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Building Philippine SMEs Resilience to Natural Disasters

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Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

Building Philippine SMEs Resilience to Natural Disasters

Marife M. Ballesteros and Sonny N. Domingo

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Building Philippine SMEs Resilience to Natural Disasters[1]

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ABSTRACT

Disasters are bad for business specifically for SMEs. These catastrophic events can compromise capital, logistics, product market and labour, which compromise business continuity and recovery. Physical damage and disruptions in supply and labour can cause temporary business closure while structural repairs to buildings and recovery or replacement of damaged equipment needed to restore operations require large amount of resources. The adverse impact may not only be short term but can have medium to long term effects. Unfortunately, the disaster risk reduction and management (DRRM) framework of government has not been effectively translated into local and sectoral (or business) plans. Philippines SMEs thus are highly vulnerable, have weak adaptability and limited access to a broader set of coping strategies. This paper recommends strategic policies to embed DRRM into the business sector and the role of APEC in promoting SMEs resilience in the region.

Keywords: business, disasters, resilience, SMEs, Philippines

[1] SME is defined in a broader sense to include micro businesses that employ hired labor. Excludes micro enterprises that operate primarily on unpaid family labor.

[2] Research Fellow and Research Associate, respectively. The authors are grateful to Ms. Larraine Bolanos for research assistance.

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EXECUTIVE SUMMARY

The Asia Pacific Region is prone to natural disasters having been host to more than half of the world's intense natural disasters during the past four decades. Exposure to these natural hazards, particularly in the Philippines, incurs heavy human casualty, population displacement and economic disruption.

The impacts of natural disasters can be devastating to business operation and viability. Micro, small and medium enterprises (SMEs) suffer the most as they are relatively resource constrained and less resilient. Recent studies show that SMEs in the Philippines, while relatively flexible, have limited access to a broader set of coping strategies and are generally not prepared for nature related disasters. SMEs had often relied on overseas worker remittances and loans from family and informal money lenders to fund post-disaster recovery, but the least resilient enterprises eventually stop business operations. Most SMEs in developing countries are also characterized by informality and noncompliance with industry norms and regulations, limiting their capacity to adopt risk management tools and expand customer and supply base. The situation is further aggravated as governments focus more on relief, search and rescue operations, and social services.

These concerns merit attention given that 99.6 percent of all enterprises in the country are SMEs employing about 63 percent of the labor force. Their products and services are especially critical in facilitating recovery and normalizing the situation in disaster-affected communities.

The present national DRRM policy framework in the Philippines is designed to adhere to the principles of proactivity and active response. Increased awareness and understanding among the various stakeholders are viewed as key in increasing resilience and decreasing vulnerabilities to disaster events. However, there is apparent lack of

disaggregation or sectoral focus on the policy framework that drives DRRM among the different stakeholders in the country, particularly between households and businesses.

Several legislative provisions relate to economic activities during disaster events with Republic Act No. 10121 or the Philippine Disaster Risk reduction Act (2010) providing an overarching legal basis for DRRM. The law acknowledges the need to adopt a disaster risk reduction and management approach that is holistic, comprehensive, integrated, and proactive among all sectors and all stakeholders concerned, at all levels, especially the local community. The law is complemented by R.A. 9729 or the Climate Change Act (2009) as amended by RA 10174 or the Peoples Survival Fund (2011), which also espoused cooperation with the global community in the resolution of climate change issues, including disaster risk reduction.

Enterprise operation or business continuity during disaster events is also directly and indirectly influenced by the price Act as amended in 2013. Related provisions governing MSME operation, institutional support, and development planning are further outlined in RA 6977/8289 or the Magna Carta for Small Enterprises, RA9178 or the Barangay Microbusiness Enterprise Act. RA 7160 or the Local government code of 1991 also empowers local executives to implement initiatives within their areas of responsibility.

National and sectoral development plans translate national policy and have direct bearing on DRRM options and related initiatives. Most relevant among these for SME business continuity and resiliency are the National Disaster Risk Reduction and Management Plan (DRRMP), Philippine Development Plan (PDP), National Climate Change Action Plan (NCCAP), and the MSME Development Plan (MSMEDP).

A thorough review of the abovementioned policy and national development plans gives a sense of relative adequacy when looking at the totality of the DRRM policy framework. Although the main sectoral development plan for SMEs failed to cover DRRM and business resiliency, enough policy coverage is provided under the NDRRMP, NCCAP and PDP. Sufficient legislative provisions have been crafted to support proactive response to disaster events for both communities and businesses. However, there is an apparent gap in policy execution, as seen in the lack of subnational action plans translating these national DRRM provisions.

There is a need to review and translate national frameworks and development plans into workable subnational and sectoral action plans. The NDRRM Plan, NCCAP, PDP, and MSMEDP need to be translated into doable sector-specific regional and local action plans. The MSME Development Plan, as the national framework governing the sector,

should be revised to include disaster risk reduction and management for business resiliency as one of its thematic areas of concern. Greater effort should also be exerted in translating an augmented MSME development plan into regional and local action plans that can be given budgets and implemented with clarity.

Improving business continuity and resilience also require concerted effort and cooperation among the government (local and national), the private sector and the local communities. The government defines the policy for managing disaster risks, ensures adequate infrastructure and investment climate for SMEs to thrive, and provides direct intervention during pre- and post-disaster operations. On the other hand, disaster resilience among SMEs can be enhanced through three fronts: (a) organizational capacity build-up, (b) policy and institutional support tackling socioeconomic drivers of risks in pre-disaster stage, and (c) prompt and sustained economic restoration and support efforts in the aftermath of disaster.

Practical strategic options on disaster mitigation and prevention and disaster preparedness that the government can pursue are:

- Conduct of industry-specific consultations for eventual crafting of MSME DRRM framework, national plan, and local action plans.
- Support to the use of financial security instruments including micro-insurance for micro and small scale industries.
- Rationalization of national and local land use policy capitalizing on the development and use of vulnerability and hazard maps, with particular adherence to precautionary safety measures against exposure to hazard when setting up business establishments.
- Capacity building among SMEs to strengthen planned and adaptive resilience to disaster events through promotion of BCPs and augmenting organizational resilience particularly on leadership and employee culture.
- Forging pre-disaster arrangements among local governments and between government and private sector.

In the event of disaster, economic activities in damaged communities should be restored with urgency. The strategic direct interventions that can be instituted for disaster response and post-disaster recovery may include:

- Prompt address of dysfunctions/breakdowns in public services and key infrastructure.

- Provision of humanitarian/disaster assistance to the local workforce to minimize injury, casualty and displacement.
- Effective restoration of security/ peace and order in affected communities to protect the citizens, and the operation of local businesses.
- Setting up of financing facilities such as grants and concessionary loans intended for SMEs and a special credit line in the form of Business Disaster Loans (i.e. a risk mitigating facility) for medium-sized companies must be in place. Grants can be directed to affected micro and small enterprises that have no productive assets left and negligible creditworthiness.
- Provision of additional capital support for SMEs during disaster events, including optional loan restructuring, and tax reprieve should be considered especially for small and medium enterprises.
- Implementation of cash for work programs and income support to partially restore the livelihoods of those affected through public works and direct food or cash transfer programs.
- Arrangement of temporary work stations, factories, stores, and other facilities through the municipal or local government.
- Institution of possible labor protection provisions (i.e. compensation), and facilitated/flexible enforcement of applicable laws to aid in early recovery (i.e. movement of goods, customs policy).
- Setting up of accessible an information system for updates on disaster support facilities, basic services and infrastructure status, market information, and other relevant updates/advisory.

In the regional front, APEC member countries can strengthen each other through knowledge sharing, integrated early warning systems, and disaster emergency logistic support. Regional cooperation is further reinforced with APEC pushing for continued policy dialogues, and collaborative work on the following concerns: (1) Vulnerability Assessment of Supply Chain Critical Points; (2) Best Practices on Critical Infrastructure Protection; (3) Business Continuity Management Public Private Partnership; and (4) Identifying Best Practices on Flexible Regulations.

1.0 INTRODUCTION

APEC member countries collectively are prone to natural disasters. More than half of the world's intense natural disasters occurred in the Asia Pacific Region between 1975 and 2012 (EM-DAT 2013). Hazards from these natural catastrophes have highlighted the vulnerability of communities at the local level, and the national and regional economies at the macro. On a sector level, natural disasters have become a major risk to firms specifically to SMEs and the global value chain.

In particular, disasters have caused significant business failures to SMEs. It is estimated that overall, 25% of SMEs do not reopen following a major disaster.[3] Even among developed countries the impact can be substantial. In the US, 43% of companies experiencing disasters never re-opened and 29% of others close within 2 years (US Department of Labor 2014). Similarly, the Great East Japan earthquake (GEJE) in 2011, caused 337 private companies to close down of which 90% went bankrupt within six months (Takihiro Ono, Asian Disaster Reduction Center 2014). Only 46 companies were located in the tsunami affected area while the other companies (291 SMEs located all over Japan) were affected due to supply chain disruptions.

In developing countries, the impact could be more disastrous. Enterprises, in particular, SMEs are seen worse off specifically after extreme disaster events as they are relatively resource constrained and less resilient (UNDP 2013). They also have limited access to a broader set of coping strategies and are generally not prepared for nature related disasters. Studies in developing economies noted that most SMEs lack insurance and do not carry out risk assessments or have business continuity plans (ESCAP 2013; Ye and Abe 2012). Most small businesses are also characterized by informality. Informality not only limits SMEs access to risk management mechanisms but can put SMEs in disaster risk due to minimal or lack of compliance with norms and regulations (e.g. operating in informal settlements, lack of social protection for their employees. Informality also constraints SMEs ability to expand their customer and supply bases (UNDP 2013; Zhang et. al. 2007).

SMEs are critical drivers of inclusive growth and economic progression. The difficulty of businesses to recovery leads to slow growth, increase in unemployment and general reduction in welfare. Enterprise losses from natural disaster are estimated between one and 20 percent of GDP (Table 1). These losses disrupt the domestic as well as global supply chains given the

[3] "Is your company ready for the new norm? Paper presented by Taipei Computer Association. High Level Policy Dialogue on Resilient SMEs for Global Supply Chains, Taichung Taipei, 24 March 2014.

interdependence of domestic and regional markets and SMEs dependence on large organizations in the global value chain.

This paper provides a framework of building SME resilience and assesses its implications in the case of Philippine SMEs. The subsequent discussion is divided into three parts. Part 1 presents the framework. Part 2 reviews the Philippines risks to natural disasters and the vulnerabilities of SMEs and the supply chain. Part 3 discusses the developments in Philippine disaster risk reduction and management (DRRM). Part 4 concludes.

Table 1. Economic costs of disaster events in recent years

Disaster	Country	Year	Total Effects (US$ million)	Magnitude (% of GDP)
East Asia Tsunami (Aceh)	Indonesia	2005	4,452	1.6
Cyclone Sidr	Bangladesh	2007	1,640	2.8
Cyclone Season	Madagascar	2008	333	4.0
Cyclone Nargis	Myanmar	2008	4,060	19.7
Storm and Floods	Yemen	2008	1,638	6.0
TS Ketsana and Typhoon Parma	Philippines	2009	4,383	2.7

Source: PDNA for Ondoy and Pepeng (2010)

2.0 CONCEPTUAL FRAMEWORK

Resilience as defined in the *UN International Strategy for Disaster Reduction* is the ability to resist, absorb, and recover from the effects of a hazard in an efficient manner. This definition applies to all sectors- households, community, and government. When applied to the business sector, resilience is associated with business continuity, i.e., the preparedness of the business sector to emergencies whereby disruption in business operation is at minimum and resumption of normal operation of business is done in the shortest time.

Building SME resilience thus has to be understood in the context of the business and policy environment in which they operate. SMEs operate within the domestic and global supply chain linked with organizations that make up the value chain and logistics. In the value chain, SMEs are interfaced with big organizations from raw material to finished products and to the market/buyers. On the other hand, the flow of funds, goods and services from all nodes of the value chain comprise the logistics of which infrastructure, utilities and communications are considered the most critical aspects (Figure 1).

SMEs are vulnerable to natural disasters in four fronts: capital, labor, logistics and markets/buyers. All these four factors are affected in the event of a disaster. Revenues are

expected to fall below expenditures in the short-term and SMEs would need capital/funds to finance rehabilitation period, which can be short to medium term depending on SME preparedness and impact of disaster on the supply chain. On the other hand, households'/people are the immediate victims of disasters. Availability of labor/manpower is crucial and firms have to consider manpower reinforcement and to support those affected workers to enable firms to meet targets, respond to spike in demand and resume operations at the shortest time. Dysfunction in facilities and public infrastructure is an expected effect of disasters requiring business to look at alternative or emergency logistic support to enable business to function. A shift in market demand is also expected in the short-term with sharp increase in the demand for basic commodities while a dip in non-essentials. The SME has to take into account changes in operations and revenues as a result of these shifts and dysfunctions.

SMEs vulnerabilities and role in the supply chain imply that their ability to manage risks and to continue and recover on their business operations amid a disaster event can be defined by how the firm in particular and the supply chain, in general address pre-and post-disaster imperatives. SME resilience requires partnerships and cooperation among the firms, public and other private organizations. It cannot be achieved by the enterprise or industry alone or by government on its own. It.

Formal plans such as emergency plans, business continuity plans (or BCPs) are only part of the solution. An initial assessment on effectiveness of BCPs in the event of disaster noted that only 22% of firms found BCPs very effective; 44% found BCPs not effective at all; 16% not very effective and 18% moderately effective (Seville, E. 2014).

Insights from international experiences illustrate the need for SMEs to build up its adaptive capacities specifically human resource capacities and to develop partnerships and networks with other organizations and government. On the other hand, government also play a critical role in building SME resiliency by providing a policy environment that would enable SMEs to effectively address the vulnerabilities to capital, labor and markets; ensuring "weather-proofed" infrastructure and communications facilities; and improving coordination work between national and local organizations and with the private sector.

In sum, the elements of supply chain resilience are:

- Improving business continuity and resilience is a concern not only of the business sector but involves the working together of government (local and national), private sector and community.

- On the organization level, SMEs need to foster both planned and adaptive resilience. The development of business continuity plans (BCP) is important but its absence does not necessarily lead to failure. SMEs need to build a culture of risk management through (1) innovation and creativity; (2) networking or effective partnerships; and (3) readiness for change (e.g. proactive posture).

- Government has a key role specifically on (1) building climate proof infrastructure; (2) development and use of hazard and infrastructure mapping technologies and systems; and (3) providing an enabling environment for SMEs to recover from capital, labor, logistics and market risks.

- Supply chain resiliency can be improved with public private partnership on flexible regulations and pre contracts. Government has to set up agreements pre disaster which maybe between local government and local government as well as between government and the private sector. Government also has to identify flexible regulations in time of disaster to remove obstacles in the movement of critical goods and services.

- The "people side of the business sector is important. Resilient supply chain begins with resilient citizen and employees. It is important to look after workers and build loyalty. This role is not a sole responsibility of firms but also of government.

- Grants can be a more direct way of providing SMEs with the necessary capital for business continuity and, when given promptly after disasters, can be more effective than emergency employment in supporting the recovery of SMEs. However, cash is effective as long as markets function; hence the importance of well-designed in-kind support programs that facilitate SME access to productive inputs when markets are heavily disrupted by disasters. The role of business associations (BA) is critical to ensure that in-kind support is relevant and appropriate for SME recovery (UNDP 2013).

- Cash for-Work' and other emergency support programs ('Food-for-Work' schemes) are useful safety nets to help communities restore the necessary basic infrastructure, local demand and personal capital needed for SMEs to operate. This strategy pump-prime the local economy and constitute an alternative livelihood strategy for affected communities (ESCAP 2013).

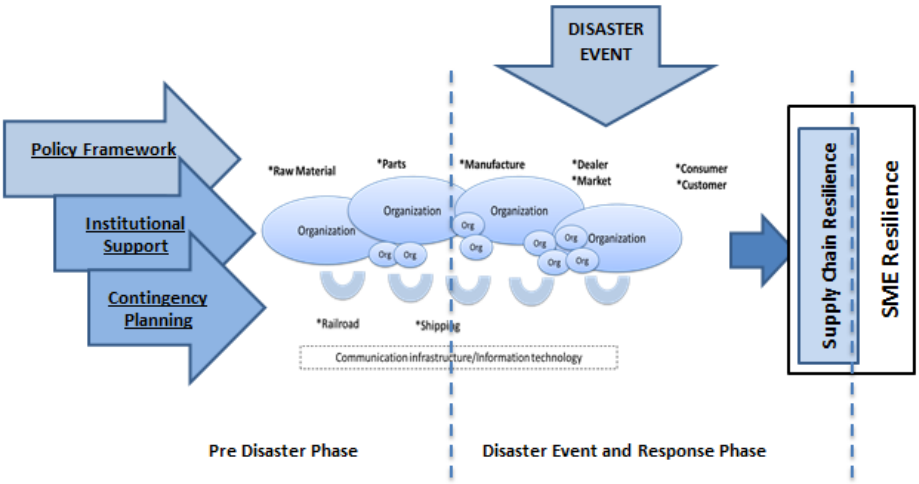

Figure 1. Conceptual Framework

3.0 INTERNATIONAL BEST PRACTICES: POLICY AND STRATEGIC OPTIONS FOR SME BUSINESS CONTINUITY AND RESILIENCE

International experiences provide insights into how the elements of SME and supply chain resilience to natural disasters have been operationalized.

The Great East Japan earthquake (GEJE) in 2011 caused devastating impacts that disrupted the operations of the manufacturing and industrial plants in large part of Japan. However, the SMEs in the Japan have shown resilience and fast recovery, which was attributed to the combined efforts of both the SMEs and the government (UNDP 2013, ESCAP 2013). The SMEs initiatives included: (1) implementation of business continuity plans; (2) extending support to suppliers, coupled with in-kind aid (i.e. Idle Machine Project). [4] On the other hand, government supported SMEs through direct and indirect financial assistance to unburden the SMEs from vulnerabilities arising from capital and labor constraints.

Kokubu Electric Corporation and Suzuki Kogyo Co. Ltd. are examples of SMEs with successful business continuity plans (Box 1). By following their BCP, they were able to secure the safety of their employees, resumed operations in about a month after the disaster, and

[4] The Tohoku CCI Association launched the 'Idle-Machine Project' wherein the CCIs identify the machines and equipment needed by affected MSME and CCIs in non-affected areas and identify the fallow and idle machines available for charge-free transfer (UNDP 2013)

prevented loss of customers. The business continuity plans prioritized the areas for response which include not only ensuring continuous service to customers and reassurance to suppliers but also support and assistance to staff and community responsibility. Japanese firms, in particular also adopt a business strategy that involves building networks and cooperation with suppliers as well as customers.

Box 1. BCPs in Action

Kokubu Electric Corporation in Tokyo engages in manufacturing, and sales and repairs of electric switchboards for power system in buildings and factories. The company has 214 employees with a production base in Ibaraki prefecture which was damaged by the earthquake. In the absence of the plant manager, the deputy manager took control according to the BCP, and quickly confirmed the safety of all employees leading the evacuation. Responding to the BCP objective of **'preventing customer loss'**, employees immediately contacted customers and explained the situation asking for their understanding. Kokubu Electric resumed 80 percent of its operations within two weeks of the disaster, without losing its customers. The company has also started reviewing its BCP.

Suzuki Kogyo Co. Ltd in Sendai city, Miyagi prefecture, has 67 employees and is engaged in the collection and transport of industrial waste, recycling, and water purification and provision. The tsunami washed away most machinery, vehicles and other equipment while the incinerator and water processing facilities were buried in sludge and rubble. Despite the overwhelming damages to the business, Suzuki Kogyo was able to recover all its business operations within one month, thanks to the BCP it had begun to draft in 2008. Suzuki Kogyo completed the first version of its BCP in 2009, held in-house training with outside experts, and carried out simulations and drills. As a result, the company was able to smoothly evacuate staff from the processing plant and quickly confirm the safety of all employees, including those who were out of office with customers. Furthermore, the company contacted contractors with satellite phones, as indicated in the BCP, who came to assess the necessary repairs the next day. Thanks to these phones, the company was also able to participate in restoration works for municipalities and customers. The company restored the communication system at headquarters within five days, and resumed all industrial waste collection, cleaning and recycling works approximately one week after the earthquake. All operations were completely restored within a month. While recognizing the effectiveness of the BCP, the company has swiftly started improving the plan based on lessons learned from the disaster.

SOURCE: UNDP 2013

On the other hand, the Japanese government prioritized logistic support and emergency response through pre disaster agreements between local government and local government; local government and public organization and local government and private companies or associations. Each type of agreement focuses on specific support activities. For instance local government and local government pre disaster agreement pertains to provision of food, water, living goods and receiving evacuees and affected residents. On the other hand, pre-disaster agreements with the private sector involves emergency transport, supply fuel, lifeline recovery, etc. (Box 2).

In addition, both the central and prefecture governments, provided direct assistance to SMEs, such as: financial assistance, emergency employment and unemployment benefits and provision of temporary workspaces. The government requested that financial institutions give special consideration for the disposal of dishonored bills and checks, and for longer repayment period for SMEs. It also provided specials grants, soft loans, and repayment grace period (UNDP 2013, ESCAP 2013). The Government also implemented a number of employment promoting programs, such as "Hello-works" and the "Japan as One" work project, to facilitate job creation and job matching. This allowed affected firms, especially those in the manufacturing sector, to rapidly regain their levels of employment, as they were working to recover their production to the level prior to the earthquake and tsunami (Ye and Abe 2012).

Other assistance from government included special tax deductions for post-disaster reconstruction, refund of corporation tax, exemption from registration and license tax, vehicle weight tax and stamp tax. To encourage business preparation for future disasters, government also offered tax incentives for investment in earthquake mitigation and provided special tax deductions for post disaster reconstruction (ESCAP 2013).

Box 2: Set Up of Pre Disaster Agreements

- **Local Government – Local government**
  - Provide food, water, living goods
  - Provide equipment for search and rescue
  - Dispatch officials for search, rescue, medical, response activities
  - Receiving evacuees and affected residents
  - Support recovery and reconstruction policy strategy
  - Carry out joint drills and develop SOPs
  - Recognition of culture, education and mutual agreement

- **Local Government and Public or Private company of organization**

Types	What	Who
Medical relief	First Aid, medical relief, medicine supply	Doctors/Dentist Association
Supply goods	Food, water, construction materials, gas	Food and Beverage industry Retailers , construction industry NGOs
Emergency Transport	Transport goods Provide transport vehicles	Trucking association
Evacuation center Fuel Supply	Shelter Space Provide gasoline	Megamalls Gas Station
Disaster Information	Announcement of Disaster Info Evacuation Instruction	Local radio and cable stations
Lifeline recovery	Gas, electricity Road, water	Construction association Electric Power
Industrial and Human Waste	Carry and management	Vendors

Source: Takahiro Ono (2014), Supply chain resilience with Public Private Partnership on Pre Contracts

In Thailand, SMEs and individuals affected by the 2011 floods were able to use a soft loan program of 300 billion Thai Baht. The Small Business Credit Guarantee Corporation also provided loan guarantees of up to THB 120 billion for seven years for businesses seeking reconstruction loans from commercial banks (ESCAP 2013).

To assist flood hit workers and maintain employment, the Thailand Ministry of Labour provided a subsidy of THB 2,000 for each employee for a certain period, providing participating workplaces maintained at least 75 per cent of each employee's normal salary. The Government also provided a skill development scheme: participating workers received a food allowance of THB 120 per day for a period of 10 days. In case of lay-offs, the affected workers received compensation in line with the labour protection law (ESCAP 2013).

So far, the documented assistance under global value chains is illustrated by the support provided by the Japanese firms to their counterparts in Thailand. Flood-hit Japanese companies sent a number of their Thai workers to work in their Japan-based parent companies. This helped maintain employment while facilitating flows in supply chains (ESCAP 2013). Toyota on the other hand extended support to their suppliers thru on-site assessment and verification and finding substitute products (Box 3) (ESCAP 2013).

Box 3. Toyota's Assistance to Suppliers

Immediately after the earthquake in Japan, all Toyota companies, from suppliers to dealers and overseas operations, came together to provide support and to restore operations. The core measures for post-quake production restoration were:

1) On-site assessment and verification – Toyota conducted an investigation of all primary suppliers, including the impact at secondary and tertiary suppliers. Onsite investigation teams were dispatched to confirm production items and inventory. The purchasing units confirmed the availability of overseas primary suppliers.

2) *Support for suppliers* – Toyota provided onsite support to 200 suppliers.

3) *Finding substitutes* – When restoring onsite production was not possible, the company would try to find substitute products.

As a result, production was restored more rapidly than had been anticipated. Domestic production had reached almost normal levels by July 2011 and was fully restored by September 2011.

There were similar measures following Thailand's floods. By adjusting the operational levels of each production line according to the parts situation, Toyota was able to return to normal operation in North America by the first half of December 2011, and in Thailand by the beginning of 2012. Initially, it had been estimated that the two disasters in 2011 would cut Toyota's output globally by 1 million vehicles, but the actual drop was 390,000 vehicles.

The lessons learned following the two events led the company to revise its business continuity plan. The company has also launched measures such as decentralizing sources for at-risk parts and converting to generalized designs.

SOURCE: ESCAP 2013

The disaster in Thailand highlighted preparedness as an important element of resilience to natural disasters. The government of Thailand thus developed a master plan on water resources management to mitigate flooding in the Chao Phraya floodplain. The master plan is intended to increase the efficiency of water control buildings and dykes, as well as that of water drainage systems such as pipes, canals, water gates, and pumping stations. In addition, there is a vision for a double-deck, 100-kilometre storm water management and road tunnel linking affected provinces (ESCAP 2013).

A major learning in the recent disasters in Japan and Thailand is the need for flexible enforcement of regulations in disaster time specifically as it pertains to the following: (1) relief supplies – relaxation of permission in restricted transportation areas; (2) gasoline by truck – relaxation on loan capacity, storage places, parking time, etc.; (3) supply shortage and product labels – flexibility in consume indication labels on food sanitation safety rules; (4) working hours – relaxation of labor law prohibiting overnight working; (5) information sharing of victims – relaxation in laws on protection of personal information; (6) pre-agreement in industries – flexibility and reduction in conditions on importation/import duties, anti-trust laws, and competition policy.

The Australian national government has also a well-established relief and recovery measure- the *Natural Disaster Relief and Recovery Arrangements* (NDRRA), which can be quickly activated when disasters hit. The NDRRA financial assistance packages include special grants, where businesses with fewer than 20 employees could receive $A25,000 for cleaning, repairs and stock replacement, and concessional loans of up to $A250,000, as well as deferred repayment of existing loans with the Queensland Rural Adjustment Authority. Businesses with more than 20 employees on the other hand could get low-interest loans of up to $A650,000 for cleaning, repairs and stock replacement – with a grant component of up to $A50,000. Commonwealth and state governments give priority to small businesses and individuals who could not survive on their own. In addition to loans, the Queensland Government provided support and advice and a range of services (ESCAP 2013).

The private sector also helped individuals and small businesses. Individual banks had assistance packages including: deferring home loan repayments for up to 3 months; rescheduling or restructuring business loans without incurring fees; giving credit card holders an emergency credit limit increase; refinancing personal loans at a discounted fixed rate; waiving interest rate penalties if term deposits were drawn early; and deferring monthly repayments on equipment finance facilities for 3 months (ESCAP 2013).

Insights from Christchurch, New Zealand show that business survival rate after the 2011 earthquake have been high and not significantly different from business failures that occur on normal times (Seville, E 2014). The resilience of business in the City has been attributed to the following: One, a multidirectional loyalty i.e., loyalty of business to employees/families and government to business and citizens. Government paid 6 months wages to employees of businesses campaign to assure suppliers and customers that the City is open for business. Companies in turn held family days and ensure that support is given to families. Two, helping businesses developed both planned and adaptive resilience. Formal disaster plans are relevant only if adaptive capacities of business and the local community are strong. Resilience emerges from the day to day culture of the organization.

In developing countries such as Haiti, remittances have become a post-disaster strategy for developing countries. Remittances provide SMEs with the necessary capital for personal and business recovery (UNDP 2013). Fokonze, a local MFI in Haiti, was quick and flexible in offering its products and services such as microloans and reception of remittances to affected SMEs, enhancing their speed of recovery. Fokonze also developed a micro-insurance product, the Kore W, to protect its affiliates from catastrophic losses. The Kore W already showed results by helping more than 12,000 affiliates, mostly female entrepreneurs, recover from Hurricane Sandy (UNDP 2013).

To support this private sector initiatives, the government of Haiti provided cash vouchers to: (1) women border traders (circa $115 each) to rebuild their petty trade businesses by purchasing the necessary assets from local retailers; (2) to farmers (circa $130 each) to purchase livestock and seed to sow the next season's crops; and (3) to vulnerable families in order to fund the purchase of quality construction materials through a pioneering e-voucher mobile money system (UNDP 2013). Fairs were organized in the communities in order to secure adequate supply and to facilitate the flow of market information (e.g. prices, availability, quantities).

The government of Sri Lanka's *TAFREN* strategy for restoring the livelihoods of 70–85 percent of households (more than 150,000 affected) within a year after the Indian Ocean Tsunami was based on three main strategies: cash grants, 'Cash-for-Work' and financial assistance for the recovery of SMEs. For the latter, the central Bank of Sri Lanka's Susahana Scheme dispensed $36 million to 8,000 private sector borrowers for business recovery (September 2005). In addition and particularly targeting SMEs, the National Development Trust Fund Scheme provided 5,570 loans to small businesses (UNDP 2013).

In Sri Lanka, many self-employed in Aceh entered the construction sector after the tsunami to recover capital and livelihoods. A large hotel and travel agency, famous in the community for its sense of CSR, provided training in skills such as cooking, food and beverage service, housekeeping and management. The Arugam Bay Tourism Association was also revamped to include a wider range of SMEs in the tourism industry, define strategic objectives, and provide practical support to its members in areas such as accessing finance (UNDP 2013).

The Federation of Chambers of Commerce of Sri Lanka (FCCISL), with the support from development partners such as the ILO, launched a comprehensive program for SME recovery after the Indian-ocean tsunami devastated the sector. Mobilizing $5.7 million, the 'Back to Business' model provided more than 11,000 SMEs with much more than traditional financial assistance. Capacity building, technology transfer and market linkages were among 10 different interventions that the program offered in order to allow SMEs not only to recover but to improve their pre-disaster situation. Two years on from the disaster, all participating SMEs were operating with some even initiating export activity. Around 50,000 jobs were created under the scheme (UNDP 2013).

4.0 PHILIPPINE SMEs VULNERABILITIES AND COPING STRATEGIES

4.1. Philippine Vulnerability to Natural Disasters

The Philippines, in particular is exposed to a number of natural hazards annually. It is situated in the typhoon belt of the western pacific, inviting an average of 19 typhoons every year, 5 to 9 typhoons of which make landfall and incur significant damage. The country also lies within the pacific ring of fire and has 25 active volcanoes with destructive potential in its area of responsibility. Earthquakes are also a source of threat especially in areas with known fault lines that are affected by tectonic movements. The amalgamation of these elements ranks the Philippines as the third most disaster-prone country in the world (World Disaster Report 2012). The global climate risk index also ranks the Philippines as second most affected by the impacts of weather-related loss events (Germanwatch 2014).

The figures are telling as natural disaster events in the country over recent years have caused alarming human casualties, population displacement, and economic disruption especially in the countryside. Table 2 presents a summary of frequency and assessed damages from natural calamities in the Philippines for the period 2009-2012.

Table 2. Frequency and cost of natural calamities in the Philippines from 2009 to 2012

	2009				2010				2011				2012			
	Freq	Casualty	Total affected	*Total damage (	Freq	Casualty	Total affected	*Total damage	Freq	Casualty	Total affected	*Total damage	Freq	Casualty	Total affected	*Total damage
Earthquake	1	-	392	90	-	-	-	-	1	-	28	-	3	114	353157	12144
Flood	8	55	1083276	29314	9	162	2846935	50589	15	122	2218828	202787	8	157	4614628	75330
Landslide	2	20	32	-	2	4	1854	156	6	58	1778	-	2	150	46	-
Storm	14	1242	12221663	932703	3	212	2595545	284420	12	1782	9468676	527238	9	2039	7560480	1712746
Volcanic eruption	1	0	47137	-	1	-	14161	-	2	-	33931	-	-	-	-	-
Total	26	1317	13352500	962107	19	408	5462495	335165	42	1988	1.2E+07	731427	29	2504	1.3E+07	1801622

Note: * in '000 US Dollars
Source: EM-DAT: The OFDA/CRED International Disaster Database (2013)

The World Bank (2014), citing pre-Typhoon Haiyan data from EM-DAT, also reported that human and economic costs of disasters over the past decade in the Philippines totaled to over 6,000 people killed, over 23 million people affected, and around 1.3 billion dollars in economic damage. These are conservative estimates as there were also post-disaster assessment studies in 2009 which pegged enterprise losses from typhoons Ondoy (Ketsana) and Pepeng (Parma) amounting to US$4.3 Billion (Philippine Disaster Assessment 2010). More recently, the damages incurred from typhoons Sendong (Washi) in 2011, Pablo (Bopha) in 2012, Yolanda (Haiyan) in 2013, major weather events that happened during the past 3 years could easily eclipse the reported figures above in all facets.

4.2 SME Vulnerabilities and Disaster Impact

Philippine business sector consists mainly of microenterprises. Of the total number of firms, 90% are microenterprises with low levels of capitalization and of which majority are informal. Only about one percent of enterprises are classified as medium and large (Table 3). Nevertheless SMEs combined contribute about 35.7 percent of the total sales and value added and provide jobs to about 63 percent of the total work force.

In terms of geographical location, SMEs are highly concentrated in the National Capital Region (211,974) and CALABARZON (122,562), Central Luzon (83,279), Central Visayas (50,078) and Western Visayas (47,166). These top five (5) locations accounted for about 63.1% of the total number of SME establishments in the country.

Many SMEs are located in high risk areas, that is, provinces with high frequency of typhoons. Among the high risks provinces are Pangasinan and Nueva Ecija, where about 40,000 SMEs (or 5% of total SMEs) are located (Figure 2). The frequency of typhoon and heavy rainfall is also significant in NCR and CALABARZON, the two regions with the highest concentration of SMEs.

Table 3. Firm Classification and number of firms by employment size (as of 2011)

Firm Classification			Number of Firms by employment size	
Size	Asset Size (Php M)	Employment	Number	% to total
Large	>100	>200	3,496	0.43
Medium	>15-100	100-199	3,287	0.40
Small	>3-15	10-99	70,222	8.56
Micro	Up to 3	1-9	743,250	90.61
All			820,255	100

Source: www.dti.gov.ph

The impact of disasters on SMEs is usually not highlighted since reports focus on number of people or households affected. However, SMES suffered significant losses and damages from recent disasters.

The back-to-back devastation of Typhoons Ondoy (international name: *Ketsana*) and Pepeng (international name: *Parma*) in 2009 caused a total of PhP 111.4 billion in damage and production losses in the enterprise sector across the NCR, CAR, Region I, Region II, Region III, and Region IV-A. Small and micro enterprises were hit the hardest in all the affected regions (PDNA Volume II-Ondoy and Pepeng, 2009).

Foregone revenues valued at PhP88.9 billion accounted for 80 percent of total damage and losses, mostly coming from the wholesale and retail trade subsector. It is largely due to damaged inventory buffer stocks for the Christmas season (worth Php 77.3 billion) caused by the flooding that affected 40,698 establishments engaged in wholesale and retail trade of which more than 50% are micro enterprises (Table 4). Typhoons Ondoy and Pepeng also had serious impacts on the manufacturing subsector's ability to deliver orders which were particularly high ahead of the Christmas season, and damage to raw materials and inventory stocks further reduced future revenues. Impact on the tourism subsector was less severe. Disruption in the transport sector could have resulted revenue losses in the tourism subsector.

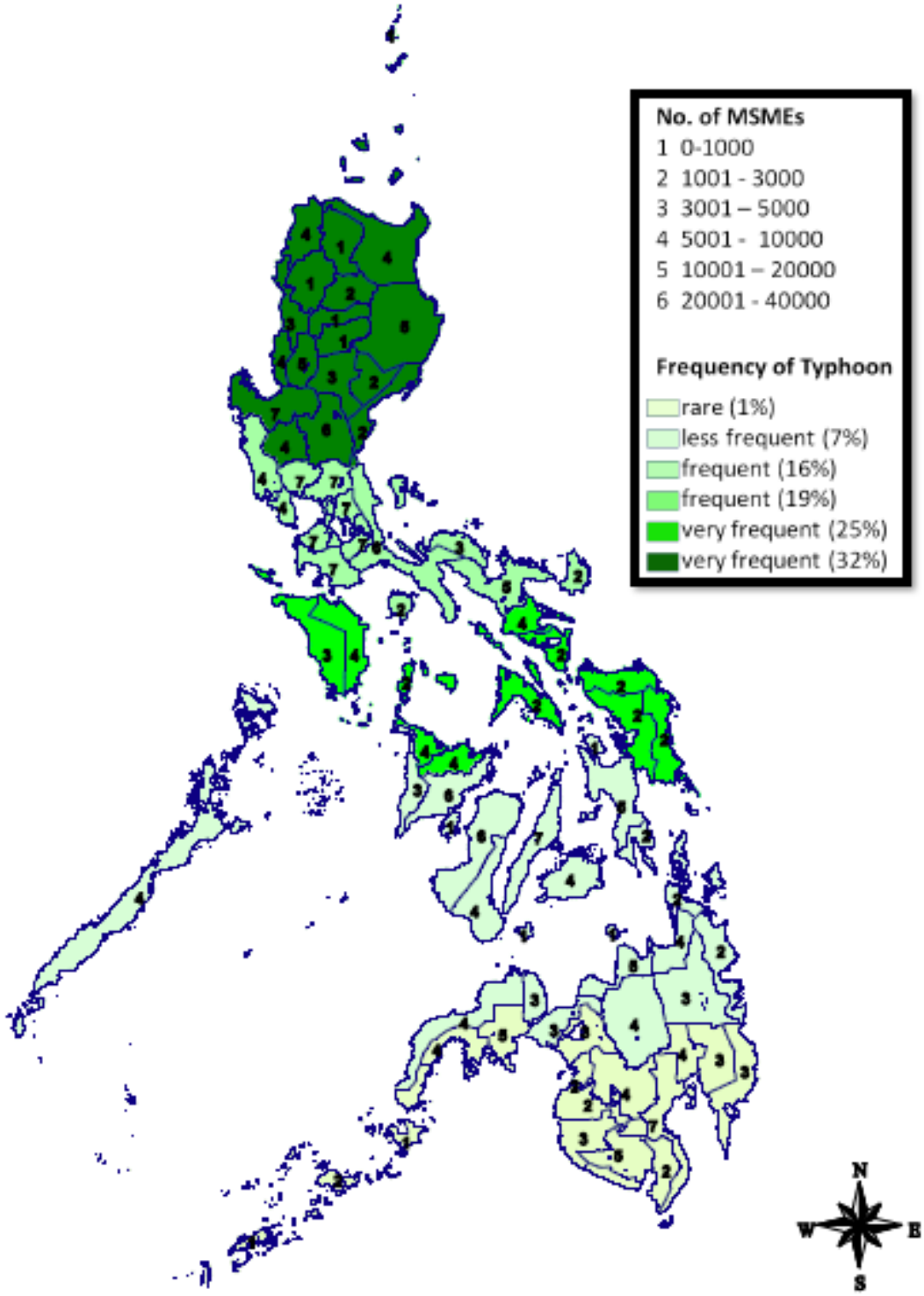

Figure 2. Distribution of SMEs in Areas Vulnerable to Typhoons

Table 4. Damage and Losses from Typhoons Ondoy and Pepeng for the Enterprise Sector, by Type of Firm (in Php million)

	Manufacturing		Wholesale and Retail Trade		Tourism		Enterprise Sector (Total)	
	Indicative # of Affected Firms	Damage and Losses	Indicative # of Affected Firms	Damage and Losses	Indicative # of Affected Firms	Damage and Losses	Indicative # of Affected Firms	Damage and Losses
Micro	10,783	330.3	22,396	686.0	4,977	152.5	38,156	1,168.8
Small	3,407	909.6	11,583	3,092.8	4,088	1,091.5	19,078	5,093.9
Med/Large	2,584	17,714.9	6,719	85,551.1	1,145	1,869.3	10,448	105,135.3
Total	16,774	18,954.8	40,698	89,329.9	10,210	3,113.3	67,682	111,398.0

Source: PDNA Volume II-Ondoy and Pepeng, 2009

In terms of income, commerce sustained the biggest loss amounting to PhP 32.6 billion or 65 percent of total lost income (Table 5). Gross value added of the wholesale and retail trade subsector fell by about 4 percent as a result of temporary closedown of some firms and home based enterprises and damages to property and firm equipment due to the flooding. The manufacturing subsector suffered Php 13.0 billion in incomes lost. The workers and micro-employers in the informal sector were severely affected. In terms of employment, losses translate into a total of 170 million workdays. With about 60% of enterprises in commerce that are self-employed and possibly 90% in the case of agriculture and fisheries, the income losses can easily translate into worsening of poverty.

Table 5. Impact on Livelihoods and Income Losses from Typhoons Ondoy and Pepeng in 2009, by Sector

	No. of Workdays Lost	Wage Losses (in Php million)
Industry	39,141,040	12,961.68
Micro	32,289,412	10,512.21
Small	6,851,628	2,449.47
Commerce	100,217,130	32,644.27
Micro	58,745,976	19,785.25
Small	41,471,154	12,859.02
Agriculture	26,053,150	3,722.00
Fisheries	4,900,824	1,024.80
Total	170,312,144	50,352.74

Source: PDNA Volume II-Ondoy and Pepeng, 2009

Mindanao was also hit by catastrophic typhoons in recent years. Typhoon Sendong (international name: *Washi*) in 2011 and Typhoon Pablo (international name: *Bopha*) in 2012. Tropical storm Sendong incurred an estimated PhP 1.32 billion in total damage and losses in the livelihood sector, sustained mostly by the agriculture subsector (Table 6). Damages to crops,

livestock, poultry and fisheries were private in ownership, 85 percent of which were incurred by subsistence farmers. It also had indirect effects to several industries such as the mining and quarrying, manufacturing, wholesale and retail, and real estate. The typhoon did not have a major impact in terms of formal employment in the region but severely affected the livelihood and sources of income of the poorer families in the informal sector (i.e., sari-sari owners, those who lost their backyard animals and other land/agriculture-based assets (TS Sendong PDNA 2012).

Typhoon Pablo in 2012 incurred an estimated PhP 40.2 billion in total damages in the affected provinces of Davao Oriental and Compostela Valley (Table 6). Damage and losses in agriculture is sustained primarily by Compostela Valley with a large percentage of the damage on permanent and high value crops such as coconut, pomelo, mango, rice, corn, banana, and abaca. Davao Oriental's tourism sector was severely affected with almost all resorts and guest houses non-operational and cultural sites like baywalk and parks and old church damaged. Private owners of the beach resorts and lodging houses, locals earning through equipment and machine rental, tour guides and stall owners lost an estimated PhP 29,450,000 in revenues[5] (PDNA Typhoon Pablo- Davao Oriental, 2013).

Table 6. Damages from Typhoons Pablo and Sendong for the Livelihood Sector (in Php million)

SECTOR	TYPHOON PABLO (Davao Oriental)		TYPHOON PABLO (Compostela Valley)		TYPHOON SENDONG	
	DAMAGES	% Dist'n	DAMAGES	% Dist'n	DAMAGES	% Dist'n
TOTAL	**12,802.60**	**100**	**27,423.42**	**100**	**13,326**	**100**
LIVELIHOOD	**6,683.69**	**52.206**	**19,288.43**	**70.336**	**1,319**	**9.895**
Agriculture	469.77	3.669	14,438.08	52.649	1,096	8.222
Tourism	5,528.20	43.180	0.91	0.003	18	0.136
Mining			69.11	0.252		
Industry, Trade, and Services	685.72	5.356	4,780.33	17.432	205	1.536

Source: PDNA for Typhoon Pablo in Davao Oriental (2013) and Compostela Valley (2012), Office of Civil Defense; Tropical Storm Sendong Post Disaster Needs Assessment, 2012

4.3 Post-disaster Coping Mechanisms and Recovery Efforts

Studies in several countries observed that disasters affect enterprises disproportionately (UNDP 2013). Larger firms tend to have better access to broader set of disaster risk

[5] There are no official and comprehensive reports on damages and losses from the Local Tourism Sector, data are based on interviews with Local Tourism Officers and owners of the lodging houses and resorts. Cost is based on estimation

management mechanisms compared to SMEs. On the other hand, SMEs can have greater flexibility but coping mechanisms may be insufficient or may lead to prolonged shrinkage of business operation. This observation is also reported in a recent study on the resilience of Philippine SME to economic and climate shocks (Franscisco, Lau and Mendoza, 2014). The authors argued that larger and more productive firms are better able to cope with crisis (both financial and environmental) and views crisis as opportunities for expansion and for new markets. In contrast, smaller and less productive firms are faced with challenges to survive and may turn to coping mechanisms that tend to reduce long run competitiveness.

Post disaster assessment on recent natural disasters in the country shows that the coping mechanism of the enterprise sector has been very limited. Survey results of affected enterprises under Typhoon Ondoy cited remittances or loans/gifts from relatives as one of the main coping strategy (Table 7). About 13 percent of micro-entrepreneurs can recover lost incomes from remittances and loans/gifts from relatives, while another 11 percent will seek to refinance their losses from moneylenders (PDNA Volume II-Ondoy and Pepeng, 2009).

Some microenterprises have to close down business and take on temporary work as a coping mechanism. In Typhoon Sendong, majority of those who lost primary income source (e.g tricycles, balut making materials, sewing machines etc.) shifted to another form such as making wallets, bags, and other items out of plastic materials from garbage and sold them in informal markets. Others engaged in 'sarisari' retailing in the evacuation and transitional camps (TS Sendong PDNA 2012). This type of coping shows the fragility of some microenterprises in the country specifically the self-help employment type which comprise a significant percentage of microenterprises in the country.

Similar to other developing countries, SMEs reliance on remittances and relatives reflects the absence of formal mechanisms such as insurance and formal finance to help in their recovery. Government disaster response is focused on relief operations, search and rescue operations and social services. As a policy, government also issues temporary price freeze on basic commodities including oil to protect consumers. Government support to normalize economic activities comes much later usually in the medium term one to three years after the disaster. The provision of financing is ad hoc usually directed to agriculture and fisheries. The Bangko Sentral ng Pilipinas (BSP) may also provide some concessions in past due loans of banks[6] and may also established special rediscounting window for affected SMEs but this form of financing benefits mainly those in the formal sector and the medium-sized enterprises.

[6] In the aftermath of Ondoy and Pepeng, BSP allowed banks to exclude loans of borrowers from the computations of past due loan ratio. The BSP also granted a 4 percentage point reduction in general loan loss provision for one year.

Table 7: Post Disaster Coping Strategies by the SMEs

Typhoon	Coping Strategies
Ondoy and Pepeng	• Remittances used for immediate reconstruction and rehabilitation needs by households and businesses • 13% of micro-entrepreneurs recover lost incomes from remittances and loans/gifts from relatives • 11% will refinance losses thru moneylenders • People took temporary jobs where available
Sendong	• Shift to different livelihood (e.g. from sewing or tricycle livelihood to retailing in informal markets or in evacuation/transitional camps

Source: PDNA Volume II-Ondoy and Pepeng, 2009; Tropical Storm Sendong PDNA 2012

5.0 DEVELOPMENTS IN DRRM POLICY AND PROGRAMS FOR PHILIPPINE SMEs

The policy framework governing disaster risk reduction and management in the Philippines has evolved over the years. The present national DRRM framework and plan as provided by law prides itself by adhering to the principles of proactivity and active response. Increased awareness and understanding among the various stakeholders are viewed as key in increasing resilience and decreasing vulnerabilities to disaster events.

However, under the current setup, business establishments operate under the same basic DRRM tenements as individuals, households and communities do. The policy framework for SMEs within the context of disaster risk reduction and management is laid out under the relevant republic acts, national circulars, sectoral development plans, and local government resolutions.

The overarching DRRM policy in the country is outlined under RA10121 or the disaster risk reduction and management act of 2010. It succeeded PD 1566 or the 1978 Presidential Decree on disaster control and community preparedness. Enterprise operations or business continuity during disaster events are also directly and indirectly influenced by the price Act as amended in 2013. Normalizing sectoral situation is also covered memorandum Circular 05 2007 on cluster approach to disaster management.

The other related policies which govern SME operation, institutional support, and development planning are outlined in RA 6977/8289 or the Magna Carta for Small Enterprises,

RA9178 or the Barangay Microbusiness Enterprise Act, the MSME Development Plan 2011-2016, and the Philippine Development Plan 2011-2016. RA 7160 or the Local government code of 1991 also empowers local executives to implement initiatives within their areas of responsibility.

Details of Philippine DRRM Policy Framework and SME Policy Framework are provided below:

5.1 PD 1566: Disaster Control and Community Disaster Preparedness (1978) and R.A. 10121: Philippine Disaster Risk Reduction and Management Act (2010)

PD 1566 and RA 10121 provide the overarching framework for disaster risk reduction and management in the Philippines. Until the enactment of RA 10121 in 2010, PD 1566 which was passed in 1978 formed the basic policy governing disaster planning, control, relief and rehabilitation efforts in the country. In many ways, remnants of PD1566 still govern many facets of disaster management in the country today.

Although PD1566 was succeeded, its provisions remain relevant. The decree created multi-sectoral local disaster coordinating council (DCCs), authorized the LGUs to allocate funds for disaster preparedness, established Disaster Operation Centres (DOCs), and supported capacity building of response teams. It enjoined a culture of self-reliance among local governments and outlined disaster management activities into three phases: pre-disaster phase, emergency phase, and post-emergency phase.

Republic Act 10121 passed into law in 2010, succeeding PD1566 and laying out the policy basis in strengthening the country's risk reduction and management system. It incorporated the national disaster risk reduction and management council (NDRRMC) vice the previous national disaster coordinating council (NDCC).The powers of the NDRRMC as specified in the law include policy-making, coordination, integration, supervision, and monitoring and evaluation functions. The law also provides for the development and adoption of a national disaster risk reduction and management framework (NDRRMF), and pushes for the institutionalization, implementation and funding of a national disaster risk reduction and management plan (NDRRMP). The NDDRMF and NDDRMP adhered to the four pillars of disaster mitigation and prevention, preparedness, response, and recovery. Disaster mitigation and prevention focused on environmental management, infrastructure and development of early warning systems. Preparedness includes building awareness, training and capacity building at the national and local levels. Response and recovery are post disaster operations

which involves both short term response (relief operations) and medium to long term operations that involves rehabilitation and rebuilding.

At the national and local levels, the implementation of the NDRRMP can tap a multitude of fund sources: the General Appropriations Act (GAA) or the budgets of the national line and government agencies, the National Disaster Risk Reduction and Management Fund (NDRRMF), the Local Disaster Risk Reduction and Management Fund (LDRRMF), the Priority Development Assistance Fund (PDAF), Donor Funds, Adaptation and Risk Financing, and Disaster Management Assistance Fund (DMAF).

The previous calamity fund as appropriated under the annual General Appropriations Act (GAA) was renamed as National Disaster Risk Reduction and Management Fund (NDRRM Fund), thirty per cent (30%) of which is allocated as quick response fund or stand by fund for relief and recovery programs to quickly normalize post-disaster situations among affected communities. Some departments are also allocated Disaster Risk Reduction and Management (DRRM) Funds, the utilization of which are based on guidelines issued by NDRRMC in coordination with the Department of Budget and Management (DBM).

The quick response fund for disaster relief is relevant in ensuring the continuity of enterprise operations during disaster events. It ensures that utilities for production are normalized, affected local labor/workforce are tended to, fixed capital are protected from further damage, and material and product routes are opened for supply chains.

From the above discussion, RA10121 as a core policy effectively covers the totality of all DRRM efforts in the country, including sectoral initiatives from disaster prevention, capacity building, disaster response, and post disaster rehabilitation. This would also effectively cover any initiative from the SME sector that would help ensure business continuity and resiliency in the face of disaster.

5.2 RA 7160 or The Local Government Code (1991); and, Local Government Initiatives and Policy provisions

As business environments are defined by relevant policy provisions and institutional support, augmenting the capacity of local governments where SMEs operate could redound to better operational stability particularly in times of disaster. Policies that give local government units greater capacity to provide support to their constituents are relevant to eventual business continuity among enterprises.

PD1566 capitalized on making local governments and their constituents self-reliant and resilient. Leadership responsibility was given to local executives: the Provincial Governor, City Mayors, and Municipal Mayors, (and Barangay Chairman), each according to his area of responsibility. RA 7160 complemented this arrangement by reinforcing local government autonomy. The law decentralized the government structure, and local government units were given more power, authority, responsibility, and resources. This was to enable local government units to promote self-reliant communities, and make them more effective partners in the pursuit of bigger national development objectives.

The policy provisions from PD1566 prompted local government units to mobilize disaster management and emergency services at their level, including rescue, evacuation, relief and rehabilitation operations. This localization of disaster response was reiterated and strengthened in the Local Government Code which devolved powers and discharged certain functions of national agencies to the LGUs such as the provision of basic health, social welfare, and infrastructure services.

To provide funding for local government initiatives, RA7160 allocates five percent (5%) of the estimated revenue from regular sources as annual lump sum appropriations for relief, rehabilitation, reconstruction and other works or services in connection with calamities which may occur during the budget year. This provision of the local government code was amended by RA8185 and eventually by RA 10121 to expand the coverage of fund use. The fund was renamed local disaster risk reduction and management fund (LDRRMF) and was earmarked to support disaster risk management activities such as, but not limited to, pre-disaster preparedness programs including training, purchasing life-saving rescue equipment, supplies and medicines, for post-disaster activities, and for the payment of premiums on calamity insurance.

Though the size of the LDRRMF fund varies with local government revenue, its use is flexible enough to be used for sectoral capacity building. Some exemplary local government executives have found creative ways of getting the most out of the resource. The case of the provincial government of Albay best exemplifies innovative fund use and apt local governance.

To institutionalize and strengthen DRRM in Albay province, the Albay Public Safety and Emergency management Office (APSEMO) was created. APSEMO is an independent office which serves as the technical and administrative arm on the provincial DRRMO. The province also passed Special Proclamation Resolution 2007-04 which stipulates that all businesses to be established in the province should be consistent with climate change adaptation. It required the submission of hazard assessment and field investigation reports for the issuance of certificate

to assure the land is safe from disasters. These initiatives came with the appreciation that businesses are also victims of disasters, and that hazards must be addressed by appropriate policy, planning, and action.

Among the sound practices that provincial government employs are the use of vulnerability and hazard maps, land use zoning, pre-disaster capacity building activities, early warning systems and evacuation. Enterprises are advised to develop contingency/continuity plans to help them cope and overcome operational difficulties in the event of disasters. Proper protection or backup systems for important files, and safe stock piling of materials and products in appropriately located warehouses are also recommended.

In the immediate aftermath of disasters, the province provides aid to both affected individuals and local businesses/ SMEs through sensible arrangements. By promoting more cash for work schemes instead of relief goods dole outs, the infusion of cash to revive local industries is achieved.

Good in-house practices allowed the Albay provincial government to contribute significantly to national DRR planning. It can be said that part of RA10121 was based on Albay's experience. It also hosted venues which helped the early passage of the Climate Change Act and the creation of the Climate Change Commission.

5.3. R.A. 9729 or Climate Change Act (2009) as amended by RA 10174 or Peoples Survival Fund (2011)

With the passing of RA9729, the government pledged to cooperate with the global community in the resolution of climate change issues, including disaster risk reduction. It becomes the policy of the state to enjoin the participation of national and local governments, businesses, nongovernment organizations, local communities and the public to prevent and reduce the adverse impacts of climate change as well as maximize potential benefits from it.

The Climate Change Act infuses international commitments into the national political agenda. It pushes for the systematic integration of the concept of climate change in various phases of policy formulation, development plans, poverty reduction strategies and other development tools and techniques by all agencies and instrumentalities of the government. Similar to the platform agenda that RA10121 provides, RA 9729 serves as a springboard for more detailed sectoral representations in the planning and development process within and outside government. It created the Climate Change Commission (CCC) which is headed by the President and mandated the formulation of the National Climate Change Action Plan.

RA 10174 amended the act by adding provisions for a people's survival fund (PSF) that would provide long term finance streams for the government to address climate change. The amount of One billion pesos (P1,000,000,000.00) is appropriated under the General Appropriations Act (GAA) as opening balance of the PSF. However, as of 2013, only P500 million in unprogrammed funds have been promised for the PSF to help make local government units (LGUs) more resilient to climate change and prepared for calamities. Any intervention that would augment the capacity and stability of local government units would eventually aid in improving the business environment for SMEs in the countryside.

5.4 Republic Act 6977 (1991) as Amended by RA 8289 (1997): Magna Carta for Small Enterprises

The basic policy in SME promotion is outlined in the Magna Carta for Small Enterprises, enacted in 1991 and amended in 1997. It declares that it is the policy of the state to promote, support, strengthen, and encourage the growth and development of SMEs in all productive sectors of the economy. To this end, the state is expected to undertake activities to spur the growth and development of SMEs throughout the country and thereby attain countrywide industrialization. These activities include creating an enabling and supportive business environment, improving access to financing, providing adequate business support, providing training on entrepreneurship and worker skills, providing linkages between SMEs and large firms, and working in partnership with the private sector. Major provisions:

(1) Creation of the Small and Medium Enterprise Development (SMED) Council. The Council is the primary agency responsible for the promotion, growth, and development of SMEs in the country by facilitating and closely coordinating national efforts toward this end.

(2) Creation of the Small Business Guarantee and Finance Corporation (SB Corp.). The SB Corporation provides, promotes, develops, and widens, in scope and service reach, various alternative modes of financing for SMEs.

(3) Mandatory allocation of credit resources to small enterprises. For the period of 10 years from the date of the effectiveness of the Act, all lending institutions as defined under Bangko Sentral ng Pilipinas (BSP) rules, whether public or private, shall set aside at least 6% and at least 2% respectively of their total loan portfolio, based on their balance sheet as of the end of the previous quarter, and make it available for SMEs.

(4) 10% share of SMEs in government procurement. SMEs should have a 10% share of the total procurement value of goods and services supplied to the government.

5.5 Republic Act 9178: Barangay Micro Business Enterprises (BMBEs) Act (2002)

RA 9178 encourages the formation and growth of barangay micro business enterprises through the rationalization of bureaucratic restrictions, the active granting of incentives and benefits to generate much-needed employment and alleviate poverty. Major provisions of the law include the following:

(1) Exemption from Taxes and Fees. All BMBEs shall be exempt from tax for income arising from the operations of the enterprise. The LGUs are encouraged either to reduce the amount of local taxes, fees and charges imposed or to exempt BMBEs from local taxes, fees and charges.

(2) Exemption from the Coverage of the Minimum Wage Law. The BMBEs shall be exempt from the coverage of the Minimum Wage Law: Provided, That all employees covered under this Act shall be entitled to the same benefits given to any regular employee such as social security and healthcare benefits.

(3) Credit Delivery. The Land Bank of the Philippines (LBP), the Development Bank of the Philippines (DBP), the Small Business Guarantee and Finance Corporation (SBGFC), and the People's Credit and Finance Corporation (PCFC) shall set up a special credit window that will service the financing needs of BMBEs registered under this Act consistent with the Bangko Sentral ng Pilipinas (BSP) policies; rules and regulations. The Government Service Insurance System (GSIS) and Social Security System (SSS) shall likewise set up a special credit window that will serve the financing needs of their respective members who wish to establish a BMBE. The DTI, in coordination with the private sector and non-government organization (NGOs) is also mandated to link BMBEs with small, medium and large enterprises. Avenues for technology transfer, production and management training, and marketing assistance to BMBEs are also provided for in the law.

(4) Trade and Investment Promotions. The data gathered from business registration shall be made accessible to and shall be utilized by private sector organizations and non-government organizations for purposes of business matching, trade and investment promotion.

The startup stage of setting up a BMBE could be likened to an enterprise struggling to continue business activities amid operational difficulties during and after disaster events. Aside from promoting the development and establishment of BMBEs, the provisions in indicated in the law reflect sound economic incentive for a possible qualified application to promoting business continuity and resiliency amid a disaster event.

5.6 Republic Act 7581: the Price Act (1992) as amended by RA10623 (2013)

RA 7581 as amended by RA10623 ensure the availability of basic necessities and price commodities at reasonable prices at all times without denying legitimate business a fair return on investment. It is the declared policy of the State to provide effective and sufficient protection to consumers against hoarding, profiteering and cartels with respect to the supply, distribution, marketing and pricing of said goods, especially during periods of calamity, emergency, widespread illegal price manipulation and other similar situations.

Under the law, prices of basic necessities in an area are automatically frozen at their prevailing prices or placed under automatic price control whenever:

- That area is proclaimed or declared a disaster area or under a state of calamity;
- That area is declared under an emergency;
- The privilege of the writ of habeas corpus is suspended in that area;
- That area is placed under martial law;
- That area is declared to be in a state of rebellion; or
- A state of war is declared in that area.

Basic necessities refer to goods vital to the needs of consumers for their sustenance and existence. Among these are staples like rice, corn, root crops, bread; fresh, dried or canned fish and other marine products; fresh pork, beef and poultry meat; fresh eggs; potable water in bottles and containers; fresh and processed milk; fresh vegetables and fruits; locally manufactured instant noodles; coffee; sugar; cooking oil; salt; laundry soap and detergents; firewood; charcoal; household liquefied petroleum gas (LPG) and kerosene; candles; drugs classified as essential by the Department of Health.

Prime Commodities are goods not considered as basic necessities but are essential to consumers at certain times. Such include flour; dried, processed or canned pork, beef and poultry meat; dairy products not falling under basic necessities; onions, garlic, vinegar, patis, soy sauce; toilet soap; fertilizer, pesticides and herbicides; poultry, livestock and fishery feeds and veterinary products; paper; school supplies; nipa shingles; sawali; cement; clinker; GI sheets; hollow blocks; plywood; plyboard; construction nails; batteries; electrical supplies; light bulbs; steel wire; and all drugs not classified as essential drugs by the Department of Health.

The law automatically impacts SMEs dealing with basic necessities and prime commodities indicated above. The imposition of price control may remain effective for the duration of the condition that brought it about, but not for more than sixty (60) days. The price

control for some items like household LPG and kerosene can be imposed for not more than fifteen (15) days.

5.7 National and Sectoral Development Plans: NDRRMP, PDP, NCCAP, MSME Development Plan

There is a wealth of documents pertaining to national and sectoral development plans that touch on DRRM options and other initiatives. Most relevant among these for SME business continuity and resiliency are the National Disaster Risk Reduction and Management Plan (DRRMP), Philippine Development Plan (PDP), National Climate Change Action Plan (NCCAP), and the MSME Development Plan (MSMEDP). The following discussions present the highlights of these development plans.

5.7.1 The National Disaster Risk Reduction and Management Plan

The NDRRMP outlines the activities aimed at strengthening the capacity of the national government and the local government units (LGUs) together with partner stakeholders, to build the disaster resiliency and institutionalize arrangements and measures for disaster risk reduction and management. It is the umbrella document that is supposed to ready the country to prepare and respond to all types of disaster and emergency events. The plan cuts across four priority areas: disaster mitigation and prevention, disaster preparedness, disaster response and recovery and rehabilitation.

With reference to SME business continuity and resiliency, the NDDRMP targets the reduction of vulnerability and exposure to disasters (i.e. through DRRM mainstreaming, resilient infrastructure, vulnerability and hazard mapping, insurance and risk financing, early warning systems, risk communication and hazard monitoring); increased level of awareness and capacity among communities and institutions (i.e. IEC, advocacy plan, training and simulation exercise, contingency planning, resource inventory, and resource stockpiling and prepositioning); restoration of lifelines and livelihood (i.e. early recovery livelihood/income generating activities, restoration of lifelines); and recovery and rehabilitation through restoration of economic activities (i.e. post-disaster needs assessment, infrastructure restoration, fund mobilization, and credit facility).

Overall, the NDRRMP is a treasure trove of action points and principles for disaster risk reduction and management. It is encompassing—with general statements that cover potential gaps or loopholes in local and sectoral applications. Its claim of mainstreaming or integrating

DRRM and CCA within national, local, and sectoral development plans, policy and budget is a key in promoting resiliency in communities and their respective economic activities.

Although business continuity is founded on how well enterprises address disaster mitigation, prevention and preparedness issues, its operational definition lies within the disaster response phase. This is where the SMEs encounter the challenge of continuing business operations amid the shock of disaster.

5.7.2 National Climate Change Action Plan

The Climate Change Act through the Climate Change Commission pushes for the formulation of a framework strategy and program; the mainstreaming of climate risk reduction into national, sector and local development plans and programs; the recommendation of policies and key development investments in climate-sensitive sectors; and the assessments of vulnerability and facilitation of capacity building.

The national climate change framework strategy has been translated into a National Climate Change Action Plan (NCCAP), which prioritizes food security, water sufficiency, ecosystem and environmental stability, human security, climate-smart industries and services, sustainable energy, and capacity development as the strategic direction for 2011 to 2028.

With reference to SME business continuity and resiliency, the NCCAP tries to address a realistically achievable program of action for integrated climate change adaptation and mitigation:

- Creation of policies and stable policy environment for the development of climate-smart industries and services;
- Adoption of eco-efficient production;
- Development of capacity building programs and knowledge for promoting climate-smart industries and services;
- Development of productive employment and livelihoods from these industries;
- Climate-proofing of infrastructures in ecotowns;
- Development of CC-adaptive housing and land use; and
- Full implementation of ecological waste management.

5.7.3 Philippine Development Plan (2011-2016)

The PDP (2011-2016) serves as a guide in formulating policies and implementing development programs for the medium term. The document presents a systematic framework for inclusive growth, which is translated into specific goals, objectives, strategies, programs and projects. It is the national industrial strategy that details opportunities, coordinates and promotes the growth of forward and backward linkages in priority areas and high-potential growth sectors as well as prepares other industries to attract investments and generate jobs.

It is stated in the PDP that the government shall implement disaster-mitigating measures, sustain socio-political stability, and create necessary conditions to ensure safe and peaceful business environment for investors. Support policy and legislation that mainstream Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) in industry and services sectors are manifested through:

- Establishment of compliance mechanisms for business sector on DRR standards.
- Strengthening of implementation of or reform existing laws on land-use and related laws such as building code for disaster-resilient industry and service sectors.
- Assessment of the level of DRR awareness and activities among the private sector and disseminate information, education and campaign (IEC) materials on DRR to ensure their support, participation and cooperation
- Development of innovative financing schemes to secure sustainable financing for programs on climate change.
- Design and implementation of DRR and CCA measures for mining companies, with areas suitable for mineral resources development to be defined based on scientific information

5.7.4 Micro, Small and Medium Enterprise Development Plan

The 2011-2016 Micro, Small and Medium Enterprise (MSME) Development Plan aims to address the key challenges and constraints, that continue to prevent the SME sector from realizing its full potential and boosting the country's industrial growth. To achieve this, the development plan lays out the overall framework to guide the formulation of action plans towards a more harmonized approach to MSME development. Four outcome portfolios for 2011 to 2016 were identified: business environment (BE), access to finance (A2F), access to market (A2M), and productivity and efficiency (P&E).

Figure 3 presents the output framework of MSMEDP 2011-2016. The MSME Development Plan identifies the key results necessary to raise the sector's contribution to GVA

to 40% and generate 2M employment. The action plans necessary to deliver these results are supposed to be crafted and managed at the regional and local levels. The DTI-MSMED Council manages at the outcome level, while the management of action plans are left to regional and local stakeholders.

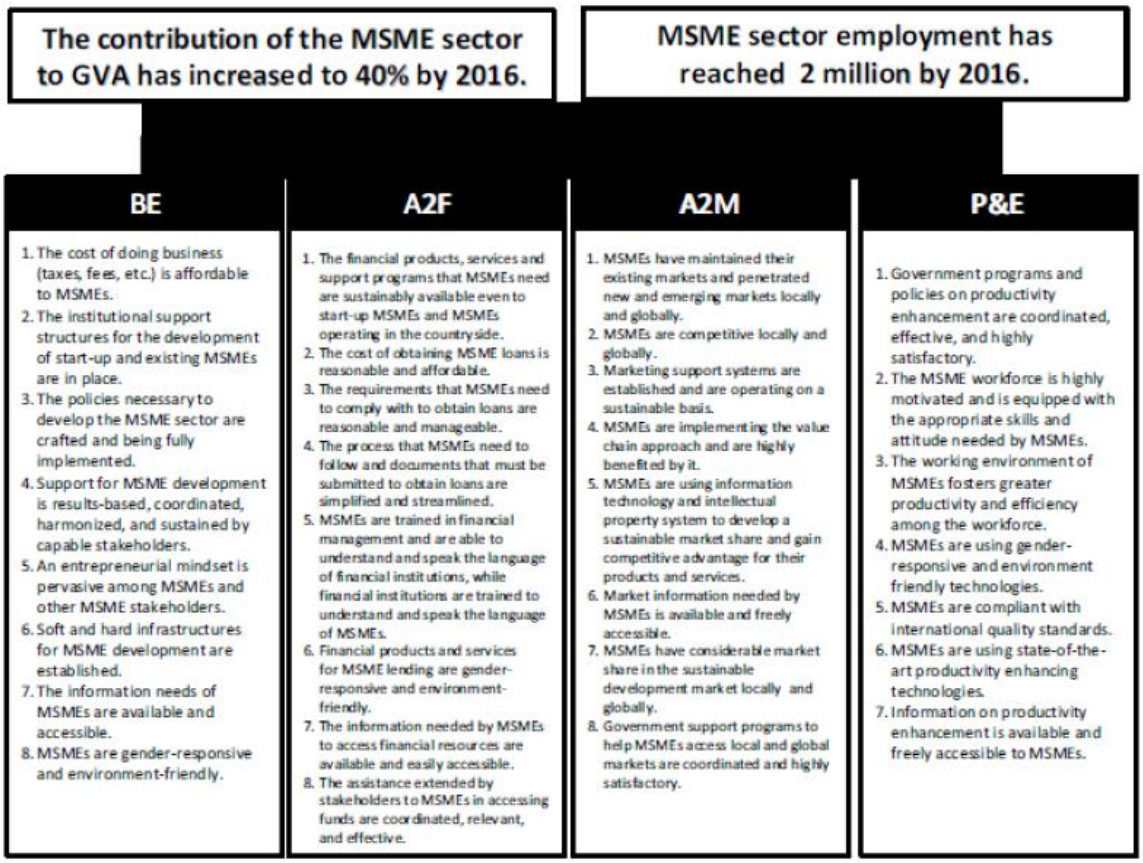

Figure 3. Output framework of the MSME Development Plan for 2011-2016 (source: MSMEDP)

The MSMEDP as a national framework requires subnational translation into workable action plans. Aside from the four outcome portfolios, the action plans have to be consistent with identified 3 development approaches (local and regional economic development approach, sector development, and market system development); and 4 global themes (gender mainstreaming, migration, green growth, and corporate social responsibility).

It is worth noting that nowhere in the MSMED Development plan is there reference to disaster risk reduction and management or business continuity/resiliency for SMEs. This important concern seems to have been overlooked in the national planning and consultation process.

Overall, Philippine DRRM framework is inclined towards the traditional models that have stronger focus on household recovery than on economic resilience, including business continuity and resilience. The evidence from recent disasters in the country shows the weak policy and strategic intervention directed to SMEs. There is no program or specific centers that would respond to the immediate needs of the business sector (e.g. logistic security). There must be a wider realization that SMEs or local entrepreneurship play an important socioeconomic role in community functioning by providing products/services, employment opportunities, and local revenue. This role becomes even more critical in times of disasters since the immediate recovery of communities strongly depends on the ability of business to continue operation. A disaggregated approach to assessing the needs and providing DRRM interventions for SMEs thus is appropriate.

6.0 CONCLUSIONS AND POLICY RECOMMENDATIONS

SMEs in the Philippines are vulnerable to natural disasters. Limited coping strategies and adaptive capacity bear directly on business continuity and supply chain resilience. Such can be addressed through combined efforts from the private sector and government and through effective policy translation from national into local and sectoral action plans, and regional cooperation within the APEC community. Collective commitment and participation should be harnessed to bring more focus on strengthening and normalizing economic activities in pre and post disaster activities/operations.

6.1 Translation of National Policy into Local and Sectoral Plans

There is apparent lack of disaggregation or sectoral focus on the policy framework that drives DRRM among the different stakeholders in the country, particularly between households and businesses. There is no single policy that details SMEs disaster mitigation, preparedness, response and recovery. Rather, the DRRM concerns of SMEs are indirectly covered by core policy pronouncements governing the national DRRM agenda.

Several legislative provisions relate to economic activities during disaster events, however, Republic Act No. 10121 still provides an overarching legal basis for DRRM. The law acknowledges the need to adopt a disaster risk reduction and management approach that is holistic, comprehensive, integrated, and proactive among all sectors and all stakeholders concerned, at all levels, especially the local community." It is only in the limited translation of

the law and the National Disaster Risk Reduction and Management Plan (NDRRMP) into local and sectoral action plans where focus on SME business continuity and resilience had been lost.

A review of existing laws and national development plans relevant to SME business continuity and resiliency gives a sense of relative adequacy when looking at the totality of the DRRM policy framework. Although the main sectoral development plan for SMEs failed to cover DRRM and business resiliency, enough policy coverage is provided under the NDRRMP, NCCAP and PDP. Sufficient legislative provisions have been crafted to support proactive response to disaster events for both communities and businesses. However, there is an apparent gap in policy execution, as seen in the lack of subnational action plans translating these national DRRM provisions.

There is a need to review and translate national frameworks and development plans into workable subnational and sectoral action plans. The NDRRM Plan, NCCAP, PDP, and MSMEDP need to be translated into doable sector-specific regional and local action plans. Disaster risk reduction and management strategies should be targeted specifically for business resiliency among SMEs. This plan has to take into context specific vulnerabilities (e.g. informality) of SMEs.

6.2 Application of Local Learnings and International Best Practices

Improving business continuity and resilience requires concerted effort and cooperation among the government (local and national), the private sector and the local communities. The government defines the policy for managing disaster risks, ensures adequate infrastructure and investment climate for SMEs to thrive, and provides direct intervention during pre- and post-disaster operations. The involvement of the private sector and local communities cultivates a sense of ownership, and strengthens proactivity and adaptive capacity among all stakeholders.

Disaster resilience among SMEs can be enhanced through three fronts: (a) organizational capacity build-up, (b) policy and institutional support tackling socioeconomic drivers of risks in pre-disaster stage, and (c) prompt and sustained economic restoration and support efforts in the aftermath of disaster.

6.2.1. Building Organizational Resilience to Disaster

The MSME Development Plan, as the national framework governing the sector, should be revised to include disaster risk reduction and management for business resiliency as one of its thematic areas of concern. Its content, aside from laying out the development roadmap for

SMEs, need to be consistent with the provisions of RA10121 as well as the NDRRM Plan, NCCAP and PDP. Greater effort should also be exerted in translating an augmented MSME development plan into regional and local action plans that can be given budgets and implemented with clarity.

In general, the government defines the policy framework and investment climate which deals with broad economic and institutional issues, and provides direct intervention on DRRM concerns. The former includes legal reform and business regulations, trade policy and financial frameworks, and infrastructure including land use planning and zoning, while the latter focuses on particular geographic areas, sectors or groups covering business continuity plans, promotion of business associations and networks for DRRM, support for savings and micro-insurance.

Practical strategic options on disaster mitigation and prevention and disaster preparedness that the government can pursue are:

- Conduct of industry-specific consultations for eventual crafting of MSME DRRM framework, national plan, and local action plans.
- Promotion of proactive posture through business continuity plans for DRRM for all enterprises.
- Prepositioning of supplies and provisions as applicable and stock piling of materials and products in appropriate locations as applicable.
- Strengthening supply chain resilience by taking into account supply routes for raw materials and finished products, including forging pre-disaster arrangements with suppliers and or nodal industry players.
- Capacity building among SMEs to strengthen planned and adaptive resilience to disaster events through: (a) Promotion of effective networks or business associations to support/strengthen SMEs, (b) focus on augmenting organizational resilience particularly on leadership and employee culture, (c) training, stress testing and disaster response simulation, and (d) Provision for a back-up system for important business files and documents.
- Support /encourage SMEs to build a culture of adaptive capacity among management and employees.
- Rationalization of national and local land use policy capitalizing on the development and use of vulnerability and hazard maps, with particular adherence to precautionary safety measures against exposure to hazard when setting up business establishments.

6.2.2. Disaster Response Early Recovery and Post-Disaster Rehabilitation

The literature showed a mixed review of resiliency among firms in both developed and developing countries. The US and Japan reported relatively high rates of business closure for companies that experienced major disasters on one hand, but fast recovery for certain SMEs on the other. Developing economies like Haiti and Thailand exhibited capital infusion from overseas remittances and proved the applicability of micro insurance, financial subsidy, soft loans, and flexible enforcement of regulations. Australia and New Zealand have focused on augmenting supply chain resilience, financial assistance packages, and organizational resilience.

The same qualified application of interventions is suited to the Philippines. In a qualified manner, these interventions are also being applied in the country. However, they have to be pursued in a more rigorous, timely, and well-directed manner. Response time for early recovery of economic activities should fall within three months to one year, with recovery and rehabilitation extending from 3 to 6 years. During the response stage, the immediate concerns for continued business operation include the safeguarding of employees, and the restoration of basic utilities, infrastructure, and peace and order.

The strategic direct interventions that can be instituted for disaster response and post-disaster recovery may include:

- Prompt address of dysfunctions/breakdowns in public services and key infrastructure.
- Provision of humanitarian/disaster assistance to the local workforce to minimize injury, casualty and displacement.
- Effective restoration of security/ peace and order in affected communities to protect the citizens, and the operation of local businesses.
- Setting up of financing facilities such as grants and concessionary loans intended for SMEs and a special credit line in the form of Business Disaster Loans (i.e. a risk mitigating facility) for medium-sized companies must be in place. Grants can be directed to affected micro and small enterprises that have no productive assets left and negligible creditworthiness.
- Provision of additional capital support for SMEs during disaster events, including optional loan restructuring, and tax reprieve should be considered especially for small and medium enterprises. Micro enterprises are already tax exempt under existing policy.
- Implementation of cash for work programs and income support to partially restore the livelihoods of those affected through public works and direct food or cash transfer programs. Cash vouchers for farmers, fisherfolks, and disadvantaged groups affected by

disasters may be applicable. Provision of cash or temporary livelihood for local residents helps circulate much needed currency and restore demand in damaged communities.

- Arrangement of temporary work stations, factories, stores, and other facilities through the municipal or local government.
- Application of special grants or incentives for cleaning, removal of debris, repairs, stock replacement, and other disaster recovery initiatives for damaged
- Institution of possible labor protection provisions (i.e. compensation), and facilitated/flexible enforcement of applicable laws to aid in early recovery (i.e. movement of goods, customs policy).
- Setting up of accessible an information system for updates on disaster support facilities, basic services and infrastructure status, market information, and other relevant updates/advisory.
- Support to the use of financial security instruments including micro-insurance for micro and small scale industries.

6.3 Regional Cooperation for Business Continuity and Supply Chain Resilience

The international/ regional community, particularly the APEC member countries, can strengthen each other through knowledge sharing, and disaster emergency logistic support.

The Asia Pacific region has developed several regional cooperation mechanisms specifically in the areas of integrated early warning systems, disaster emergency logistic systems and knowledge sharing. [7] APEC will to continue to build partnership on business or supply chain resilience specifically focusing on the seven key principles of APEC.

1. ***Share information and knowledge*** to promote supply chain resilience.
2. ***Promote disaster risk management and hazard mapping*** to better understand potential risks to supply chain resilience.
3. ***Support planning and business continuity management*** to improve global supply chain resilience.
4. ***Promote best practice policy, regulations, and flexibility*** to enable global supply chain resilience.
5. ***Leverage regional cooperation to support the supply chain***, including coordination with other multinational organizations working on supply chain resilience inside and outside the APEC region.

[7] See Annex 1 for a list of these regional initiatives.

6. ***Promote critical infrastructure protection and inter-modalism*** as a key component of supply chain resilience.
7. ***Recognize and promote best practice in human resource and capacity management*** in the context of supply chain resilience.

In line with these 7 key principles, APEC will undertake policy dialogues, pilot projects and cross-collaboration with other APEC entities and international organizations focusing on the following concerns: (1) Vulnerability Assessment of Supply Chain Critical Points; (2) Best Practices on Critical Infrastructure Protection; (3) Business Continuity Management Public Private Partnership; and (4) Identifying Best Practices on Flexible Regulations.

The Philippine government can work on strengthening these principles and activities for building resilience highlighting the relevant areas that impact on supply chains. The government can also explore new areas for regional cooperation such as regional risk insurance facility, which provides risk transfer solution to help participating governments finance recovery and rebuilding from disasters. This cooperation has been established in the Caribbean region and recently piloted in the Pacific Island region.

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ANNEX 1: Summary of Regional Cooperation Mechanisms for DRRM in the Asia Pacific Region

Mechanism	Details
Hyogo Framework of Action (HFA)	It calls all regional organizations to undertake the following: (a) promote regional programs; (b) undertake and publish regional and subregional baseline assessments; (c) coordinate and publish periodic reviews on progress; (d) establish or strengthen specialized regional collaborative centers; and (e) support the development of regional mechanisms and capacities for early warning More recently, the Rio+20 outcome document reaffirmed the international community's commitment to the HFA and called on subregional and regional organizations to urgently accelerate implementation of the HFA goals in the context of sustainable development and poverty eradication. The *ASEAN Agreement on Disaster Management and Emergency Response (2009)* is the world's first, and only, HFA-related binding instrument.
	On Integrated Early Warning System
ESCAP Trust Fund for Tsunami, Disaster, and Climate Change Preparedness (2005)	The ESCAP Multi-Donor Trust Fund for Tsunamis in the Indian Ocean and South East Asian Countries was established in 2005 through a $10 million contribution from the Government of Thailand. The overall objective was to build and enhance tsunami early warning capacities at various levels in the Indian Ocean. The Fund helped establish RIMES (*Regional Integrated Early Warning System)*, which now covers over 26 countries from the Asian and African continents, and feeds into the overall Indian Ocean Tsunami Warning and Mitigation System which went live in 2011.
Regional Cooperative Mechanism for Disaster Monitoring and Early Warning, Particularly Drought	Established under ESCAP's RESAP program, this mechanism receives technical support from member countries in the region. While still at an early stage this should provide an information portal for national strategies and mitigation experiences. It will also serve as a technical support platform for no- or low-cost space-based products for drought analysis – and as a platform to encourage technology transfer and capacity building.
	On Disaster Preparedness
ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (2012)	Established by ASEAN in 2011 in order to link national disaster management agencies and provide early warnings and response. Shortly after typhoon Bophas truck the Mindanao region of the Philippines in December 2012, the Centre launched an ASEAN Disaster Emergency Logistic System.

	On Knowledge Sharing
Asia-Pacific Gateway for Disaster Risk Management and Development(2010)	Launched by ESCAP in November 2010 An interactive web platform that provides unprecedented opportunities to share information and knowledge products about disaster risk management (DRM) across the Asia-Pacific region. The Gateway acts as a knowledge broker that connects the various hubs of DRM knowledge in the region to develop an extensive database of policies, plans and assessments. These 'knowledge configurations' connect government ministries, particularly national development and disaster management authorities, and enable them to benefit from centralized access to hundreds of policies, strategies and studies across the Asia-Pacific region. The Gateway is a regional initiative supported through key partnerships with the Asian Disaster Preparedness Center (ADPC), the UNISDR, the United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development, and the United Nations Office for Outer Space Affairs. The Gateway builds on existing initiatives in disaster risk management, such as ADPC's DRR Project Portal for Asia and the Pacific, and relies on the active participation of users to provide value-added content.
Pacific Disaster Net(2008)	The most comprehensive information resource on disaster risk management in the Pacific. Established in 2008, this was developed by SOPAC, IFRC, UNDP-Pacific Centre and UN-OCHA.
South Asia Disaster Knowledge Network	In South Asia, the SAARC Disaster Management Centre established the South Asia Disaster Knowledge Network in 2011 to provide a common platform and easy access to real-time disaster data from different providers using a map-based system. The network is linked to portals within and beyond the governments of the SAARC member countries.
	On Regional Risk Insurance

Caribbean Catastrophe Risk Insurance Facility	Provides participating governments of the Caribbean Community with the opportunity to purchase insurance coverage at rates 45 to 50% lower than if they were to purchase insurance individually in financial markets. This is because participating countries can pool their country-specific risks into one diversified portfolio. The facility then transfers risks it cannot retain to the international financial markets through reinsurance or through other financial coverage instruments such as catastrophe bonds. Parametric insurance products are priced for each country based on their individual risk profiles. Annual premiums typically vary from $200,000 to $4 million, for coverage ranging from $10 million to $50 million. Bermuda, Canada, France, the United Kingdom, the Caribbean Development Bank and the World Bank have pledged a total of $47 million to the CCRIF reserve fund. Participating governments contribute resources to the pool according to their respective risk exposure. With 16 governments currently members of the CCRIF, participation is regarded as high.
Pacific Catastrophe Risk Assessment and Financing Initiative (2013)	Piloted by the Secretariat of the Pacific Community, the World Bank, and the Asian Development Bank The pilot programme, funded principally by the Government of Japan, has successfully placed catastrophe risk with four international reinsurance companies, Sompo Japan Insurance, Mitsui Sumitomo Insurance, Tokio Marine & Nichido Fire Insurance, and Swiss Re. The program covers major tropical cyclones and earthquakes. Five Pacific island countries, namely the Marshall Islands, Samoa, Solomon Islands, Tonga and Vanuatu are participating, and coverage is expected to be $45 million. This regional mechanism could generate savings of up to 50 %compared to individual risk transfer solutions
	On Resilient Infrastructure
SAARC Development Fund	With paid-up capital of $300 million to finance infrastructure projects in energy, power, transportation, telecommunications, environment and tourism.
ASEAN Infrastructure Fund	Co-financed by ADB, with major contributions from Malaysia and Indonesia. Projects funded are related to the Master Plan on ASEAN Connectivity
The Greater Mekong Subregion (GMS)	With support from the ADB and other donors, the targeted projects are transport, energy, telecommunications, trade, tourism, agriculture and environment worth approximately $10 billion. ADB has provided funding of $65 million for the GMS Information Superhighway Network.

South Asia Subregional Economic Cooperation Information Highway Initiative	This aims to improve data connectivity across Bangladesh, Bhutan, India, and Nepal and may serve as a preliminary phase for an extended SAARC information highway. ADB has also approved about $16 million in grants and loans for this project
Master Plan on ASEAN Connectivity	ASEAN has designated the development of broadband corridors as a key component of its regional infrastructure development plan
Trans-Eurasian Information Super Highway (TASIM)	This project spans to more than 20 countries between Central Asia and Europe. The TASIM initiative is a collaborative project that involves a connectivity alliance led by the ITU, as well as telecom operators from the participating countries which are jointly responsible for the construction of the backbone network
	Other Initiatives
Mekong River Commission (1995)	Cambodia, Lao PDR, Thailand, and Viet Nam The Commission has formulated the Basin Development Plan which integrates economic, social, and environmental issues in the management of water and related resources, energy generation and food production, as well as a regional flood management program, and an agreement on data and information sharing. It also has an agreement with China on hydrological data exchange.
ESCAP/WMO Typhoon Committee (1968)	Established in 1968 The Japan Meteorological Agency provides support and advice to members through the Regional Specialized Meteorological Centre in Tokyo.
WMO/ESCAP Panel on Tropical Cyclones (1972)	Provides a cyclone warning service for the Bay of Bengal
International Charter on Space and Major Disasters (2000)	Provides countries affected by disasters with a unified system of satellite data acquisition and delivery. Currently, 14 of the world's space agencies are members, offering more than 21 earth observation satellites