private sectors, and between private sector and the humanitarian community, is that the benefits of these partnerships are long-lasting. Zyck and Kent (2014) explain that the single greatest increase in the prevalence of public private partnerships in disaster risk management came in the aftermath of the 2004 Boxing Day earthquake and tsunami. As a result of this event, long-term working relationships were formed between Pfizer and UNICEF, UPS and CARE International, and Coca-Cola and UNDP, to name a few. The pre-existence of such partnerships allows for collaborative planning and strategizing prior to events, and increases the speed with which coordination mechanisms begin benefitting the process when response efforts are needed.

Engagement through Procurement and Contracts

While public-private partnerships offer a wealth of benefits and long-term advantages, they are not always practical or appropriate. There are many times when no entity in the public or nonprofit sector can deliver goods or services as efficiently or effectively as a business whose central purpose for existence is to provide that good or service. In many such cases, it is neither cost effective nor necessary to dedicate what is needed to form an effective partnership given the nature of the work to be performed or product to be delivered. For instance, snow removal services in a major city typically require nothing more than a defined expectations of what will be performed by the business and when it will be performed, and how that work will be compensated by the government in such

cases.

Contracting offers a simple yet effective way to engage with the private sector while simultaneously injecting much-needed cash into the local economy. In doing so, businesses are able to help secure much needed livelihoods, and government is able to manage long-term disaster risk reduction and sustainability issues. In fact, ESCAP found that public procurement and public contracts are highly effective at incentivizing the involvement of the private sector in disaster risk management efforts in that disaster-resistant regulations and/or requirements can be written into contract in a manner that ensures vulnerability is addressed. It is also a great opportunity to promote training and education in disaster-resistant design and practices, and helps to enable local businesses to acquire national or international certifications in such cases as they exist (e.g. risk management standards, construction standards). Government can require contract bidders to show evidence of hazard-resistant past projects, or that their staff and the company as a whole meet basic DRM standards. These efforts thereby incentivize private sector DRM and influence the manner in which hazard mitigation is applied. These contracts have long-term benefits for community resilience in that any certification or training received applies to subsequent projects that have no association with the recovery effort yet still influence long-term community sustainability (ESCAP, 2014).

In an after-action report conducted in the aftermath of several US hurricanes, the US Department of Homeland Security noted several benefits and obstacles to using contracts for response and recovery. The report found that contracts in place before a disaster can speed the delivery of assistance and result in a better negotiated price than would be possible in the midst of disaster response. However, advance contracts for services often require a guaranteed minimum amount, or standby fee, that must be paid to the vendor whether or not the contract is ever used. US Government officials said they found it difficult to obtain funds for standby fees, and they are sometimes criticized for wasting funds when an advance contract is never activated because of a quiet disaster season (DHS, 2009).

Case 34: Formalized Private Sector Participation through Emergency Agreements

Topic: Engagement through Contracts

Formal contracting for disaster assistance has been established in Japan through the use of Emergency Agreements (EAs). These contracting instruments, which are promoted as a part of national disaster risk management policy, may be established at the local, regional, or national levels, as determined by the nature of the assistance and the capacity of the private sector partner.

EAs are established between a private sector entity or a group of entities and a unit of government. Each EA outlines an agreement under which a private sector

entity or entities provide specific goods or services (e.g. shelf-stable food, debris clearance) to the public sector party (usually local governments) when requested during an emergency or disaster. While there do exist cases where goods and services are provided as a donation, the majority of EAs entail arrangements through which compensation is provided in exchange for the goods and services.

A survey of 66 prefectures and cities in Japan conducted in March of 2012 found that there were almost 7,400 EAs in effect in the area of study, of which 6,415 are characterized as agreements between a local government entity and one or more private sector entities.

At the time of the Great East Japan Earthquake in March of 2011, an EA was in effect under which The Association of Precise Survey and Applied Technology (APA) had agreed to provide the nationally-based Geospatial Information Authority (GSI) with uniform-standard, high-quality aerial photography. The photographs were intended for use in a range of functions including damage assessment and the provision of government assistance. This EA stipulated (among other actions) that:

- APA member companies that have agreed to participate under the EA must be ready and willing to mobilize immediately when requested in an emergency situation
- When requested by GSI, APA will identify and recommend companies capable of providing the requested photography services
- GSI will purchase the aerial photographs from the recommended companies on a fast-track, sole-source contract basis

The following actions were taken to support the EA between APA and GSI:

- APA developed a clear and detailed manual that outlined how the agreement would function
- APA and GSI revised and/or updated the details of the EA regularly, and APA reviewed the support manual and updated it as necessary
- APA implemented a system through which member companies could register interest for specific periods of time, thereby increasing the likelihood that committed partners were able to respond when called upon

On the day of the earthquake, staff at APA headquarters in Tokyo recognized the significance of the event and immediately began preparations for activation of the EA. A formal request from GSI under the EA was made approximately 45 minutes after the initial quake, and APA initiated mobilization procedures. This involved contacting member companies, confirming their availability, and ranking the available companies according pre-arranged criteria. A list of

recommended companies was provided to GSI shortly thereafter. The existence of the EA enabled GSI to begin receiving aerial photography from seven companies by the morning immediately following the earthquake, and an additional two by that same afternoon.

Source: UNISDR, 2013

Lessons:

- EA contractual agreements must be made between entities at the appropriate level of government as determined by the nature of the goods and services promised and the capacity of the private sector partner
- The public-sector party to the agreement must have the ability to manage the agreement both before and during the disaster event to ensure it functions as intended
- EAs have failed when local governments were unable to effectively call the EAs into action, and when companies found themselves unable to deliver due to problems in their own business continuity
- Companies that enter into the agreement for marketing purposes, and which have little ability or intention to actually deliver the products or services as promised, need to be filtered out. Detailed and regular follow-up and communication on agreed actions, which is a necessary element of a successful EA, can be one of the options to filter out these companies.
- Management of contracts may be improved by ensuring a process exists to assess and update the status of partners on at longest an annual basis

Case 35: FEMA Contract Sourcing for Disaster Management Needs

Topic: Engagement through Contracts

When disaster strikes, the United States Federal Emergency Management Agency (FEMA) is the national-level agency tasked with response and recovery assistance, and as such the agency must be prepared to quickly provide goods and services to help state and local governments that request a disaster declaration. In large emergencies or disasters, FEMA is able to provide goods and services, such as food, water, ice, tarps, generators, search and rescue teams, sheltering, and evacuation assistance, to the impacted state and regional governments. Goods and services can be provided directly by FEMA, by another federal agency under direction from FEMA, or by the private sector through a contract with FEMA or another federal agency.

FEMA has four primary sourcing mechanisms available to use in responding to a disaster:

1. Warehoused goods
2. Mission assignments to other national-level agencies which FEMA reimburses for their efforts from its own budget
3. Interagency agreements
4. Contracts

Operational procedures that guide FEMA's disaster response call for a single-point ordering concept to provide goods and services efficiently and effectively, while minimizing the risk of duplication and waste.

When Hurricane Gustav, and later Hurricane Ike, threatened the Gulf Coast, FEMA prepared to assist the affected states and provide goods and services necessary to alleviate the impacts of these hurricanes. The assets that were deployed to the state of Texas in advance of Hurricane Gustav include:

- Emergency Meals: 855,760
- Comfort / Hygiene Kits: 100,000
- Blankets: 41,000
- Cots: 16,600
- Liters of Water: 17,000
- Staffed Medical Care Beds: 3,360
- Specialty Medical Response Teams: 10
- Urban Search and Rescue Teams: 9

FEMA assessed suitability for advanced contracting using such factors as: inventory carrying costs; length of shelf life; storage and handling considerations; and availability of pre-positioned material as well as contracts held by federal partners. In this event, private sector contracting was pursued for the acquisition of water, emergency meals, and tarps. For other items and services, it was deemed preferable to task other national-level agencies.

Source: DHS, 2009

Lessons:

- Purchasing goods and services from the private sector to address response and recovery needs may be more cost effective and efficient in some but not all cases

- Implementation of a single-point ordering system, which would help to streamline the contracting process and increase response and recovery assistance efficiency, has been more difficult than anticipated because of existing government contracting regulations and poor integration of information technology systems
- Post-disaster contracting is heavily dependent on pre-disaster planning and preparation

Engagement through Intra-Sector Coordination Mechanisms and Adoption of Standards

As is true in the nongovernmental sector, the private sector has explored the use of formal intra-sector coordination systems, and the adoption of humanitarian standards that more effectively guide humanitarian conduct after disasters. In several communities and countries, and at the regional and global levels, businesses have begun working together to establish structured and staffed organizations that pursue missions specifically guided by their members' desire to provide coordinated and high quality care.

During the 2007 World Economic Forum (WEF), over 800 private sector representatives drafted in partnership with the WEF and various humanitarian agencies a set of "Guiding Principles" for private sector humanitarian assistance. These principles, which draw heavily from humanitarian codes of conduct developed by the UN Interagency Steering Committee, are revealing about business motivations and intentions in the humanitarian context, and include:

- Coordinat[ing] with mainstream humanitarian actors
- Distinguish[ing] commercial from philanthropic operations
- Be[ing] accurate and truthful in public relations activities
- Train[ing] standby staff in humanitarian principles
- Be[ing] clear about the real value of contributions

In 2008, the Global Agenda Council on Humanitarian Assistance was created as a working group of the World Economic Forum. This body brings private sector representatives into the typical mix of disaster risk reduction and humanitarian action planning stakeholders that also includes the nongovernmental sector, academia, international organizations, and national governments. This body has sought to discover new ways to engage the private sector in building disaster resilience. The Global Agenda Council (2010) worked with the UN to develop a set of ten "Guiding Principles for Public-Private Collaboration in Humanitarian Action", which include:

- Leverage core competencies and not just finance
- Identify needs and respect the culture, customs and structures of affected communities
- Adhere to the codes and standards developed by the humanitarian sector
- Engage national and local authorities
- Use collaborative efforts to build local skills and resources
- Cover financial costs of in-kind donations
- Do not use humanitarian action for commercial gain
- Ensure public relations activities accurately reflect the collaboration
- Report publicly, using clear, consistent and transparent procedures
- Develop long-term and predictable partnerships

Businesses can greatly enhance their ability to assist in disaster recovery operations by participating in intra-sector coordination structures, and the local, national, and global communities they serve have much to gain. By establishing formal relationships with these mechanisms, and supporting them through leadership support, providing data and information, and allowing representatives greater access to public sector planning, operations, and other endeavors, both the public and private sectors stand to benefit. The mere fact that these structures are being established is testament to the great interest businesses have in supporting their communities, and any means to elevate their status and help develop their capacity will result in increased recovery capacity, and by extension, community resilience.

Case 36: Philippine Disaster Resilience Foundation (PDRF)

Topic: Engaging With and Supporting Intra-Sector Coordination Mechanisms

The Philippines has a long history of including the private sector in official disaster management structures, as mandated by the 1978 Presidential Decree 1566 and the 2010 Republic Act 10121 (Philippine Disaster Risk Reduction and Management). In Section 5 of the 1978 Act, it is stated that "[a] representative from the private sector shall be one of the members of the National Disaster Risk Reduction and Management Council". Private sector inclusion also exists through three national level disaster management frameworks. These include:

- The 2005 NDCC Four Point Plan of Action on Disaster Preparedness
- The National KALASAG Disaster Risk Management (DRM) awards (which recognize the private sector for contributions to disaster risk management)
- The 2010 Philippines Strategic National Action Plan on DRR

As a result of these collective actions, the number of private sector representatives on the National Disaster Risk Reduction and Management

Council (NDRRMC) rose to 43. Additionally, several KALASAG awards have been conferred to private organizations since 1998 and 18 memoranda of agreement have been signed with businesses. More recently, private sector engagement in disaster preparedness and recovery is being enabled through the establishment of the Philippine Disaster Resilience Foundation (PDRF).

Following a series of devastating typhoons, including Fengshen, Ketsana, and Parma, the Philippines Office of the President issued an executive order to create a Special National Public Reconstruction Commission (Public Commission) to spearhead effective reconstruction measures to address the needs of disaster stricken communities. Its goal was to support reconstruction programs by tapping private sector resources. Soon after, leaders from some of the country's largest businesses and NGOs came together and formed the PDRF. On October 23, 2009, the Public Commission and the PDRF signed a cooperative agreement that formalized private sector support for governmental reconstruction programs.

PDRF staff work with field experts and reputable humanitarian institutions to organize and coordinate private sector solutions to disaster management. It serves as the link between the private sector and government agencies, civil society groups, and local government units, and provides a systematic and holistic approach to recovery. Support is organized according to the following sectors:

- Livelihood
- Shelter
- Education
- Environment
- Water, Sanitation, and Hygiene (WASH)

Since it was created, the PDRF has organized private sector support for a number of recovery efforts, including the civil unrest in Zamboanga, the 7.2 magnitude earthquake in Bohol and Cebu, and the Super Typhoon Haiyan. Examples of the private sector work that was facilitated in the aftermath of Haiyan include:

- Manila Water shipped potable water to Leyte and sent a mobile water treatment plant to Bantayan Island, Cebu
- Globe engineers took action to quickly restore communications services and set up free phone call, charging, and Internet stations
- Ayala Land used the occasion of its 25th anniversary to motivate its employees to donate and volunteer for its disaster-related efforts
- Local and foreign donations were also deployed by well-established

programs such as Ayala Foundation's Laging Handa, ABS-CBN's Sagip Kapamilya, and Globe's Bangon Pinoy
- Foreign partners (including Mitsubishi, Singapore Telecom, Optus, Amdos, Tobii, and Volkswagen) contributed aid and technical assistance
- More than P400 million was raised from the Ayala business units, partners and merchants, employees, individual and institutional donors, and the general public

Source: PDRF, 2015; APEC, 2010

Lessons:

- Businesses may be highly motivated to participate in an official capacity in community and national disaster risk management structures
- The private sector is uniquely equipped to assist and even lead recovery planning efforts in a number of sectors including infrastructure

In many cases, existing business networks that are originally established for the purpose of promoting the interests of commercial enterprises are also capable of serving as intra-sector coordination mechanisms if provided with the tools and training to make that happen. Local business and industrial associations, chambers of commerce, or other similar business line specific associations (e.g. a restaurant association) enjoy long standing relationships with their membership, have dedicated staff and often have dedicated office space. In disasters, these associations can coordinate and promote the interests of their members for humanitarian purposes, and can also serve to coordinate the tracking of their members' needs and the management of assistance provision. Government can help business networks to appreciate the need to address private sector recovery roles, and to establish a committee or other action to formalize planning and operational capacities.

Case 37:Chamber of Commerce Tornado Response

Topic: Intra-Sector Coordination

The Joplin Area Chamber of Commerce has a history of promoting business continuity planning among its members, and maintained a plan for its own facilities and operations that was considered a best practice emulated by similar business networks. However, after a tornado tore through the town in May of 2011, killing 158 people, and causing almost USD3 billion in damages which included the destruction of over 500 business facilities representing over 5,000 jobs, the organization found itself at the center of a private sector recovery operation that its BCP crafters could not have foreseen.

Using text messaging in light of nonfunctional telephone systems, the Chamber's

leadership began calling together the organization's 17 employees. Because their office space had not been in the direct path of the tornado, their facilities were intact and were quickly turned into a business recovery center. Although power was out and telephone systems were not working, the communications director began providing members with updates about the ongoing recovery using SMS text messaging.

Using GIS systems, the Chamber plotted the storm's path on a map and used that information in conjunction with membership lists to identify which businesses were impacted. This allowed them to put together a preliminary assessment of needs, including potential job loss numbers. In order to verify assessments, four Chamber staff headed to the impacted areas to make visual confirmation. Since search and rescue operations remained underway, they began with the outlying areas where businesses were impacted the least and gradually moved towards the hardest hit areas as the days passed. They also began compiling lists of business recovery needs, including contact information and availability of general contractors, sources of generators and building materials, and phone numbers for insurance agencies, banks, and attorneys. Finally, by contacting their wider membership, inclusive of those that had not been impacted, they began logging offers for assistance, equipment and supply availability, and other recovery support resources.

One day after the storm, the US Small Business Administration (SBA) assigned a representative to the disaster event, and that individual made contact with the Chamber. Upon hearing that the SBA would be setting up a business recovery center, the Chamber offered to locate that function within their own facilities and to communicate the availability of this service through their communications networks. This represented a break from typical SBA protocol, but given the suitability of the Chamber's facilities for trainings, one-on-one meetings, and other supportive actions, the SBA agreed. The Chamber invited other individuals and groups offering recovery assistance to do the same, in order to provide a single location for impacted businesses to access many services. This included Small Business Technology Development Center (SBTDC) counselors, accountants, attorneys, and others. For the SBA, the offer translated to one of the most efficient openings of a disaster center they had ever experienced.

The Chamber received offers of assistance from neighboring communities' chambers of commerce, which it accepted. Loaned staff helped to answer helplines, formulate and update contact and resource lists, and provide program operations and strategy assistance.

In just the first two weeks after the event, the Chamber made in-person contact

with 400 businesses, rising to almost 1,000 by the end of the third week. They continued to monitor the status of almost 530 businesses that had been impacted, and those efforts continued for several years. Chamber members also established partnerships with the city and with the school district to help support and speed up many aspects of recovery.

Source: US Chamber of Commerce, 2014

Lessons:

- Business networks can assume the role of intra-sector coordination even if they have not considered this role in the past
- Government stands to benefit greatly from existing communications channels with membership by partnering with business associations or similar organizations

Case 38: World Economic Forum (WEF) Disaster Resource Partnership (DRP)

Topic: Intra-Sector Coordination

The Engineering and Construction Disaster Resource Partnership (DRP) is a relatively new model for coordinated private sector partnership in response to natural disasters. Launched at the World Economic Forum Annual Meeting 2011 in Davos-Klosters, Switzerland, DRP is an international alliance of engineering and construction (E&C) companies that have made a mutual commitment to improve humanitarian response when natural disasters occur through the direct application of engineering and construction skills and assets. The objectives of the partnership are:

- Developing an ongoing collaboration between private industry, public sector and humanitarian organizations
- Ensuring fast and effective deployment of E&C expertise and capacities before, during and after natural disasters
- Increasing the number of Disaster Resource Partnership National Networks

Following this model, DRPs are being formed at the national level in several countries. These national networks are considered the program's driving force, allowing local and national actors to better respond and recovery on account of the relationships, systems and frameworks the DRPs enable. The organization is chaired by an individual who provides overall coordination at the national level, and is a formal member of the secretariat for coordination at the global level.

The E&C community supports DRPs with assets and skills relevant to core expertise and physical resources. Response can be provided locally to enhance and build local capacity, or globally (in particular, services) where local capacity does not exist. DRPs add value at the global level through advocacy and expertise to international policies and guidelines, which helps to develop relationships and trust with the humanitarian community.

India maintains a Disaster Resource Network (DRN), which is the predecessor to the national DRPs and which was established in November 2002. It is coordinated by Hindustan Construction Company (HCC). DRN India is associated with the Construction Federation of India (CFI) and has undertaken many rescue and relief operations in the past. DRN India has two areas of operation: (i) providing training and increasing the capacity of the E&C community to respond to disaster situations, and (ii) creating an organizational structure and emergency management plan to respond to emergency situations. DRN India has a partnership with Registered Engineers in Disaster Relief (RedR) India, an organization that provides disaster response training and facilitates the secondment of engineers to humanitarian organizations in post-disaster situations. As coordinator of DRN India, HCC has incorporated DRN activities at all levels of its company structure. The HCC Group consists of several companies covering project management, infrastructure, horticulture, and other activities. At group level there is one person whose full-time job is the management of the DRN. The DRN manager is supported by several people who spend 25% of their time on DRN activities. At each project site there are people who have DRN as part of their job description. They spend 15% of their time on DRN activities, including: designing training, forming networks, and building relationships at the district level.

On 18 August 2008 heavy monsoon rains caused a breach of 2 kilometers in length along the embankment of the Kosi River. The breach inundated over 1,800 villages in 16 districts in North Bihar affecting over 4 million people. After the breach the river shifted its course nearly 100 km eastward. There were 125 people who died in the floods, more than 300,000 houses were destroyed and direct overall losses were estimated at USD3.7 billion. The HCC had construction sites throughout India but they were not operational in Bihar at the time of the flooding. The firm, however, was able to respond quickly through its national network of emergency response trained engineers. In the immediate aftermath of the floods, RedR India requested HCC to provide Engineering in Emergencies trained engineers to assist in the relief work. RedR organized the secondment of 10 HCC engineers from several construction sites to Oxfam India. The HCC Head Office Corporate Social Responsibility Department covered both their salaries and expenses (USD29,500). The engineers were seconded in three teams, and

each team went for two weeks. Their task was the provision of WATSAN facilities for 1.2 million displaced people living in camps. Activities undertaken included: design and construction of water storage tanks; boreholes with hand pumps and sanitation facilities; hygiene and sanitation awareness training; and disposal of dead bodies.

Source: World Economic Forum, 2010

Lesson:

- A key factor for the establishment and ongoing effectiveness of a national network will be the commitment and engagement of the principal or country executive from one or several of the E&C companies involved

Governments, international organizations, and humanitarian organizations can support business philanthropic interests by providing information to guide decision-making and action. Businesses are often quick to offer their own products to support ongoing response and recovery efforts, and even go as far as to pay to transport those goods to the disaster area. If the items donated are not needed, however, they can have the unintended consequence of making things worse, which is sometimes called "the second disaster". By developing guidance early in the disaster event that helps businesses to understand needs and to address them accordingly, such problems can be avoided.

Case 39: UNDP Nepal Earthquake Business Guide

Topic: Supporting Private Sector Philanthropic Decision-making

Philanthropic giving was significant in the immediate aftermath of the April 2015 earthquake in Nepal. To help guide business efforts to support the ongoing response and recovery, the United Nations Development Programme (UNDP) published a four-page informational bulletin explaining the prevailing humanitarian needs of the event and describing suitable avenues for assistance. This document referred to the USD415 million Flash Appeal that had been issued for the event, but the information applied to all giving regardless of whether it would directly support the appeal.

In order to increase private sector understanding of the situation and to ensure philanthropy was targeted, the document grouped needs into five "main humanitarian issues", which included:

- Access to safe drinking water, and sanitation and hygiene
- Food security
- Emergency shelter and essential items
- Access to medical care

- Protection of the most vulnerable populations

Businesses were strongly encouraged to donate financially to the flash appeal, and the document included a comprehensive list of organizations that were accepting donations to perform the work described in the document. Businesses were also encouraged to donate in-kind assistance, but were instructed to first provide a detailed offer which would be matched with a suitable organization that, together with the business, could arrange for delivery and acceptance of the donation. Instructions were provided on how businesses could donate. Businesses are encouraged to comply with the UN-developed Guidelines on Cooperation between the United Nations and the Business Sector.

Source: UNDP, 2015

Lessons:

- Businesses may be highly motivated to give but lacking information about what is needed
- Businesses are likely to be receptive of guidance on giving

A United Nations Development Programme document explains that building on pre-disaster partnership and knowledge can help local government to more effectively mobilize response and recovery support for affected micro-enterprises and SMEs, thereby minimizing the impacts to their operations. Local governments are also in a better position to understand the response and recovery capabilities of local businesses, and are more likely to have the relationships needed to more effectively guide their contributions (UNDP, 2013).

Engagement with Disaster Impacted Businesses

Disasters cause both direct physical damages to business facilities, equipment and supplies, and direct and indirect economic costs related to business interruption, market loss, breaks in the supply chain, among others. These damages and losses place a heavy financial burden on businesses. While insurance can provide much-needed cash injections, it rarely covers all losses especially in light of balance of payment issues, consistency of staff salaries, and promotion and other atypical costs related to post-disaster business recovery and resumption. Although businesses may also hava the opportunity to avail for governmental programs that offer loans or grants, this is an assurance because priorities are given to those most in need – and by extension, for buisinesses most at risk for future disaster impacts.

Engagement needs often differ according to the severity of the disaster and the

nature of the needs that arise. In smaller events, engagement needs may be limited to simple information exchange. To address those needs, governments may do no more than provide suitable channels for access. The nature of those needs is a driver behind communication methods and channels, and there are typically three categories of interaction that arise:

1. Impacted businesses seek assistance or information from a government agency or office (e.g. to learn about or apply for grant or loan programs, or to inquire about other method of support)
2. Government seeks input or information from businesses (through damage and needs assessment processes, long-term recovery planning efforts, or other community related effort)
3. Government announces or shares information that is relevant to or supportive of business recovery efforts (e.g. issuance of moratoria on construction, release of a new or adjusted building codes or land-use regulations, release of information about grant or loan programs, or some other transmission of recovery related information)

For most basic needs, a dedicated business recovery hotline, and an associated website or portal, can be set up quickly and inexpensively. If it was not previously known, efforts will need to be made to promote its existence. Hotlines can simply include recorded information, or can connect to call centers with dedicated operators prepared with information and answers. They can provide information on inspection and contracting services, governmental and private recovery grant and loan programs, training and seminar programs, as well as information about ongoing infrastructure repairs, development plans, town planning meetings, and other information.

For more dedicated service, in person service centers can be established. Oftentimes, these are set up in government offices or facilities in centralized locations. Business owners can visit the center for documents, information, and access to government officials that are equipped to answer their questions or provide them with access to support programs administered by their own or other government agencies.

Case 40: US Small Business Administration Disaster Loan Outreach Center

Topic: Engaging Businesses with their Recovery Support Needs

The US Small Business Administration (SBA) is a national government agency that provides support to entrepreneurs and small businesses. In the aftermath of disasters, SBA administers the Disaster Loan Program. This program offers financial assistance to business owners facing recovery challenges in the wake of a disaster. Loans are low-interest, and have long-term repayment terms.

Businesses and private nonprofit organizations of any size may borrow up to USD2 million to repair or replace disaster damaged or destroyed real estate, machinery and equipment, inventory, and other business assets. The SBA may increase a loan up to 20% of the total amount of disaster damage to real estate and/or leasehold improvements, as verified by SBA, to make improvements that lessen the risk of property damage by future disasters of the same kind.

To be considered for all forms of disaster assistance, applicants are able to register online at the SBA Disaster Assistance website (www.DisasterAssistance.gov). SBA also takes application information through a toll-free hotline number and by email.

SBA also facilitates in-person applications by setting up Disaster Loan Outreach Centers in impacted areas. After a moderate windstorm in the US state California, SBA set up an outreach center in the facility of a municipal fire department, and announced their presence via press releases to local media. The agency provided customer service representatives that issued loan applications, answered questions about the disaster loan program, explained the application process, and helped applicants to complete their applications. The outreach center was open for one month. By the time it closed, it had provided 23 businesses with loans totaling USD535,000.

Source: County of Los Angeles, 2012

Lessons:

- Even in small disasters, there will be businesses that require support and in-person support centers that offer an effective interface for engagement
- Multiple forms of communication and engagement may be necessary to accommodate different capacities and schedules of impacted businesses

Direct engagement in this manner can be highly effective in some, but not all situations. In complex disasters, where there are many different types of recovery needs and a wide variety of informational requirements for both businesses and government, it can be preferable to establish a more dynamic engagement vehicle. After all, government is but one of many stakeholders involved in or otherwise concerned with the recovery of disaster impacted businesses. Banks, insurance providers, community associations and philanthropic foundations, nonprofit organizations, economic development associations, and many other types of entities and organizations will be looking to identify and support business needs in the disaster's aftermath. For disaster impacted businesses, the web of support can become overwhelming. Moreover, it is oftentimes the micro-enterprises and SMEs

whose recovery needs are greatest, and the bulk of economic aid that becomes available is likewise focused on these most vulnerable business types. To make matters worse, the smaller enterprises are less likely than their larger counterparts to have the knowledge of recovery solutions or the capacity to effectively seek out and engage with support systems, especially in the high stress and time-constrained post-disaster atmosphere. In such situations, a mechanism capable of facilitating engagement in a coordinated, easily accessible, and well-communicated manner needs to exist. Many communities achieve this through the establishment of a Business Recovery Center (BRC) that provides "one-stop shopping" for recovery-focused businesses.

While community recovery planning often takes weeks or months, private sector recovery must begin within days. As businesses assess their damages and explore their options for survival and recovery, owners or managers will almost immediately begin exploring their options. Their technical needs will likely surpass what they experience in the normal course of operations with regards to legal obligations, facility cleanup and repair, record-keeping, insurance requirements, repair or replacement of equipment, locating alternate facilities, and meeting the terms of contracts or the needs of customers.

An effective BRC can help businesses to address most or all of their recovery needs, not just their financial ones. In order to meet such high standards, there are a number of steps that should be taken, including:

- Building Relationships
  A BRC is most effective if it is connected to an organization or association that businesses are familiar with or otherwise connected to in non-disaster times. This entity depends on the nature of the community itself and the form of government in place. It may be a chamber of commerce, an industrial support center, an economic or business development council, or some other structure through which the business community regularly interacts. This way, when a disaster happens, there is a basis by which the BRC clientele is understood and post-disaster contact and tracking may be made.
- Understanding the Needs
  Each disaster is unique with regards to its impacts, including those on businesses. To effectively formulate assistance, a BRC must have the capacity to assess business impacts and their resulting needs. Assessment accuracy and feasibility will depend significantly on the depth of penetration achieved in prior relationship-building efforts. In many cases, the only way business needs have become known is by contacting or visiting each impacted business to gather data. The International Economic Development Council (2014) explains that part of the relationship building process needs to include gathering multiple means

for contacting businesses in the post-disaster setting. Because disasters often result in the loss of electricity or landline communications systems, many standard communication methods will be inaccessible. Assessment can be enhanced if there is a method of registering for assistance online, or through a call center, or through access points (website URL or phone number). Finally, working with emergency management agencies can help to inform the assessment process, and they are likely to have an intimate understanding of the areas impacted, especially when evacuations prevent business owners from accessing their facilities.

- Advertising Assistance
  Unless business owners know that the assistance is available, understand that it applies to them, and is presented in a manner that is appealing and offers a credible solution to their problems, they are unlikely to engage. A BRC needs to have an effective communication capability that includes the standard forms of communication through relationship building, but also accommodates utility interruptions and is able to reach businesses that were not previously affiliated with the entity that is leading the BRC effort. This might include press releases or advertisements through mass media outlets, social media messaging, posting of flyers, communication through informal or professional networks, and other methods that expand upon coverage.
- Being Available
  Just like the businesses they are serving, a community must be able to access its BRC in the event of an actual disaster. The BRC should be planned to be set up in a location that is not likely to be impacted by the disaster that is centralized in the community, and is not likely to be easily cut off from major transportation routes. It should have continuity plans in place, and staff should ensure that they and their families are prepared for the disaster so that the BRC is not impacted by staffing shortages.
- Performing Case Management
  Addressing the problems faced by disaster-impacted businesses is something that is rarely achieved through a single interaction. By establishing case management, which is a process of creating a file or "case" for each impacted business, and assigning a dedicated, properly trained recovery official to the case, the engagement is often able to see each business through its full recovery (i.e. in cases), where recovery is possible. IEDC states that case managers tend to be drawn from the business community itself given their skills and knowledge. Case management also increases the likelihood that mutually acceptable meeting times and frequencies are possible, and make business owners feel that the community is invested in their recovery.

Topic: Engagement with Disaster Impacted Businesses

The triple disaster that struck Japan in March of 2011 affected almost 800,000 businesses, of which more than 99% were small and medium sized enterprises (SMEs). The immediate provision of recovery assistance for these businesses was critical given that historical incidence of failure following disasters has exceeded 50% for directly impacted SMEs. Industrial support organizations operating in Sendai City and in Fukushima, Miyagi, and Iwate Prefectures implemented several innovative and highly effective programs in the days and weeks following the event that provided desperately needed assistance.

The industrial support centers, which are government-affiliated support organizations for SMEs, each took steps to assess the scope of their members' impacts and needs, which allowed prioritization and provision of the assistance that followed. The experience of Miyagi Industrial Promotion Organization highlights the comprehensive manner in which resources must be dedicated to this effort. In recognition of the urgency of the situation, the Miyagi Center made first contact with the SMEs by telephone while roads remained impassible, and through site-visits once streets had been cleared. The Center considers this process critical to sustaining the pace of recovery and continues to use phone and on-site monitoring as recovery progresses.

Assistance service counters (help desks) were set up by several industrial support organizations. These programs allowed direct interface between business owners and operators and case managers, provided a one-stop access point for critical recovery information, and enabled easy access to technical assistance providers in critical areas that include law and accounting. The Sendai Industrial Promotion Center, in partnership with the local Chamber of Commerce, began hosting a service center in their facilities (which had received minor damage and first needed to be cleaned) within a week of the event. Visitors to the center encountered a wide range of booths, housing experts that offered various no-cost technical services. In Iwate, these benefits were supported by a website that included collated grant and other recovery support information.

One of the most significant problems that impacted businesses faced was the loss of facility space and industrial equipment. To support their equipment needs, several support centers helped businesses to locate and procure replacements for what had been lost or damaged. The Iwate Industrial Development Center established and maintained a centralized website that served as a marketplace for pre-owned equipment. The center subsidized equipment delivery costs for those members facing financial difficulties. The Miyagi center offered a similar service wherein donated equipment was matched

with and delivered cost-free to disaster-impacted companies.

Several innovative programs were launched to address businesses' facility needs. The Sendai center offered no-cost office space within its own facilities to businesses whose own space was inaccessible. The Iwate Center used its business support website to centralize vacant commercial listings, thereby simplifying the search process. Perhaps the most impressive program involved a recovery partnership between the Miyagi center and electronics manufacturer Sony. Under the agreement, Sony offered a total of 32,000 m^2 of office space to impacted businesses which they occupied for a nominal fee. Sony also allowed participating businesses to utilize spare industrial equipment and to access on-site services including utilities, security, and a cafeteria.

The industrial support centers were uniquely positioned to promote contracting and partnership opportunities for their impacted members. Trade shows were organized and conducted country-wide to showcase products and services the impacted businesses offered, and to encourage matching of industry services between the regions. The Miyagi center further supported members by facilitating work orders when communications capacity was lacking, and by established "hosting centers" that increased regional collaboration. The Iwate center provided its members with radiation inspection devices (Geiger counters) to help allay upstream and downstream product safety fears related to the nuclear emergency.

In many cases the most significant assistance came in the form of business grants and loans. In addition to the subsidized equipment delivery services that the Iwate center provided, it allowed impacted businesses to refinance and/or forgave their existing loans, and instituted a new low-interest rate loan program to support equipment purchase. The Fukushima Industrial Promotion Center provided two large lending programs for businesses that supported those that had been relocated or evacuated as a result of radiation. Almost 15 billion Yen was provided in loan amounts totaling up to 30 million Yen each.

All told, it is likely that many of the assisted businesses would not have survived without the assistance provided by municipal and regional industrial support centers. The success of these programs warrants additional consideration for disaster recovery preparations in advance of disasters to maximize the immense value these centers provide to their members, and by extension, the community residents and the local economy.

Source: International Recovery Platform, 2015

Lessons:

- Support must be available immediately, given the low-interruption tolerance of most SMEs
- Industrial support centers need to be prepared for disasters if they are to be effective at providing support in the critical first days following a disaster
- Pre-existing relationships between support centers and businesses are an immensely valuable factor in assessment speed and accuracy, and for coordinating and promoting the recovery services offered
- Centers are effective conduits for promoting the impacted businesses' products and services in order to maintain or revive revenue streams and operational viability

Finally, engagement with disaster impacted businesses can occur through the provision of training and workshops. Workshops on topics relevant to disaster impacted businesses, especially those featuring well-respected leaders from the business community, appeal to business owners and help to bring the impacted businesses into contact with the agencies that can measure their needs, offer them assistance, and track their progress. It also helps create peer-to-peer relationships because the meetings offer a forum to easily interact with counterparts facing similar challenges.

Supporting Private Sector Recovery

Chapter 4

The operations of private sector entities, especially micro, small, and medium-sized enterprises, can be heavily influenced by economic strength, legislation and regulation, and brand reputation. The onset of a disaster can offset this balance in a number of ways, and businesses suffer heavily in such events. Communities, including government, businesses, and the constituents each serves, are intimately connected in relationships of dependence and support. Without the private sector, there is no economy, and therefore private sector recovery is synonymous with economic recovery, which is in turn a dominant factor that defines how all other aspects of community recovery transpire.

For businesses, actions to achieve successful recovery must begin immediately-even while the damaging effects of the disaster event are ongoing – given that most businesses aspire to minimize operational recovery times. Communities need to understand that with prolonged recovery difficulties, businesses may seek to relocate in order to achieve a more rapid resumption of business processes, or may have no alternative than to relocate if they have no option to resume operations locally due to an exodus of employees, a loss of useable facility space, or other detrimental conditions.

Many of their recovery drivers, including resumption of critical infrastructure services, clearing of roads, permission to rebuild, and a resumption of wraparound services for customers and clients (e.g. childcare, medical care, safety, and security) are beyond their control. Private sector recovery is also heavily dependent upon very rapid access to cash, equipment, supplies, services, and technical expertise. With government and humanitarian actors often focused on relief for the impacted population, recovery of life sustaining systems, initiation of large social and infrastructure projects, and other response and early recovery needs, the business community is often left to their own devices. The expectation has been that businesses are supported by insurance, by their own cash reserves, and by the preparations they should have taken by performing business continuity planning. But in most cases these three measures fall short of needs, even in instances where all three apply.

Like the business community that has in recent years come to accept that it is inseparable from the community it serves and must therefore invest in community recovery following disasters, government must remain cognizant of the important role businesses play in the success of the community and act to preserve the integrity of the business sector. There are a great many ways that government can support private sector recovery, from simply including the voice of business to be heard in the recovery planning process, to direct financial and technical support to help businesses manage the impacts they have sustained.

A UNDP document entitled *Small Businesses: Impact of Disasters and Building Resilience* (2013) explains that, "[e]ffective post-disaster recovery involving [micro, small, and medium enterprises] as engines of local socio-economic recovery, requires public investment to focus on the right mix of "hard" infrastructure restoration and "soft socio-economic policies". Like all disaster impacted individuals, entities, and agencies, cash is needed to survive. By expanding the menu of support to address more than just the financial needs of businesses, their employees, and the communities that support them and benefit from their existence, successful private sector recovery becomes much more likely.

This section explores a number of private sector recovery support mechanisms.

Considering Business Needs in Community Response and Recovery Decisions

The recovery decision-making process is perhaps the most difficult and complex faced by a community. There is no standard process by which this is conducted, though significant guidance exists to facilitate the process in a productive and inclusive manner. Because recovery decisions impact actions that have a profound and often poorly understood range of impacts across all community stakeholders, an inclusive process is necessary to minimize unintended negative consequences, misunderstandings, and avoidable problems. Everything from temporary housing site selection, building moratoria, permitting study requirements, contract vetting processes, and other factors can have secondary consequences that are negative or perhaps even ruinous to businesses. Even the provision of humanitarian assistance can result in the closure of businesses if care is not taken to ensure relief commodities do not result in a drop or shift in local market demand. High-paying recovery related job vacancies can pull workers out of lower-paying jobs on the economy, leaving businesses without employees. Many decisions made for the right reasons, such as adjusting land-use restrictions in flood-prone areas, can result in catastrophic impacts to affected businesses if they are unable to achieve the same sales or productivity in their new location.

There are many ways to describe the recovery planning process, although the goal

in all cases is a variant of a desire to set in motion a course of action that addresses the impacts of the disaster in a manner that is fair and transparent, that benefits all community stakeholders, that reduces prevailing risk, is appreciative of longer-term climate change effects, and that capitalizes on new and existing opportunities to improve community development. While private sector inclusiveness is simply a strategy in support of this goal, it is an effective one that has benefitted those governments that have utilized it. That is not to say that including business representative or even simply considering the needs of businesses is an easy task. The private sector is diverse, and needs are equally diverse and in some cases even contradictory or opposing. A UNDP (2013) recovery guide states that, "The development of a healthy [micro, small, and medium enterprise] sector depends on a combination of factors to create enabling environments for private sector development while allowing the effectiveness of direct interventions, particularly value chains and markets". It is further explained that housing, for instance, is something that governments should view not only in light of their benefit as a shelter solution, but also as a determinant of and even a venue for business processes (as in the case of home-based businesses which typifies micro and some small-business enterprises). Relocation is another recovery issue that directly impacts the ability of the private sector to function as well as it did prior to the event. Many of these issues are covered in the International Recovery Platform Guidance Note on Livelihoods.

Case 42: Greater Christchurch Recovery Strategy

Topic: Including Business Recovery in Community Response and Recovery Decisions

Greater Christchurch has a population of just under 460,000 people, and it includes New Zealand's second largest city. It is the center of economic activity on the country's South Island. A series of earthquakes in 2010 and 2011 caused significant destruction in the city, including to infrastructure and services. Many businesses were impacted. To address recovery, the Canterbury Earthquake Recovery Authority (CERA) was established by the Government of New Zealand to lead and coordinate recovery activities. It is positioned within the Department of the Prime Minister and Cabinet. The stated purpose of this agency is to lead and partner with communities, and one of its six stated roles is to work closely with key stakeholders, including businesses.

In 2012, CERA released the Recovery Strategy for Greater Christchurch. The document described the situation as follows:

> "Much of Greater Christchurch functions effectively and safely and is open for business. The international airport and Lyttelton's sea port remain busy. Businesses have relocated, schools have shared facilities, and temporary housing has been constructed.

> Despite ongoing significant aftershocks, the city is now moving out of the immediate response phase, where the emphasis was on meeting people's basic needs, demolishing unsafe buildings and determining which areas are suitable for rebuilding. It is important to look to the future and coordinate the efforts of all the organisations and individuals helping greater Christchurch to rebuild and recover. Opportunities for investment, innovation and job creation need to be maximised, and the wellbeing of the community should be kept at the heart of the recovery".

In recognition of the importance of working closely with all sectors, including the private sector, the strategy document explained the following:

> "Achieving recovery will be a joint effort between the public and private sectors, non-governmental organisations (NGOs) and the wider community. CERA is coordinating the rebuilding and recovery of greater Christchurch through an efficient and effective programme of action involving local and central government; iwi; businesses; community groups and individuals; land owners and developers; house builders; infrastructure providers; and insurance and finance sectors".

Eight community workshops were held to garner stakeholder views and input. Businesses and business associations were among the attendees at these meetings, which were encouraged to provide comments and input into the process which was recorded and is posted on the CERA website. In line with this effort, CERA released a fact sheet on inclusiveness that explained the organization's approach as follows:

> "Our community engagement approach aims to communicate to and work with people in a range of ways, from sharing information, to asking for feedback; from problem solving and planning together to supporting people to shape their own futures and make their own decisions. We will work with communities, recognizing the diversity of need and perspectives across Greater Christchurch and commit to building and nurturing the relationships which will support our recovery".

Source: Canterbury Earthquake Recovery Authority, 2012

Lessons:

- Local governments must remain cognizant of the fact that businesses play a crucial role in recovery and must therefore be given a place in recovery planning and decision-making
- There are several different ways that business input may be acquired, and not all businesses will be receptive to the same engagement channels
- Businesses have a substantial investment in their operating infrastructure and resources
- It is in the best interest of businesses to engage in activities that minimize impact from natural disasters and achieve rapid recovery to return to full operations

Supporting Local Markets through Recovery Contracting and Procurement

Disaster relief and recovery actions and decisions almost always impact local markets, and a number of factors dictate whether these impacts are positive or negative. For instance, governments and other types of humanitarian organizations have a number of different options when sourcing for their activities, whether related to relief (e.g. feeding, shelter, clothing, healthcare, and cleanup) or longer-term recovery (e.g. construction). When products are brought in from outside the disaster area, they draw demand away from local enterprises, even those not directly affected by the event but whose market area includes the impacted population. Demand is already negatively impacted by the fact that the impacted population will likely have less available capital or may be physically dislocated from their shops of choice. By purchasing supplies locally, not only does humanitarian assistance support these local businesses, it helps to offset revenue lost from impacted customers in a manner that resonates throughout all sectors. Regardless of what products are purchased for humanitarian work, whether construction supplies, vehicles, clothing, or cleanup materials, the local economy is supported through the injection of income.

But the solution requires more consideration than simply recommending or mandating that humanitarian work source locally. In fact, doing just that could ultimately cause much more harm than good. This is because demand for certain supplies, equipment, and labor are in far greater demand in the aftermath of disasters than they experience during non-disaster times. This is especially the case with construction work following damaging events like earthquakes, floods, tornadoes, and cyclonic storms. Recovery planning efforts must pursue a mix of purchasing strategies that both support local markets but balance supply and

demand using outside resources when needed. When too much humanitarian aid is brought in from outside the disaster area, businesses that provide the same products cannot compete with the supply of free inventory and see sales drop considerably. This is called negative demand shock. On the other hand, when local supplies and labor are unable to meet disaster related demands, prices typically skyrocket, and this is known as positive demand shock, and it can cause a drastic increase in prices such that recovery becomes more difficult or even impossible.

Case 43: 2004 Earthquake and Tsunami in Banda Aceh, Indonesia

Topic: Supporting Local Markets

In the aftermath of the earthquake and tsunami in Aceh, Indonesia (2004), demand for local construction increased markedly and in turn prices began to rise astronomically. Steel, cement, bricks, wood, sand, aggregate, and stone all became scarce, and thus expensive, given that they were needed for a number of recovery activities including housing and infrastructure. Not only did this result in an inability of many victims to conduct recovery independent of humanitarian assistance, it increased the likelihood that affected individuals would turn to scarce resources like Sumatran forest wood. Through the assistance of housing reconstruction organization Uplink Banda Aceh, a logistics team was mobilized that facilitated shipments of construction materials that matched local type and quality from elsewhere in Indonesia (including Jakarta and Southern Sumatra). This had the effect of reducing prices and helping the local businesses to restock supplies. Local businesses participated in the effort by opening their available warehouse space for incoming shipments. Through these efforts, construction costs were reduced by several million dollars for 3,000 houses that were built, and this was achieved without relying on foreign materials that would not be available locally once the effort was concluded.

Source: da Silva, 2010

Lessons:

- Large-scale reconstruction efforts will likely exhaust locally available supplies
- Material shortages can negatively impact recovery pace
- Shortages of locally available materials may lead to illegal production or acquisition of building materials
- Coordination mechanisms are effective at reducing market shock

Loss of livelihood and unemployment are common disaster consequences, both of which make victims more likely to depend on handouts than purchase items from the local market. Programs that boost employment by hiring the locally-unemployed

can drastically help improve individual recovery. However, if it is not done in consultation with the local business sector, it is possible that such programs will draw employed workers out of their jobs, leaving businesses that are already suffering without employees. Programs should provide equal emphasis on supporting local businesses that perform the tasks targeted by food-for-work and other employment programs as they do in supporting the locally-unemployed populations.

Additionally, even the large-scale reconstruction projects that are perhaps beyond the capacity of any single local employer should not be contracted in such a manner that local businesses and workers do not benefit in any way. Even when outside contractors are sought for project design and management, the labor-intensive components of the project should prioritize local businesses for subcontracting work (UNDP 2013). There are several obstacles that stand in the way of locally sourcing large- scale infrastructure projects, including difficulties associated with achieving efficiency and economy of scale (e.g. it is easier to manage one large firm than many small firms), and dealing with the political leverage of large businesses who may prefer to use their own subcontractors from outside the impacted area.

Governments can support local inclusion in post-disaster reconstruction work during the pre-disaster recovery planning process. This includes drafting contracts for certain types of services that may or may not be called upon, e.g. indefinite delivery and indefinite quality or IDIQ contracts. According to Shafer, Peterson, Baylor, and McCarthy (2014), local governments can plan for effective contracting by:

- Checking legislation to determine whether there are provisions for expedited contracting available during emergencies
- Developing contingency, or stand-by, contracts or a list of qualified local and other vendors to expedite the contracting process
- Developing clear requests for quotes (RFQs), requests for proposals (RFPs), and source selection criteria, which do not unfairly exclude local businesses

Mentorship and Coaching Programs

Disasters present many businesses with problems they have never encountered and therefore have little or no experience in managing. The learning curve for disaster recovery operations is extremely steep, and those business owners or managers that do not perform well typically suffer failure as a result. Business mentoring, partnering, and coaching services have been shown to be highly effective practice in terms of their abilities to increase business retention in the impacted area and reduce overall rates of failure.

Governments have established different systems for recruiting mentors, matching business needs with mentor skills, and facilitating the mentoring process. The following three examples of mentoring programs show a range of program options, two of which were established in the aftermath of disaster to address the impacts of one or more events, and a third which grew out of a program that existed prior to the disaster for the purpose of offering general business support:

- **Big Business, Small Business Emergency Management Mentorship Program**
  The Big Business, Small Business Emergency Management Mentorship Program is designed to motivate and encourage large businesses to provide mutually beneficial emergency preparedness, response, and recovery expertise to small businesses. The program was created to improve the resiliency of small businesses, and reduce recovery time after a disaster. All program costs are supported by the Louisiana state government. Business mentors create a profile, and program managers match businesses in need with appropriately skilled mentors. Mentoring is conducted one-on-one, and is formalized through a mentoring agreement. The program office supports the mentoring process with a guidance document, and has gained significant funding through business sponsorships.

- **Business to Business Mentoring: Business Mentor NY**
  Business Mentor NY was created as a component of the New York State recovery effort in the aftermath of Hurricane Sandy which struck in October of 2012. The program allows interested businesses to make direct contact with mentors using an online platform. The program is essentially self-supporting in that mentors and mentees each register through the web-based portal. Businesses who serve as mentors do so on a volunteer basis, and the program is free to those who require assistance. By joining the program, small business can use the program to seek answers to a single question, or can establish longer-term relationships to address recovery related issues. Mentors need to have at least five years of management experience or three years of business ownership experience. They draw from a wide variety of disciplines that together touch upon most disaster related problems businesses face including those related to law, accounting, retail, communications, information technology, human resources, public relations, sales and marketing, among others. More information can be found at www.businessmentor.ny.gov.

- **Coaching Panel: Mentoring for Growth (M4G) Program**
  Mentoring for Growth (M4G) is a program administered by the Government of Queensland, Australia, that allows businesses to apply for mentoring by a panel of 8-10 volunteer business mentors. M4G is a program that exists in

and out of times of disaster, addressing a number of business growth and innovation needs of which recovery is just one. A registry of about 800 mentors is maintained by the government, which matches applicant businesses with a panel that has the appropriate knowledge and skills to address the stated problems. The Queensland government also supports the sessions by providing a venue for counseling, which might be a physical site or through videoconferencing if distances between businesses and mentors is too great. More information can be found at: http://bit.ly/1JBeI5C

Business coaching has also been provided by business and industrial support organizations in the aftermath of disasters through help desks, help lines, and support centers. The Sendai City Industrial Promotion Agency (SIPA) in Miyagi Prefecture, Japan established a center where disaster impacted businesses could speak to experts on a number of topics including those that pertained to legal and accounting needs. In particular, SMEs impacted by the Kumamoto Earthquake of April 14 2016 were provided technical expertise and support by SIPA.

Recovery and Economic Development Incentives

Governments can promote private sector recovery in both the lead-up to and recovery from disasters by instituting or facilitating financial and brand-focused incentive programs, and development focused initiatives. Incentive programs boost recovery capacity, efficiency, and effectiveness in a number of ways that businesses find particularly appealing. Financial incentives enable businesses to take actions that they might not otherwise have the cash on hand to do so. Brand-based incentives can help businesses to expand their market reach by increasing exposure, recognition, or reputation. Development focused incentives can attract new businesses into the disaster area, thereby increasing employment opportunities and growing the local tax revenue base. In all cases, incentives help government to promote behaviors and actions that support disaster risk reduction (including the development of BCPs, mitigation actions, and purchase of insurance). Finally, incentives help convince disaster impacted businesses to remain in the community during the hard months and years of recovery when relocating elsewhere becomes an especially attractive alternative.

Tax deductions, tax relief measures, and direct cash subsidies are three common financial incentives. Governments may offer lower tax for building or rebuilding on land that carries lower hazard risk (or conversely, could raise taxes on high-risk land). Tax deductions work both before and after disasters to influence behaviors that support resilience and resilient recovery, typically applying to expenditures related to hazard mitigation, capacity building, or post-disaster activities that result in more

effective recovery. Examples include deductions that offset the purchase of integrated power generators, to pay for flood proofing and seismic engineering retrofits, or to pay the costs for reconstruction that are more hazard resilient. Subsidies for pre-established eligible expenses can also provide relief while guiding resilient recovery behavior. Depending on how the program is administered, subsidies may have added appeal to disaster impacted businesses in that up-front cash expenditures may not be required.

Economic incentives can be a prohibitive burden on local financial resources even if well-structured. On the other hand, the exodus of disaster impacted businesses or the failure to attract new investment can place equal or greater stress on municipal budgets. Politically, economic subsidies might be perceived as public sector handouts or bailouts in the aftermath of disasters, while pre-disaster incentives will be a tough sell if the public does not consider a future event to be imminent. However, in the post-disaster setting, the alternative to offering incentives may be just as expensive or even more so in terms of lost tax revenue from the businesses that close or decide to relocate elsewhere. Economic incentives also serve to stimulate the local economy and tend to promote a faster recovery for all sectors. Examples of activities that subsidies can be used to support recovery include:

- Offsetting the costs of assessing, strengthening and/or retrofitting vulnerable facilities
- Driving adherence to more stringent safety standards
- Decreasing the cost of resilient building supplies
- Lowering interest rate of loans for construction in low-risk areas or using resilient design and materials

Nonfinancial incentives are also effective in many contexts. Businesses have been spurred to action with the promise of official recognition or certification highlighting their efforts. Businesses often appreciate this type of incentive because awards and certifications equate to positive publicity (and, by extension, new business opportunities). Brand-focused incentive programs have been conducted with success for years to address hazard mitigation, and more recently with climate change mitigation adaptation (e.g. the "Green Building" and "Green Business" concepts). Whole communities can participate in such endeavors, as exemplified by two international programs that certify communities as being "tsunami ready" or "storm ready" upon taking certain actions.

Case 44: FEMA PS-Prep Business Certification Program

Topic: Brand-focused Incentives

The United States Department of Homeland Security established and implemented a voluntary private sector preparedness accreditation and certification program called Private Sector Preparedness (PS-Prep™). This

program, which began in 2007, is designed to improve the ability of businesses and nonprofit organizations to respond and recover from disasters. It works with businesses and NPOs to develop consensus based preparedness standards and best practices to which the private sector entities will voluntarily conform. Through participation in the program, private sector entities are supported in their efforts to identify and implement different options for instituting and maintaining comprehensive business continuity management system and addressing overall organizational resilience.

Participation in the PS Prep™ program is voluntary, but acts to promote the importance of recovery planning and encourage businesses to take action prior to disasters. To incentivize participation, the Department of Homeland Security offers certification to businesses that have completed the program successfully, and provides recognition for those entities that certify to the adopted preparedness standards. Certified businesses can claim to be equipped with the necessary plans and resources to quickly resume operations and continue the delivery of products or services in the vital days and hours after a disaster strikes.

Source: FEMA, 2015

Lessons:

- Businesses may be more likely to participate in a pre-disaster recovery planning or preparedness effort if there is something in addition to risk reduction to be gained
- Allowing businesses to use branded and professionally marketed logos and materials from standardized government readiness initiatives on their own websites and materials can increase interest in these programs

Case 45: Philippine Economic Zone Authority (PEZA)

Topic: Financial Incentives

Typhoon Haiyan devastated parts of the Philippines in November of 2013, causing an estimated USD12.9 billion in damages and affecting more than 12 million people. Thousands of businesses were impacted, and about 7.4 million workers were likewise affected. The Government of the Philippines, in partnership with the Philippine Disaster Resilience Foundation (PDRF), continues to explore options for using special economic zones which normally apply to export oriented businesses to help disaster impacted businesses and to attract new businesses to the disaster area.

The Philippine Economic Zone Authority (PEZA) aims to assist the impacted areas

by establishing new special economic zones in the most badly affected communities. The economic incentives that companies operating in those zones will help boost the local economy and attract new businesses. Among the incentives are tax breaks and income tax holidays. The government has hope that these disaster-driven economic zones will help buffer the hardships that businesses often face in the road to recovery.

Source: IRIN, 2014

Lesson:

- Incentives can be helpful in reviving impacted businesses and in attracting new investment in the region

Case 46: Tsunami Ready Hotels Program

Topic: Brand boosting Incentives

The Bali Hotels Association, ASEAN, and the Indonesia Ministry of Tourism jointly developed a certification program that highlights the resilience efforts of hotels in the Pacific region. This program, called the "Tsunami-Ready Hotels", is a certification program that recognizes facilities that have taken a number of actions in line with defined tsunami safety standards. These include:

- Information Sources and Interpretation
- Decision-making
- Evacuation Procedures
- Evacuation Route and Shelter
- Post Tsunami
- Earthquake
- Community Relations and Cooperation

Facilities that apply for certification receive training for staff and tsunami-resilience supplies and materials. After an audit by the program, the hotel may receive certification and are authorized to use the Tsunami Ready Hotels logo on their marketing materials. The program also makes a press release to call further attention to the efforts of the business.

In Indonesia where the program began, there are currently 27 hotels registered, many of which are internationally recognized brands. Other countries that are initiating affiliated programs include Thailand, Malaysia, Singapore, Philippines, Australia, and Sri Lanka. Additionally, an all-hazards program that also considers community resilience and which is entitled Hotel Ready, remains under

development. Hotel Ready was conceived by the Pacific Asia Travel Association (PATA) and is supported by German development agency Deutsche Gesellschaft fur Internationale (GIZ) and UNISDR.

Source: Tsunami Ready Hotels, 2015

Lesson:

- With adequate support, the private sector may be motivated to work together within industries to develop their own certification standards and systems
- Local training and capacity building efforts to help build the employee resource base is an essential component in this type of program

Studies of disaster recovery incentive effectiveness have shown that these programs can be effective but that there are inherent obstacles that need to be addressed in program design and management. For instance, although they are intended for small and medium sized businesses, large businesses are most often the beneficiaries of them simply because they represent such a large share of local market share (especially in the case of tax-based incentives). Also, they are often more beneficial to areas that experience less damage than the most heavily impacted areas simply because businesses in those badly damaged areas are not always ready to utilize them, especially in the case of first-come first-served incentive programs (Gotham, 2013).

Case 47: The Post Katrina Gulf Opportunity Zone Tax Incentive

Topic: Funding Incentives

In December 2005, just four months after Hurricane Katrina devastated the United States Gulf Coast, the U.S. Congress passed the GO Zone Act of 2005 which authorized the use of economic incentives to support business recovery and to attract business investment in the disaster area. Louisiana was one of several states where assistance was targeted. The law required the Louisiana government to issue USD7.9 billion in tax-exempt private activity bonds during the period spanning from 2006 to 2011. Projects supported by GO Zone program receiving tax incentives were financed with bonds that had to be repaid or with equity provided by private investors, developers, insurers, among other sources. These bonds represented a new category of tax exempt bonds that, unlike the type traditionally issued by state and local development boards to fund development, were not payable from taxes or other public funds. Instead, the private developers to whom the bonds were issued were responsible. The risk to government was in the loss of tax revenue.

Source: Gotham, 2013

Lessons:

- Issuing an incentive program in a blanket fashion across a region that differs greatly with regard to poverty, income levels, disaster impacts, and other factors can lead to unfair distribution of incentive benefits
- Incentive programs that base allocations on property values or other damage descriptions can lead to ineligibilities where the need for such incentives is greatest
- Bond values are dependent on market conditions, which can change rapidly and reduce their effectiveness as an incentive
- Incentive programs must be conducted in a highly transparent manner

Streamlined Permitting and Applications Processes

During non-disaster times, permitting processes serve to ensure that development occurs in a manner that is in line with the community strategy and vision, and in compliance with all laws and regulations. The application process, including any mandatory waiting periods or requirements, help protect the environment, character, and function of the community. However, in the aftermath of disasters, these same permitting processes can instead act as a major roadblock to recovery efforts. When permitting authorities become overwhelmed with a volume of recovery-related requests that greatly exceed normal operations, permitting processes tend to act as bottlenecks. Unless continuity of operations planning has been incorporated into the permitting process design, procedures and protocols will likely be ill-suited for or even irrelevant to the type of permitting needs that exist post-disaster.

In the pre-disaster phase, municipalities can establish post-event policies, strategies, and actions relative to building, land-use, and repair permitting and applications that help to facilitate post-disaster recovery for businesses or any other community stakeholders. Permitting departments can establish mechanisms to increase capacity, including identification of staff-support procedures. This is particularly important given that officials will be overwhelmed with inspecting homes and structures for safety and therefore unable to process applications. Permitting is often related to environmental impact, land-use, engineering, design conformity, plan approval, and other requirements. Facilities that have been "grandfathered" through permitting requirements in the past, including such things as non-conforming characteristics, historical designation, a use that runs counter to regulation, code violations, or other issues will likely face extraordinary hardships during recovery, given the backlog of requests. Plans should address how these types of cases can be streamlined as well.

Topic: Streamlined Permitting

Lee County in the US state of Florida faces a high risk from hurricanes. In order to reduce delays on recovery activities, including among businesses, the County has instituted procedures to expedite permitting for certain activities following emergency declarations. These procedures are outlined in the municipality's administrative code.

Expedited permitting prioritizes actions taken to replace existing structures, notably those for which limited review is required. Permit applications related to the disaster are given priority over other work requests that were pre-existing or do not pertain to the impacted area. It also allows property owners to immediately secure their structures to ensure safety and prevent additional damage before they are required to apply for a construction permit. It does not, however, exempt any disaster related construction from meeting existing and updated building codes. All contractors hired to do the permitted work must also be properly licensed to do so.

Permitting procedures are based on the total cost of repairs to the structure, and are broken down as follows:

- Damages less than USD20,000: Permits are intended for minor damage, consisting of roof covering, screen enclosures, wood decks, doors, windows, and other non-structural components. Permits are obtained by submitting an itemized list stating the items to be repaired, with an accurate cost estimate of the repairs. It is the responsibility of the owner-builder or contractor to request the required inspections and provide inspections reports.
- Damages greater than USD20,000: Permits are intended for minimal structural components including damaged glass rooms, trusses on single family houses, cladding (roof and wall sheathing) and non-structural components, including mechanical (air conditioning), electrical and insulation. Permits are obtained upon submitting an itemized list signed and sealed by an approved architect or engineer.
- Major Structural Damage: Permits are intended for collapsed roofing systems, destroyed walls, foundation damage, damage to beams, and other major structural components. Permits are only issued upon submission of detailed construction drawings prepared and sealed by an approved architect or engineer.

Source: Lee County, 2015

Lessons:

- Establishing procedures prior to disasters increases the likelihood that contractors are familiar with them and thus able to effectively work within their provisions
- Emergency provisions can accommodate the fact that many projects will pertain to minor damage and therefore do not need to go through standard application procedures resulting in logjams

One of the most effective ways to streamline permitting and applications is to ensure that whatever entity is tasked with recovery, management is equipped with the authority necessary to administer temporary modification to municipal construction and land-use codes and laws. In particular, those pertaining to building permits, demolition permits, and restrictions on the use, development, or occupancy of private property must be authorized – provided that such action is reasonably justifiable and accounts fully for the protection of life and property, mitigation of hazardous conditions, avoidance of undue displacement of households or businesses, and the prompt and effective restoration of public infrastructure.

It is important that streamlined permitting and applications processes do not result in relaxed permitting processes, in the sense that opportunities to address hazard risk are negated or situations are created where structures or facilities present environmental or structural hazards. Temporary use permits are often all that is needed to facilitate business recovery. The American Planning Association (APA) explains in a set of model ordinances developed to guide communities engaged in planning that temporary use permits are effective in facilitating recovery provided that the activities:

1. Will not be detrimental to the immediate neighborhood
2. Will not adversely affect the Comprehensive General Plan or any applicable specific plan
3. Will contribute in a positive fashion to the reconstruction and recovery of areas adversely impacted by the disaster

Government can determine the length of validity for temporary use permits, with provisions for extension if needed. The APA also recommends that provisions be in place to ensure that revocation is possible if any evidence suggesting conditions or activities contradict the pretexts under which the permit was issued (American Planning Association, n/d).

Case 49: Permitting Issues Following the 2004 Boxing Day Tsunami in Sri Lanka

Topic: Permitting

Sri Lanka was one of the countries severely impacted by the 2004 Boxing Day Tsunami. Businesses located along the country's coastlines were particularly hard hit given the direct physical impacts received and the nature of the businesses. Micro-enterprises and SMEs were most profoundly impacted, especially those involved in fishing or tourism. Over 150,000 jobs were impacted by the event.

Initially, the government instituted a mandatory 100-meter buffer zone along the south and west coasts, and a 200-meter buffer zone along the north and east coasts, to reduce tsunami risk moving forward into recovery. It did not take long for these land-use regulations to stand in the way of business recovery efforts, especially in the tourism and fishing industries. In fact, many micro-enterprises and SMEs found they were precluded from receiving assistance from humanitarian organizations and aid agencies on account of their inability to conduct any work within those zones. The nature of their work, however, required them to be located near the ocean. Soon after the zones were imposed, the government of Sri Lanka granted a variety of exemptions to tourism and fishery businesses. Pre-existing hotels that had received little or no damage were allowed to remain within the buffer zone. Hotels that were either heavily or completely destroyed received priority for allocated land in 15 "tourism zones" created by the Sri Lanka Tourist Board in 2005 and planned for many of the most popular seaside resorts.

Source: Dasayanaka and Gayan, 2014, Connolly, 2007

Lessons:

- Land-use regulations, including temporary regulations issued in the aftermath of a disaster, need to be issued only after considering how they will impact eligibility for aid
- Mechanisms must be put in place to ensure that expedited or modified permitting does not benefit one industry or group over another

Accelerated Access

When a business is impacted by a disaster, business owners and employees have an almost universal need to access their facilities as soon as possible, even while the hazard is still impacting the area. There are many drivers behind this desire, including the need to carry out facility assessments, the need to take action to protect or secure facilities and other property, the need to retrieve items, the need

to contact customers and suppliers, and much more. For the vast majority of businesses, an inability to physically access the business directly translates to an inability to operate. But for some businesses, like banks, it can mean much more to both the business and for the community at large.

There exist opposing needs in recovery with regards to businesses' eagerness to return to the disaster area to resume operations and activities, and the needs of government to properly manage consequences, make assessments, and set forth a coordinated course of action. Delayed access to business facilities negatively impacts business continuity, especially in situations where a business is unable to easily or quickly recreate the operational environment elsewhere.

The most common cause of delayed access is a failure to quickly resume the delivery of critical infrastructure services. Power outages are the number one cause of business interruptions, and can result in businesses far from the immediate impact zone being negatively impacted and possibly forced to cease operations. Water, gas, and communications infrastructure outages can have the same effect. Even if a business is able to resume operations through the use of a generator, for instance, their employees may not be able to.

Government can assist business by prioritizing some response and early recovery activities that enable businesses and their customers, suppliers, and employees to more quickly resume access to the impacted facilities. Examples of government activities that accelerate access for disaster impacted businesses include:

- Clearing debris from roadways
- Prioritizing the repair schedule for critical infrastructure, or providing suitable temporary alternative delivery mechanisms
- Providing escorted access early in the event to retrieve records, equipment, supplies, or other items

Case 50: Prioritized Transportation Infrastructure Repairs

Topic: Accelerated Access

Hurricane Irene struck several states in the US Northeast in 2011. In mountainous Vermont, heavy rains led to destruction of several main transportation routes, effectively cutting off many towns right before the fall foliage and winter skiing seasons from which most of the year's tourism revenues are derived. In just the few weeks of fall foliage, tourists provide over USD330 million for businesses, the overwhelming majority of which are small.

The storm resulted in the closure of 118 sections of state roads, which are the

routes most often used by tourists. Planners assessed early in the recovery planning process that failure to reopen roads as quickly as possible would result in dire consequences for many of these businesses.

In just four weeks, 84 of the 118 sections of state roads that had been damaged were reopened, and 28 of 34 state highway bridges that had been closed were reopened. Within three months of the storm, over 500 miles of road had been repaired, requiring over 300,000 tons of rock utilizing a specially-designed train that brought stone directly from a quarry located in the north of the state. This work was in addition to the repair of approximately 200 bridges that had received some degree of damage.

In order to repair the roads fast enough to support the State's tourism sector, it had to fully close the damaged highways, routing traffic through local communities that had to accommodate the increased pressure. The state also partnered with technology companies like Google to develop a plan of action that prioritized roads according to impacts on the economy and on transportation, to establish a schedule of repairs that was as short as possible, and to maintain communication with the public about which roads were open and when closures would be occurring in the future. Finally, the State had to work in close coordination with construction companies to expedite the approval of plans and permits.

To address perceptions that Vermont was unable to support tourism, which had been resulting in cancellations at hotels and resorts, the State government assembled a marketing team called the "foliage force" that promoted businesses and tourism-related activities and announced that repairs would be completed in time for tourists to arrive. The State again worked in concert with private sector mapping firms to develop maps of road closures and to let tourists know how to easily reach their destinations.

Source: Schwartz, 2011

Lessons:

- Accelerated access is vital to ensuring businesses have a good chance of achieving recovery
- Access prioritization requires coordination between many different sectors, and must be performed in conjunction with a communication campaign that counteracts inaccurate perceptions
- Accelerated access often comes at a cost, and in this case, one of the greatest

costs was that effective DRR solutions that require more time were rejected (e.g. repositioning roads higher in the river valleys where future flooding would have a lower impact)

- Accelerated access does not always benefit all businesses equally, and some may feel left out of the faster recovery or even feel that they faced greater hardship so that others could reap benefits

Access is typically controlled because of either safety or security concerns. Communities can enable accelerated access to these areas by establishing programs of access control. These are specialized identification systems that provide authorization to individuals who have been vetted in terms of their need or right to access the area of control. Depending on the particular situation, access may or may not require individuals to be accompanied by an escort, which increases security and safety but effectively limits the capacity of the system. Under such circumstances, normal business operations are not possible. However, critical actions including the retrieval of data, records, equipment, supplies, or other items can take place, thus allowing the company to continue operations elsewhere. Communities have used badging systems coupled with security cordons to enable more independent access for business owners and operators. Law enforcement agencies are well-positioned to provide these services.

Case 51: New York City Corporate Emergency Access System (CEAS)

Topic: Accelerated Access

The Business Network of Emergency Resources (BNET) is a nonprofit organization established in New York in 1999 in order to promote more effective emergency and crisis management of public-private partnerships. The organization was the product of a joint effort between local/national disaster management agencies and several local businesses. A study was conducted to identify the most significant needs of businesses in emergencies, and accelerated access emerged as a priority. In response, BNET developed the Corporate Emergency Access System (CEAS), which is a credentialing program that allows businesses to register their critical employees for cards that enable access in emergencies requiring access restrictions.

The goal of the CEAS Program is to reduce the impact of an event on business operations. Access gives impacted businesses an opportunity to initiate or conduct emergency response and recovery operations on-site, as needed, including damage assessments. It also enables the rescue of valuable assets left behind including cash, checks, and securities, vital records, hardware and critical equipment, and the performance of any IT-related needs (e.g. rebooting or updating systems).

To participate, businesses select a pre-determined number of employees to receive access ID cards, which is based on their total employee population. CEAS credentialing takes place prior to an emergency or disaster. Critical employees are vetted and given a secure identification card that is approved and recognized by the police force. When a disaster happens, they are able to return to their offices once local authorities have given the authority to do so under the program.

BNET uses web-based credentialing processes to eliminate the need for private businesses to purchase or maintain expensive software and hardware. The cards meet or exceed standards maintained by national and local law enforcement agencies so no duplicative vetting is required. Since its implementation in New York, it has been expanded to 11 other municipalities in 5 other states.

Source: BNET, 2015

Lessons:

- Accelerated access credentialing promotes partnership between local government and area businesses
- Pre-disaster credentialing improves the ability of law enforcement agencies to protect property and maintain scene security
- Businesses are much better able to perform business continuity processes if they have physical access to their facilities, even if only a representative sample of employees is able to do so

Issuance of Ordinances, Land-Use Regulations, and Other Legal Mechanisms

Disaster resilient methods and practices must be incorporated into reconstruction plans if communities are to become resilient in the face of similar future events. While it is well-documented that investments in hazard mitigation pay off several-fold in terms of reduced disaster recovery costs if and when a disaster occurs, this fact is not appreciated by all stakeholders in the community. While a community might hope that their private sector entities might self-police to ensure that Disaster Risk Reduetion (DRR) is incorporated into facility reconstruction and business operations, they should only expect them to incorporate such measures as required by law and statute. Efforts to strengthen building codes and land-use ordinances often meet stern resistance from businesses due to the associated increases in construction cost and the new limits on development opportunities that arise. Much of the opposition comes from specific influential segments of the private sector including land investors, building developers, and materials suppliers. All of these

segments associate strengthened building codes with financial cost. The private sector must derive a profit to exist, and will resist almost any action that threatens to reduce revenue, impact a competitive edge, or limit opportunities for expansion.

Measures to reduce risk almost always translate to increases in up-front costs, but this can be viewed as investment that reaps a 4 to 10 fold return. Risk reduction measures have also been shown to increase the value of the structure upon resale. Generally, businesses are often reticent to invest in mitigation activities because doing so will reduce their profits relative to competitive firms that do not elect to take such actions. However, by raising the minimum standards for protections (whether through land-use or corporate laws, building codes, safety regulations, or other mechanisms), the playing field is leveled and responsible businesses no longer risk losing their edge.

National, regional, and local governments regulate building and reconstruction activities for the purpose of ensuring resilience to known risks, and revise them to account for new hazard information gleaned from recent events. It is typically local governments that regulate land-use. Business and consumers alike must be informed about how increases in protection far outweigh the associated rises in cost such that statutory and legal mechanisms are able to garner necessary legislative support. Governments, therefore, need to ensure that laws are in place prior to disasters, including highly controversial practices like eminent domain activities and control of development on private property. The mechanisms to arbitrate disagreements between government and businesses and between businesses and other stakeholders, must also be in place prior to an event to ensure that recovery does not become stalled. It must also be noted that older buildings are often exempt from building code revisions through "grandfathering" clauses. These provisions protect businesses and homeowners from excessive costs, but also serve to retain risk. Government can manage such issues by including sunset provisions that limit grandfathering to a set period of time such as five or ten years following the

Case 52: Enhanced Regulation of Nuclear Power Plants in Japan

Topic: Government Regulation of Hazard Risk

The magnitude 9.0 earthquake that struck off the coast of Japan in March of 2011 resulted in significant damage, but seismic standards prevented a more significant loss of life as has happened during the 1995 Great Hanshin-Awaji Earthquake. However, the strength of the tsunami caused by the earthquake exceeded expectations, and almost sixteen thousand people were killed by drowning. The tsunami also resulted in the failure of cooling systems at three active reactors operated by the Fukushima Daiichi Nuclear Power Plant complex. Hundreds of thousands of people living within 20km of the facility were displaced, some of them indefinitely.

Because this event exceeded the threshold upon which safety measures had been designed, regulators decided to cease operations at all nuclear facilities until safety inspections were conducted at all operational plants. Moreover, new safety standards based on lessons from the Great East Japan Earthquake were implemented. This was an incredibly difficult decision given that Japan relied upon nuclear power for about 30% of power generation and the alternative fossil fuel options were expected to be much more expensive. This subsequently translated to an increase in electricity costs for all Japanese residents and businesses, and impacted air quality due to increased fossil fuel combustion. However, the Government of Japan felt such an action was justified when measured against the potential outcome of another preventable nuclear accident.

Following the accident, every country with operating nuclear power plants conducted initial assessments of the continued safe operation of its plants. Both the NEA and the IAEA have played a significant role in the exchange of related information among countries. The international Convention on Nuclear Safety (CNS) legally commits each of the nuclear states that are signatories to maintain minimum standards of safety. However, governments can institute their own safety measures that are in excess of those minimum standards, and many countries have acted to do so.

The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (NAIIC) was established in December of 2011 to investigate the direct and indirect causes of the Fukushima nuclear accident. The 10-member commission compiled its report based on more than 1,167 interviews and 900 hours of hearings conducted over six months of independent investigation. In 2013, Japan's Nuclear Regulatory Authority (NRA) developed and adopted new safety standards that the country's 48 shuttered nuclear reactors must meet before they can restart. The new standards consist of three parts:

- Design-basis safety standards
- Severe accident measures
- Safety standards relative to earthquakes and tsunamis

Among the new requirements are specific countermeasures against serious incidents like core meltdown. Plants are also required to install filtered venting systems to reduce emissions of radioactive substances and create an emergency control room where personnel could operate reactors remotely in the event of a disaster. To date, the country's plants remain shuttered, but if and when they are given permission to restart, those that do will have taken action to reduce future disaster risk in accordance with the government-mandated standards.

Source: Patel, 2013

Lessons:

- Updates to safety standards will require significant resources and sufficient time to conduct the necessary investigations, including interviews, inquiries, and collection of stakeholder and public input
- It is essential that safety standards and building codes be modified immediately to reflect resilience requirements so that new capital investments are made with resilience as a priority and not as an afterthought
- Political environments can impact or influence efforts to increase safety standard stringency

Regulations may also be required to either protect businesses from the impacts of humanitarian practices and from other businesses (in terms of price wars and market flooding), or to protect consumers from predatory practices like price gouging (as often occurs in the case of construction supplies and fuel). The quality of work performed by contractors on construction or other activities should also be monitored or regulated to ensure that fraud and substandard construction are both avoided.

Case 53: Price Controls on Rice Following the Sichuan Earthquake

Topic: Issuance of Regulations

The Sichuan Earthquake struck western China in 2008, resulting in significant destruction of homes, businesses, and the death of over 60,000 people. Because the region is one of the country's most important locations in terms of food production, there were fears that the disaster could lead to inflation. Damage to roads impacted hog farmers' abilities to purchase pigs and supplies to support operations surrounding livestock operations. Farm employees had a difficult time returning to work, and shipping companies had shifted operations away from picking up food shipments to delivering humanitarian supplies. Rice farmers, which also form a large part of the Sichuan economy, faced many of the same issues.

The prospect of rising food prices, which would have come on top of earlier price increases from other economic issues, sparked fears of possible social discontent and other disorder. To control food prices, regional governments placed controls on both food commodities pricing and transportation costs. The national government placed restrictions on exports, and instituted policies to punish businesses that attempted to raise prices to excessive levels, e.g. transportation

costs, and placed restrictions on exports.

Source: Lee, 2008

Lessons:

- Price controls on commodities that businesses depend upon for operations are critical to recovery
- Price controls, if implemented without proper assessment or support, can lead to commodity shortages, e.g. companies may opt to sell their products elsewhere if transport and storage costs become more expensive to do business in disaster impacted areas due to price controls.

Many economists warn that price controls need to be used with caution. Price controls can have the effect of causing commodities shortages if businesses are not supported in a way that ensures it makes sense to continue selling their products or offering their services. Price controls imposed on fuel in the aftermath of Hurricane Sandy in the United States caused suppliers to ship product elsewhere where shipping costs and risks would not have been so great. As a result the US Government ended up having to move over 22 million gallons of gas to the disaster area to make up for the shortage of commercially available gasoline (Powell, 2012).

Financing through Grants, Loans, and Other Mechanisms

If revenue is interrupted because of the event, businesses may quickly lose the ability to pay suppliers, utilities, and facility lessors, to cover staff salaries, or to satisfy other contractual obligations upon which their business depends. This is especially true in the case of micro-enterprises and SMEs.

Cash assistance, whether in the form of grants or as loans with appealing repayment terms, constitutes the most effective direct form of recovery support that can be provided to disaster impacted businesses. Almost all businesses in the impacted area (and many outside it) experience economic losses, even those that sustain no physical damages. While cash provisions should never be considered the panacea solution given the variety of non-monetary issues that also influence recovery (e.g. infrastructure access, regulatory shortfalls), it does help those businesses that have minimal cash reserves with which they can meet new and existing commitments, finance recovery expenses, and purchase the supplies and resources required to resume operations.

Direct cash grants should almost always be limited to situations where they act as an investment in economic recovery or some other community benefit rather than

welfare or bailout to individual business owners. Otherwise, the public may view the action as rewarding those entities that failed to make the proper investments to limit hazard risk. Oftentimes, grants are limited to micro-enterprises and SMEs that are most profoundly impacted by large events, and their use is limited to expenses that could not reasonably be covered by other protections (e.g. hazard insurance). Grants can also come with requirements that help to promote economic recovery and employment, encourage adoption of DRR practices, or directly and indirectly benefit other sectors.

In practice, business recovery grants have been found to be most effective when provided at the earliest stages when micro-enterprises and SMEs have not yet exhausted all reserves. Businesses need to resume revenue generating processes early on to avoid having to divest themselves of assets, lay off employees, or acquire an unmanageable amount of debt. In fact, grants to micro- enterprises and SMEs have been found to be much more effective at supporting overall economic recovery and livelihoods protection than cash-for-work programs given that employees retain their long-term sustainable livelihood options (UNDP, 2013).

Loans are a second and much more widely available option for businesses. Given their current situation, or perhaps because of pre-existing financial circumstances, businesses may not have access to or the ability to qualify for standard commercial loans. Financial institutions may also not be in the position to provide loans given the conditions present in the disaster area, including those relative to special emergency ordinances or other provisions. Governments can help businesses by providing loans that have special repayment provisions, including grace periods for repayment (to accommodate the fact that some businesses will have no revenue until operations resume), low interest rates, low collateral requirements, and long repayment terms.

Whether cash is provided as grants or loans, governments and other entities must keep in mind that financial assistance will only be marginally effective (if at all) unless economic markets are functioning. Financial programs must be administered in conjunction with the resumption or reconstruction of wraparound services including critical infrastructure and housing, for instance, so that employees and customers are able to play their part in business recovery. Other support may also be necessary, including the facilitation of technical or logistical needs that require more centralized coordination.

Case 54: Fukushima Business Relocation Grant Program

Topic: Support for Non-Covered Recovery Expenses

Damage to the Fukushima Daiichi Nuclear Power Plant caused by the 2011 Great East Japan Earthquake resulted in a release of radioactive materials and

prompted the evacuation of an area of 20km radius surrounding the plant. Many businesses were impacted, and most faced long-term displacement from their facilities. To address the hardships associated with relocation (which were above and beyond what any SME would have reasonably been expected to prepare for), and to support economic recovery in the region, the Fukushima prefectural government instituted a 20 billion Yen business relocation subsidy program.

The program was administered through the Fukushima Industrial Promotion Center. The program divided businesses into two categories: those that were in the relocation area, and those that were in areas that were evacuated but for which evacuations had been lifted after some time. The requirements for spending eligibilities differed according to which category the business fell into, but in either case, the subsidy limits were 30 million Yen. There were five categories of eligible industries, which included:

1. Those involved in the production of machines for transportation, semi-conductors, medical welfare apparatus, renewable energy, agriculture, commerce, and industry
2. Manufacturing industry and research establishments involved in the promotion and acceleration of industrial areas
3. Companies involved in the installation of logistics and distribution centers
4. Call centers, data centers, and similar facilities
5. Companies that the governor has deemed eligible

The grant subsidy, which was available for a three-year period, addressed a number of special impacts sustained by businesses as a result of the mandatory evacuations from radiation-affected areas. For example, it could be used for the purchase of land and investment in employment. It also contained a requirement that businesses incorporate sustainable energy into their practices. In total, 548 loans were provided to businesses that relocated and 289 were provided to businesses in the zone where evacuation was lifted. Tax incentives were also provided in addition to the grant subsidies.

Source: Fukushima Industrial Promotion Center (presentation at a public forum at the Third UN World Conference on Disaster Risk Reduition March 2015)

Lessons:

- Insurance policies may not cover some types of damages that the business owner has no control over, thereby leaving them with no financial protections

- In cases where evacuation or relocation is needed, insurance policies are unlikely to be sufficient to cover costs
- In situations where relocation is required, insurance may ultimately be the only compensation a business receives for its lost equipment, facilities, supplies, and other property
- The extent of coverage and any coverage limitations must be fully understood because false confidence may accompany the purchase of insurance in some cases and discourage DRR activities

While many recovery programs are best positioned at the regional and local levels, grant and loan programs are often most effective when nationally based. Both types of programs require significant access to cash reserves, which few local or regional governments have, and national governments are not likely dealing with the governance problems that disaster-impacted local governments typically face in the early aftermath of disaster. Moreover, national governments are best positioned to garner and coordinate the support of international financial institutions, major banks, foundations, and other entities capable of supporting disaster grant and loan programs. They also possess the oversight capabilities that are necessary to ensure such programs are conducted responsibly and fairly.

Case 55: Government Grants to Support Businesses

Topic: Government Financial Support (Grants)

The 9/11 terrorist attacks in the United States resulted in the destruction of approximately 30 million square feet of commercial space, impacting over 100,000 workers who became displaced. Compounding the problem was the fact that transportation infrastructure serving the impacted businesses was also heavily disrupted.

After the attacks, the mayor of New York City (Rudolph Giuliani) and the governor of New York State (George Pataki) created the Lower Manhattan Development Corporation (LMDC) to help plan and coordinate the rebuilding of the area in NY that had been impacted. LMDC is a joint State–City Corporation governed by a 16-member Board of Directors charged with overseeing recovery strategies. LMDC works closely with public and private sector stakeholders to coordinate long-term recovery planning, while simultaneously pursuing initiatives to improve residents' quality of life. Several Advisory Councils representing a broad spectrum of groups affected by the World Trade Center attacks including victims' families, business owners, and downtown residents regularly consult with the LMDC on issues of concern to their respective constituencies. LMDC also conducts public hearings, participates in Community Board meetings, and

continuously meets with community groups, civic organizations, and public officials.

The LMDC Business Recovery Grant (BRG) program was created to provide grants to SMEs and nongovernmental organizations with fewer than 500 employees located in the affected area in order to cover expenses that were caused by the disaster. The goal of the program was to help keep the displaced businesses (and jobs) from leaving the city, and to create new jobs by attracting new companies and NGOs. Businesses need only show their pre-9/11 lease, deed, or permit and their new business lease, deed, or permit (if relocated) to establish eligibility. Grant limits differed by business location and were calculated according to the number of days gross revenue was impacted, and included values of USD50,000, USD100,000, USD150,000, and USD300,000. The BRG program was integrated with another existing grant program for retail businesses (WTC Disaster Retail Recovery Grant Program) previously offered by the New York Empire State Development Corporation (ESDC) - a state government agency that provided grants of USD10,000 or less to small, retail businesses.

The US Congress had initially appropriated USD700 million to the state through the Department of Housing and Urban Development (HUD) to facilitate economic recovery and revitalization efforts. That fund was managed by ESDC. However, much more was ultimately needed to fund business recovery and revitalization and an additional USD2 billion of Federal disaster funds was appropriated for LMDC of which USD350 million was used to support business recovery programs. The following table shows how funds were allocated among the two agencies:

Program	ESDC (State)	LMDC (City)
WTC Business Recovery Grant Program	USD331,000,000	USD150,000,000
Small Firm Attraction and Retention Grants	USD105,000,000	USD50,000,000
Job Creation and Retention Program	USD170,000,000	USD150,000,000
Other Programs and Administration	USD94,000,000	USD0
Total	USD700,000,000	USD350,000,000

The BRG program began accepting applications on January 25, 2002, approximately four and one half months following the event. By December 31, 2002, the application deadline, ESDC had received applications from 15,306 businesses. By the end of 2003, the program had provided USD219 million in grants to 6,858 businesses employing 52,310 people.

Source: US Department of Housing and Urban Development, 2013; LMDC, 2015

Lessons:

- Grants may be necessary to preserve private sector provided wraparound services, and to retain the character of the community, if businesses would otherwise fail or relocate
- Small businesses are much more likely to require grant support given their reduced access to credit following disasters

Case 56: 2013 Alberta and Wood Buffalo Floods

Topic: Financial Support to Disaster-Impacted Businesses

Five days of heavy rainfall along 32 key river tributaries of seven major rivers triggered the worst flooding in Alberta, Canada's history, including in the provincial capital Calgary. Over 100,000 residents were displaced and almost 5 billion Canadian dollars and damages were sustained.

Disaster provisions stated in the Province of Alberta enables local governments to apply to the provincial government for a disaster declaration on behalf of impacted citizens. If the province approves the request, a Disaster Recovery Program (DRP) is set up. Declarations were granted for 32 communities, each triggering several recovery support programs for impacted small businesses.

The DRP, which is geared towards individuals, households, and very small businesses (up to 20 employees), is not intended to return businesses to their pre-disaster status, but rather to return the properties to their basic function. It helps each to manage some of the expenses related to uninsurable property damages and losses. Funds cover the cost of returning essential property to the condition it was in before the disaster happened, and in addition to homeowners also apply to NGOs, institutions, agricultural producers, landlords, and small businesses. Costs include cleanup expenses, replacement of essential equipment and supplies, and insurance deductibles, all of which many small businesses are unable to cover given their other impacts (e.g. revenue losses).

The second program called "Small Business Rebuilding" is similar to the DRP, and supports the recovery of businesses employing between 21 and 50 people and generating less than 15 million Canadian dollars in annual gross revenues. Fund eligibility is equivalent to the DRP program. The Hand-up Plan is a third program, which provides immediate financial assistance to small businesses, agricultural producers, self-employed contractors, and nonprofit organizations.

Source: Government of Alberta, 2014

Lesson:

- Grant and loan programs can help cover uninsurable losses

Case 57: Forgivable Disaster Loans Utilizing Local Banks in Galveston, Texas USA

Topic: Financial Support

Before a disaster, local governments can work with banks in order to better understand how they might make business loans available in recovery, and what support they would need in doing that. Locally-derived disaster loans may be the only option in smaller disaster events, and can often be accessed much faster than nationally-administered loans. They are also generally more flexible in terms of meeting businesses' needs of businesses through either working capital loans or long-term financing.

In 2008 Hurricane Ike struck the US state Texas and the city of Galveston, which was the site of the most deadly hurricane in US history in 1900, when as many as 12,000 people died. Following Hurricane Ike, Galveston's lead economic development organization The Galveston Economic Development Partnership (GEDP) established a USD2.5 million fund that would provide local businesses with working capital to address cleanup and emergency repairs after disasters. Funds were provided by the National Community Development Grant program, but the banks would write the loans. These meetings resulted in the creation of the Galveston Business Recovery Fund Program (GBRFP).

GBRRP is a registered nonprofit organization that offers no-interest, deferred short-term recovery loans for SMEs that need quick access to cash. It is designed to cover expenses when capital is not typically available through conventional loans, and covers expenses such as furniture, operating expenses, fixtures and equipment, and working capital. Business eligibility is limited to those entities that have existed for a year or longer, that were an operating business before the disaster, that were solvent and operationally sound and profitable before the disaster, that are in good standing with regards to taxes, and that can show evidence of job creation. Loan amounts are determined on a case-by-case basis, as are the loan terms. Loans are limited to USD50,000.

If all loan terms are met, the loans are forgiven after one year. However, if the terms are not met then the loan must be repaid in full. Conditions include:

1. The borrower must show they have created and retained at least one job per USD50,000 loan

2. The borrower has complied with all servicing requests as stipulated in the loan closing documents and promissory note
3. The borrower keeps the lender informed of any changes in the business' operating status
4. The borrower continues to actively operate the subject business for the term of the loan

After Hurricane Ike struck in 2008, the fund was deployed immediately to assist small and medium-sized businesses with pressing capital needs. Applications took only 7-10 days for processing.

Source: Galveston Economic Development Partnership, 2008; Rice, 2011

Lessons:

- Loan programs with forgiveness provisions enable governments or lenders to influence sustainable recovery provisions
- Local banks can assist in the writing and servicing of loans supported by external funding

Supporting Insurance Mechanisms

Insurance penetration in the private sector, especially the micro-enterprises and SMEs that are less likely to have policies in place, is a determinant factor in post-disaster survival rates for businesses. As was previously stated, insurance and other risk-sharing instruments do little to limit physical damage or destruction of facilities, equipment, inventory, and other property. However, it provides invaluable support for businesses facing the high costs associated with disaster recovery. Moreover, the expenses related to business interruption, including staff salaries, are eligible for reimbursement under many comprehensive policies. Unfortunately, due to the high financial risks associated with catastrophic incidents (e.g. hurricanes, floods, earthquakes), many insurance providers are unwilling to write policies without government backing. For micro-enterprises, even standard insurance policies may not be available or premiums may be excessively expensive.

The disaster recovery burden shouldered by the public sector is greatly reduced when a higher portion of disaster damages is covered by risk transfer and sharing mechanisms. However, in most situations businesses face no obligation to insure their facilities, equipment, inventory, or operations, and therefore may fail to utilize these protections or under-subscribe to them. Business owners or managers must consider the impact of each cost on profit margins, and even those that carried

insurance for some time may elect to cancel or otherwise forego adequate coverage on the gamble that a disaster will not strike in the foreseeable future. At the same time, short-term insurance rates for property coverage often fail to reflect medium-term hazard risk. They tend to be overly influenced by near-sighted financial markets and are variable such that rates climb and fall relative to the occurrence of major events. As such, many insurers claim they cannot offer incentives for resilient practices when their rates fall following an extended disaster-free period.

There are a number of ways that government and other stakeholders can support business insurance subscribership. These include:

- **By mandating coverage:**
  Hazard insurance subscribership in some countries has been increased by government issuing coverage mandates under certain circumstances. Examples include the location of a facility in the floodplain or along the coast, when government-backed mortgages are purchased, when businesses are publicly-traded, when government contracting is sought, when businesses operate in certain industries, and others.

- **By backing catastrophic coverage:**
  Private insurance companies are much more willing to provide coverage of catastrophic events if government guarantees such coverage beyond a maximum loss level. Insurance companies are often unwilling to insure risks that cannot be accurately measured, such as terrorism or earthquake risk. They are also not likely to offer policies that would be too expensive if offered with actuarially-sound premiums. The UN Economic and Social Commission for Asia and the Pacific suggests a four-level approach to risk responsibility wherein: (i) victims bear the first expenses (i.e., the deductible) which encourages risk reduction and reduces total reliance on insurance for protection; (ii) the private insurance companies assume costs beyond the deductible to a set amount; (iii) reinsurance policies are purchased to cover the third level of expenses; and (iv) anything in excess is backed by government, multi-state pools, or international financial institutions. There are several options for governments seeking to back insurance coverage. These include guaranteed loans, acting as reinsurer, and establishing a government program that directly insures clients.

- **By regulating insurance industry practices:**
  Insurance can fail when certain conditions are present unless special precautions have been taken to avoid such outcomes. For instance, if a company writes all of its policies in a small geographic area, and an event impacts all of its written policies at once, it is unlikely to have the capital

reserves needed to pay all claims submitted. Insurance companies may also try to deny coverage for events that are not clearly described in their policies. Governments can regulate the risks that insurance companies take to ensure that businesses are not left without coverage in geographically expansive events, and can provide arbitration for disagreements between policy-holders and insurers. Governments can also regulate pricing structures to ensure that they are risk-based.

- **By supporting the insurance industry with information:**
  Insurance rates are driven by risk, and availability of reliable risk and vulnerability data across all markets and geographic areas helps to improve insurance ratings and, by extension, pricing. Government can facilitate or mandate the sharing of data between research institutes, private companies, regional and local government agencies, and individuals.

- **By subsidizing coverage of "uninsurable" businesses:**
  Government can offer programs that help to decrease the financial burden of certain policies, namely catastrophic ones, for companies that are unable to afford them. Governments often face much greater expenses related to the loss of such businesses in the aftermath of disaster than would be required to support well-designed insurance subsidies.

- **By promoting insurance through education and marketing:**
  Many micro and SME businesses do not understand their risk, the types of insurance policies that are available, the benefits of having an insurance policy, or the mechanisms through which insurance may be purchased. There are many opportunities for engagement through which governments can encourage businesses to purchase the appropriate policies, including through initial registration, loan programs, on government websites, through industry support networks, on government websites, and in other settings.

The insurance industry itself can also increase subscribership in a manner that simultaneously reduces community risk by discounting policies for businesses that implement risk reduction. For instance, businesses that have ERM and BCP that are aligned with international standards, or that are housed in facilities that meet strict building code standards, would face lower risk than other businesses that have not taken such measures and would therefore pay lower premiums. This method represents a win-win for communities in that fewer structures are lost, and those that are lost are more likely to have the insurance necessary to cover the cost of rebuilding. It also removes the disincentive to pay for risk reduction measures that exists when policies treat all entities within a specific zone as having equal risk.

Topic: Government-Backed Insurance

In 1965, the US Congress passed the Southeast Hurricane Disaster Relief Act after Hurricane Betsy devastated the US Gulf States. In addition to providing financial relief for victims, the Act authorized a feasibility study for a national flood insurance program. The National Flood Insurance Act of 1968 was subsequently passed in order to reduce national expenditures for flood-related disaster assistance by creating a government-based insurance program. The National Flood Insurance Program (NFIP) was the product of this effort.

The NFIP provided low-cost flood insurance to structures that existed outside of the 100-year floodplain, or that existed within it but had taken measures to elevate or otherwise reduce flood risk to 100-year levels. The program required communities to adopt and enforce structured floodplain management regulations in order to participate in the program that the act created. The program supports these requirements by studying and developing maps of the floodplain in all US communities. The maps create broad-based awareness of the flood hazards and provide the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.

When the NFIP was created, it recognized that insurance is needed for pre-existing buildings located in the floodplain, so a subsidy program was introduced. It covered approximately 26% of the 4.3 million NFIP policies in force (which is much lower than the 70% of policies that were subsidized in 1978). In exchange for subsidy availability, communities are required to protect new construction and substantially improve structures through adoption and enforcement of community floodplain management ordinances. The 1968 Act required that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date that flood maps were provided to the community.

It was determined early in the program's history that subsidies alone were insufficient to incentivize communities to voluntarily join the NFIP, or for individuals to purchase flood insurance. When Tropical Storm Agnes struck in 1972, it caused extensive river flooding along the US East Coast, and it soon became clear that few impacted property owners were insured. In fact, only 95,000 policies were in place nationwide at that point. The storm, which resulted in greater public-sector recovery costs than any previous disaster, led to the passage of the Flood Disaster Protection Act of 1973. This Act further incentivized the program by prohibiting national government agencies from providing financial assistance for acquisition or construction of buildings, and for certain disaster assistance in the floodplain, in any community that did not participate in

the program. The Act required that federal agency and federally-insured or regulated lenders must also see to it that there is flood insurance on all grants and loans for acquisition or construction of buildings in the 100-year floodplain.

The mandatory flood insurance requirement resulted in a dramatic increase in the number of communities that joined the NFIP from just over 2200 communities to approximately 15,000 in just four years. It also resulted in a dramatic increase in the number of flood insurance policies in force to about 1.2 million. Today, over 19,700 communities participate in the program.

Source: Coppola, 2015

Lessons:

- Grandfathered structures that are subsidized despite being unprotected in high-risk zones may last longer than anticipated, thereby presenting a long-term source of loss for government-backed insurance programs
- Tying availability for insurance policies and disaster assistance together can help increase community willingness to participate in the program
- By mandating insurance coverage as a condition of government-backed mortgages, businesses will have no choice but to purchase policies if they wish to take out such loans
- By creating grant programs that address mitigation of the covered hazard, the long-term financial costs associated with the program will decrease for government, and communities will have smaller risk zones and thus fewer high-cost policies
- Government-backed insurance programs may operate at a loss given that premiums are not always based on actuarial rates

Supporting Disaster Risk Reduction and Climate Change Adaptation Activities in Recovery

Disaster recovery presents a unique opportunity for all community stakeholders, including businesses, to address the vulnerabilities and other risk issues that led to the disaster impacts. It also allows for the reduction of other hazard risks, including those associated with climate change that may not present for years or decades, that might not otherwise be possible in the absence of the investment occurring as a result of recovery. Businesses may not have access to the information or the financing required to make that happen without external assistance. There are several mechanisms through which government can support private sector DRR and

CCA activities in recovery.

Information is perhaps the most widely-applicable form of assistance. Without knowledge of possible risk reduction options, business owners may simply rebuild to what previously existed, or to the minimum allowable safety limits as dictated by local ordinances and building codes. Businesses are highly dependent on government for information during recovery, especially if disaster resilient design and materials are to be used. To begin with, businesses need access to information about risk. This includes predictions for changes in risk to occur as a result of climate change effects. Biagini and Miller (2013) write that, "Some elements of climate change adaptation are primarily or even exclusively government functions and are likely to remain so, particularly the provision of basic weather and climate information, design and implementation of risk management policies (e.g. building codes, land use restrictions, and insurance regulations), and disaster planning and preparedness". They further state that very few businesses have conducted risk assessments and even less has considered their options relative to climate change. Governments must make risk data available at all times to support DRR and CCA, but during recovery both the need for such information and the challenge in providing it increase. A 2014 report by ESCAP supports these points in stating that, [j]oint accountability among the public and private actors requires transparent and accessible disaster risk information […] this is crucial for risk-sensitive investment decision-making for both governments and businesses and is even more important for low-income countries and SMEs that have not developed their own risk analysis framework". Governments may need to consider multiple options for supporting data and information sharing, including funding for academic institutions, supporting a data platform, or creating a task force to coordinate the data collection and sharing efforts of all stakeholders.

Businesses are also influenced by the actions and efforts of government. National-level strategies and action plans that are created to address disaster risk or climate change policy and action can serve as a model to interested businesses. Public-private partnerships for community resilience, or through hazard mitigation planning, can also act as a platform for risk reduction assistance when disasters occur and more opportunities present.

Government can also support DRR and CCA activities through targeted funding and technical assistance programs. Understanding that businesses are only required to rebuild according to codes and standards, but that the incorporation of resilient design and systems benefits not only the business but oftentimes the community at large, grant programs can be utilized as an incentive for more comprehensive improvements. Providing information about or facilitating connection with private and nonprofit organizations that support such efforts is another option, especially

for microenterprises and SMEs that these organizations often support. Private sector networks like industrial support centers, chambers of commerce, small business development centers, as well as academic institutions, rural development centers, and other entities often provide their own staff to advise businesses about risk-reduction opportunities. Businesses are also commonly willing to provide peer-to-peer training and technical assistance. Finally, insurance providers and associations, who have a vested financial interest in business resilience, will support or conduct such programs.

Case 59: Singapore Business Federation

Topic: Promoting DRR in the Business Sector

The Singapore Business Federation (SBF) is the apex business chamber in Singapore, representing the interests of the Singapore business community in trade, investment, and industrial relations. It represents more than 21,500 companies as well as the local and foreign business chambers and key national and industry associations from business sectors that contribute significantly to the Singapore economy. It was established in 2002 by the SBF Act, and any Singapore registered company with a share capital greater than 0.5 million Singapore dollar is a member.

The National Business Continuity Management (BCM) Programme is a USD30 million initiative that was launched in Singapore in December of 2008 to engage the private sector in building economic resilience through BCM certification. SBF was appointed the National BCM Focal Point for this national initiative. In that vein, SBF supports businesses' effort to become BCM certified, advises them on BCM issues, and helps SMEs in program participation.

However, BCM is just one way that SBF promotes DRR and CCA. The following programs also contribute to the high levels of resilience that Singapore businesses have achieved:

1. SBF is tasked with developing a BCM journal, which allows exchange of idea and thoughts to promote the interest from the public and private sector in developing and improving BCM skills and knowledge
2. SBF worked with a branding firm to develop a special logo that public and private sector entities certified to be BCM ready can use to promote their achievements
3. SBF leverages private sector expertise and strengths to advance knowledge and understanding of BCM and DRR options across the sector
4. SBF developed a BCM online resource library for public and private sector entities interested in learning more about BCM, including maintaining a BCM Facebook page

5. SBF supports national and local risk assessments, inclusive of socio-economic factors, e.g. SBF plans BCM workshops throughout the region to increase BCM knowledge and capacity

Source: UNISDR, 2015c; SBF, 2015

Lessons:

- Chambers of commerce may be best positioned to promote BCM, DRR, and CCA given their existing relationships with the wider business community
- Business networks can serve as a platform for information sharing on key risk reduction issues

Governments must continue to promote business continuity planning efforts and provide the education and guidance to facilitate it (especially among small businesses, where participation in such schemes is lowest). Continuity planning is the most basic manner in which the private sector is able to contribute to reductions in community risk. A lot of effort is spent promoting DRR in the public sector, but up to 90% of national wealth, and likewise 90% of the costs of recovery, originate in the private sector so the effort is justified. Businesses must also consider all hazard risk, including that related to climate change, in their investment strategies so as to avoid creating community vulnerability and risk. The long-standing private sector predilection of developing on land that is cheaper due to higher physical vulnerabilities (e.g. land located in the floodplain) must be reversed, and adequate sharing of publicly-generated hazard assessment data is one of many ways to realize such a shift.

Governments can support business resilience and recovery planning by allocating resources for awareness campaigns, more direct support in the form of seminars and workshops, or the establishment of technical assistance resource centers such as business.gov.au in Australia or Ready Business in the United States.

Annexes

Annex 1: Acknowledgments

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Annex 2: Pre-Disaster Recovery Planning through BCP

Businesses are generally risk managing endeavors given that profit is often derived from a well-positioned investment that aptly balances risk with return. However, business owners understand that the inherent risk factors – facing their operations, facilities, employees, property, and reputation – have the potential to negatively impact revenues and possibly lead to a total loss of business in the most extreme cases.

As mentioned in this guidance note, businesses prepare for recovery prior to the onset of disasters by performing business continuity planning and by maintaining an enterprise risk management function. The manner in which this is performed differs markedly between businesses, with the majority of micro-enterprises and SMEs addressing their risks prior to disasters only in an informal manner that might not appear to qualify as "planning" at first glance. However, the relationships and the knowledge – gained through involvement in business associations, discussions with insurers and suppliers, working out staffing plans with employees, and even making space and dedicating the resources to stockpile extra supplies – help increase recovery capacity in the aftermath of disasters, both small and large in scale and scope.

Through the development of a BCP, businesses will have analyzed the manner in which identified threats stand to impact their business processes, their people, their facilities and property, and their data. Using the knowledge gained through this exercises, they become better equipped to identify suitable risk reduction options or mechanisms to work around the problems that arise. Businesses will almost always take actions based upon a cost analysis (i.e., if the cost of taking action to mitigate a risk is greater than the cost of the impacts that the business believes they will sustain, they will not take the action). Unfortunately, there is a high degree of subjectivity in these decision-making processes, and as previously stated business owners tend to be less risk averse and therefore may perceive threats to be less than they actually are.

Local and national government agencies are both very well-positioned to promote the practice of BCP and to assist businesses as they pursue this valuable endeavor. There are a number of ways to extend support, inclusive of:

- Providing business specific risk information government websites
- Providing one-on-one assistance
- Providing BCP guidance, including how to instructions, plan templates, checklists, job aids, and other easy to adopt materials
- Supporting community organizations engaged in building business resilience

- Providing incentives for businesses that perform BCP, including certifications and tax based programs
- Involving businesses in disaster exercises so they can test their plans and procedures
- Mandating minimum planning requirements for certain businesses critical to the functioning of a community such as critical infrastructure owners and operators and businesses whose products present a credible hazard risk in the community (e.g. LPG storage facilities)
- Supporting business to business networking, mentorship, and coaching programs
- Supporting the ongoing dialogue about the business role in DRM through conferences, forums, and other venue based events
- Marketing BCP value through press releases, event based communications (e.g. the beginning of cyclone season), social media, and other channels

Experience in past disasters has consistently shown that those businesses that maintain a business continuity plan are significantly more likely to survive the event than those that have taken little or no pre-disaster planning action. Recovery that is based upon pre-event planning offers the following advantages: it is much more organized; it is more likely to result a rapid resumption of revenue; it is more likely to result in a reduction of future disaster losses; and it is better able to support overall community recovery.

Annex 3 (Resources) of this Guidance Note contains a list of links to information and documents that governments can use to promote pre-disaster recovery planning among the private sector.

Annex 3: Resources

Changing the Game
US Chamber of Commerce. 2014.

Economic Recovery Support Function; National Disaster Recovery Framework
US Federal Emergency Management Agency. 2011.

Environmental Improvement Enterprise
Wealthy Corporation.
http://www.wellthy.co.jp/en/overseasprojects/project/#project2

Global Assessment Report (GAR) 2013: From Shared Risk to Shared Value – The Business Case for Disaster Risk Reduction
UNISDR. 2013. http://bit.ly/1fETkSM

Leadership in Times of Crisis: A Toolkit for Economic Recovery and Resiliency
International Economic Development Council. 2014. http://bit.ly/1QxfKoR

Local Disaster Recovery Staffing Guide
Shafer, Jennifer, Matthew Peterson, Philip Baylor, and Kerry McCarthy. 2014. LMI Research Institute. http://bit.ly/1jPor0F

Model Pre-Disaster Recovery Ordinance
American Planning Association. n/d.

Multi-Hazard Business Continuity Management
International Labour Office. 2011. Geneva.

Multi-Hazard Business Continuity Management: Guide for SMEs
ILO. 2012.

Private Sector Activities in Disaster Risk Reduction: Good Practices and Lessons Learned
UNISDR. 2008. http://bit.ly/1Ojt5fW

Private Sector Engagement in Disaster Risk Reduction
Asian Disaster Preparedness Center. 2013. Asian Conference on Disaster Reduction. http://bit.ly/1tjArKO.

Private Sector Strengths Applied: Good Practices in Disaster Risk Reduction from Japan
UNISDR. 2013. http://bit.ly/2asinVjD

Rebuilding a Community: An Employer's Guide to Assisting Employees
Weyerhaeuser. 2005. September.

Resilient Business for Resilient Nations and Communities
Asian Disaster Preparedness Center and United Nations Economic and Social Commission for Asia and the Pacific. 2014. http://bit.ly/1RbijOZ

The Private Sector Challenge: Final Report
Kings College London. 2013. Humanitarian Futures. http://bit.ly/1CEIAP5

Working Together to Reduce Disaster Risk
UNISDR and PwC. 2013. http://bit.ly/1Z0msXr

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