REDUCING RISK & BUILDING RESILIENCE OF SMES TO DISASTERS

SENDAI FRAMEWORK
FOR DISASTER RISK REDUCTION 2015-2030

UNDRR
UN Office for Disaster Risk Reduction

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EXECUTIVE SUMMARY

CONTEXT

Small and medium enterprises (SMEs), including micro SMEs, are the bedrock of global, national, and local markets. Two in every three people works in an SME (OECD 2019).[1] When disaster strikes, SMEs are hit harder, suffer longer and are slower to recover than larger businesses. If the global community is to improve the lives and livelihoods of people in emerging and growing economies, we must tackle risk in SMEs. This guidance, authored by the United Nations Office for Disaster Risk Reduction (UNDRR), provides guidance for how to build the resilience of SMEs to multiple hazards, enabling SMEs to be sustainable and competitive in the long run by reducing disaster risks, and with a specific focus on prevention, i.e. activities and measures that help SMEs "avoid potential adverse impacts of hazardous events" and in "reducing vulnerability and exposure" (United Nations 2016).

The guidance is informed by a global survey conducted by UNDRR facilitated by the ARISE global network,[2] a literature review of available evidence related to building the resilience of SMEs to disasters and many insightful discussions with our international partners.

HAZARDS AND RISKS

In any given year, SMEs around the world face a daunting array of hazards,[3] such as: meteorological and hydrologic (e.g. hurricanes); extra-terrestrial (e.g. meteors and solar flares); geohazards (e.g. earthquakes and volcanoes); environmental (e.g. biodiversity loss, salinization); chemical (via acute or long-term exposure); biological (e.g. zoonotic pathogens); technological (existing and new); and societal (e.g. financial shock, civil unrest). With the outbreak of the COVID pandemic, multiple hazards and systemic risks converged during 2020 to wreak havoc globally on economies, society and the environment. SMEs have been particularly hard hit.

2020: SYSTEMIC RISK LAID BARE

Beginning with a global oil price shock and the Covid-19 pandemic, the year 2020 continued against a backdrop of "mutually exacerbating catastrophes,"[4] including hurricanes, monsoon floods, wildfires, refugee crises, civic unrest, and cyber-attacks. The Covid-19 pandemic alone, the likes of which had not been experienced in 100 years, was devastating to the health and wellbeing of individuals and to the global economy. SMEs were hit hard: half of SMEs surveyed by the Organization for Economic Cooperation and Development (OECD) feared going out of business within three months without further support, with the International Trade Centre (ITC) noting a disproportionate impact on youth and women-led SMEs. Working-hour losses by the second quarter equated to 480 million jobs lost globally (ILO 2020a). Of the policy measures implemented by national governments to help SMEs respond and recover from the crisis, UNDRR estimates that **only 15% of the policy mix would also help strengthen their longer-term resilience** based on a 55-country study reported by the OECD (OECD 2020a).

CHALLENGES

SMEs are important catalysts for resilience, given their agility, entrepreneurship, and role in providing livelihoods. However, SMEs experience multiple challenges in relation to disaster risk reduction. These tend to cluster around the following areas:

- Their inherent composition (i.e. size).
- Access to financial resources and products.
- Awareness of risks and risk creation (including multi-hazard).
- Business strategy challenges with a tendency to focus on response and recovery, rather than risk reduction and prevention.
- Operational aspects such as vulnerability within global value and supply chains.

SUCCESS FACTORS AND RECOMMENDATIONS

The evidence compiled in this guidance points to four critical success factors for building the resilience of SMEs through disaster risk reduction, including:

1. Supporting and developing international and national policy frameworks that address the specific needs of SMEs.
2. Providing access to finance and financial products tailored to SMEs.
3. Combining Enterprise Risk Management and Business Continuity Management mechanisms to better incorporate and increase the focus on prevention.
4. Addressing interdependencies and inequities across value and supply chains.

Across these four critical factors, the following recommendations emerged from this guidance and are directed at the organizations and associations that represent, support and work with SMEs, including governments and non-governmental organizations. These recommendations should trigger a shift away from response and recovery to the prevention of disaster risks, by reducing hazards, exposure and vulnerability. Crucially, it is evident that a focus on ensuring business continuity alone is neither sufficient nor cost effective given the limited capital of SMEs in the face of multiple hazards and systemic risks.

1. SUPPORT AND DEVELOP POLICY AND LEGAL FRAMEWORKS THAT ADDRESS THE NEEDS OF SMEs FOR BUILDING RESILIENCE THROUGH PREVENTION:[5]

- Collect disaggregated data on SMEs and disasters to strengthen and inform targeted and intersectional policy and fiscal approaches.
- Undertake systematic evaluation (ex ante and ex post) of different government interventions to establish which SME-focused policies work best for incentivising SMEs to undertake disaster risk reduction efforts.
- Implement international policy frameworks through comprehensive national and local disaster risk reduction strategies coupled with financing strategies.
- Engage SMEs in policy development through local and national and multi-sector platforms and peer-to-peer networks.
- Incentivise the legalization of informal businesses, coupled with social protection measures, to ensure more SMEs have access to disaster risk reduction measures and are aware of how their business may be contributing to or creating risks.

2. PROVIDE ACCESS TO FISCAL AND FINANCIAL PRODUCTS AND INSTRUMENTS TAILORED TO SMEs THAT SUPPORT A PREVENTION APPROACH TO BUSINESS MANAGEMENT, STRATEGY AND OPERATIONS:

- Tailor economic incentives, disaster risk financing and transfer instruments to accommodate the particular needs of SMEs.
- Incentivise SMEs to build back better by integrating disaster risk reduction into investment and lending decisions of financial institutions and government support programmes.
- Incentivise SMEs to implement nature-based solutions (NbS) to reduce the exposure and vulnerability to disaster risks of the business and the communities in which they operate.
- Promote insurance pricing and pre-requisites that incentivise SMEs to adopt risk prevention activities and measures.
- Provide support to microfinance institutions to incorporate prevention activities and measures.

[1] Across the OECD. OECD SME and Entrepreneurship Outlook 2019. Policy Highlights.

[2] Private Sector Alliance for Disaster Resilient Societies

[3] UNDRR-ISC (2020). Hazard Definition and Classification Review: Technical Report

[4] https://www.gatesfoundation.org/goalkeepers/report/2020-report/#GlobalPerspective (accessed 29 Sept 2020)

[5] This report focuses on prevention, as defined in Open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction, United Nations 2016.

3. COMBINE ENTERPRISE RISK MANAGEMENT AND BUSINESS CONTINUITY MANAGEMENT MECHANISMS TO BETTER INCORPORATE AND INCREASE THE FOCUS ON PREVENTION:

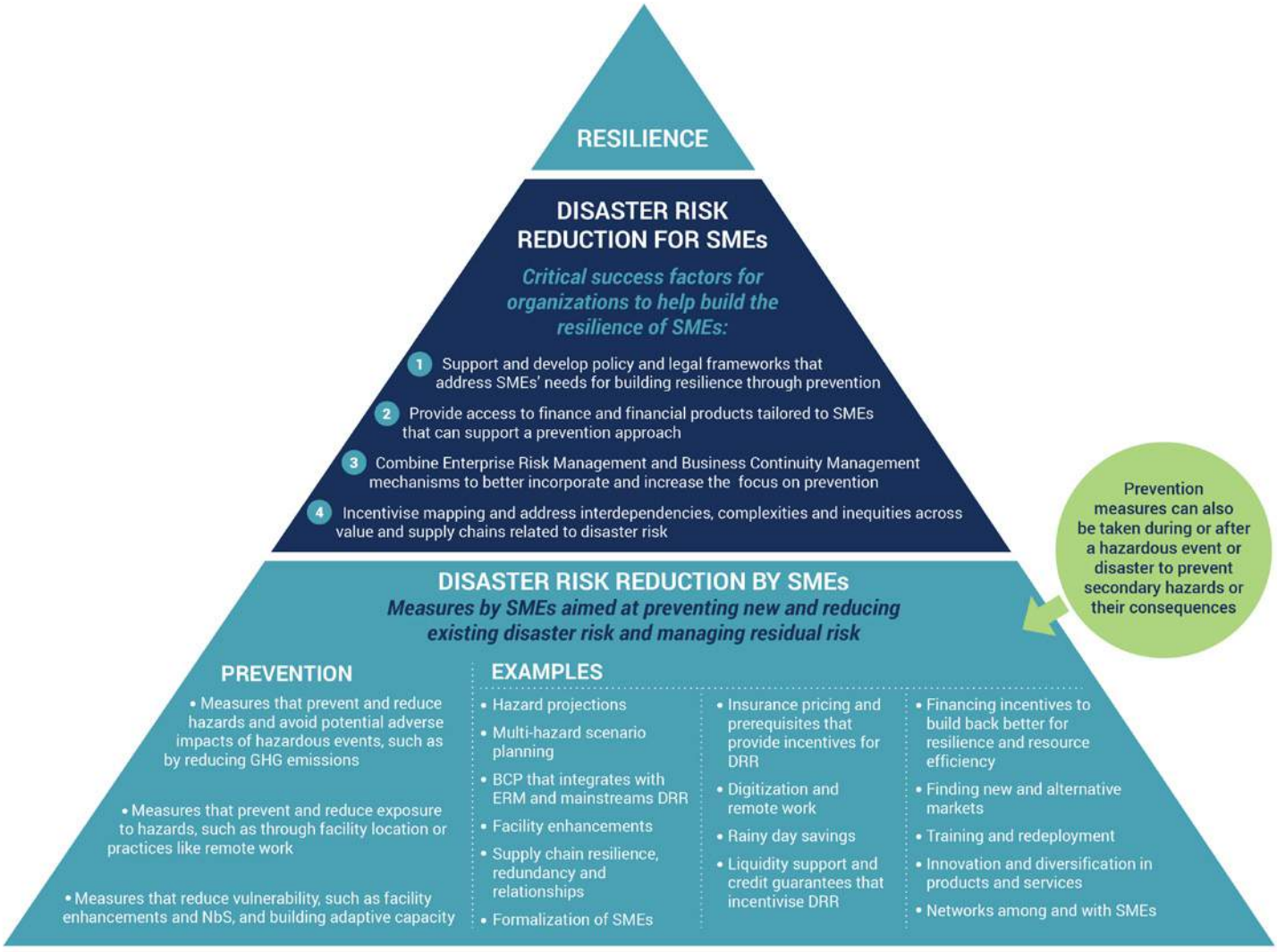
- Build capacity for integrated Enterprise Risk Management and Business Continuity Planning that mainstreams prevention and better connects risk analysis and reduction.
- Establish a common understanding of 'business resilience' and other disaster risk reduction terminology that applies to SMEs.
- Develop the capacity of SMEs to incorporate strategic foresight, multi-hazard scenario building and scenario planning to identify multiple and intersecting hazards and their cumulative impact.

4. MAP AND ADDRESS INTERDEPENDENCIES, COMPLEXITIES AND INEQUITIES IN SUPPLY AND VALUE CHAINS RELATED TO DISASTER RISK:

- Incentivise those working with SMEs to build the capacity of SMEs to map and stress-test their supply and value chains
- Enhance collaboration among stakeholders within supply and value chains and across sectors to reduce exposure and vulnerability to disaster risks.

As a result of this guidance, UNDRR will examine how risks are distributed across SMEs in different sectors, geographies and value chains, to develop resources and approaches that build the resilience of SMEs through disaster risk reduction.

Figure 1: Summary Framework for building the resilience of SMEs through Disaster Risk Reduction



"SMEs have a key role to maintain sustainable food systems, add value and create jobs. However, they are being confronted with a whole new set of risks including those of climate change and the COVID-19 pandemic. We must ensure that these risks are incorporated in both global and local policy making while at the same time continue to support competitiveness. ITC welcomes this report published by UN Office for Disaster Risk Reduction (UNDRR) which recognises that all stakeholders across government, private sector and NGOs must work together in alliances to enable transformative and resilient change for good."

Anders Aeroe,
Director Enterprises and Institutions,
International Trade Centre (ITC)

"As the Caribbean is prone to the occurrence of various types of hazards, this report provides great insight into how to support SMEs in being more resilient. I believe that this is extremely valuable in contributing to the work of the ARISE networks, Chambers of Commerce and other support organisations in the Caribbean and around the world. As we continue to work towards the resilience of SMEs, the best practices shared and presented in the report, if implemented, will support the prevention of some similar disasters that we have faced in the past."

Lizra Fabien,
ARISE Network of Chambers of Commerce
from the Caribbean Community (CARICHAM)

"ICMIF welcomes this timely report by UN Office for Disaster Risk Reduction (UNDRR) on Building Resilience of SMEs to Disasters with a clear focus on prevention. The insurance industry should play a pivotal role in tackling the risks faced by SMEs, by helping them absorb shocks, build assets, and manage and prevent risks. Many SMEs find self-help mutual solutions to support each other. This is how many of the mutual insurers started in Europe from the 17th century onwards, of which a number are now the largest and most admired insurers in their countries. We are now seeing this growth being replicated in the emerging markets where trust created in a community leads to risk pooling to help each other, which leads in turn to education about risk and risk prevention and mitigation strategies being developed in these communities. An excellent example of this would be CARD MBA in the Philippines as highlighted in the Cambridge Institute for Sustainable Leadership (CISL) report, Mutual microinsurance and the Sustainable Development Goals: An impact assessment after Typhoon Haiyan, published in July 2019. Whilst mutual insurance solutions are not the only answer, they have a long track record of success globally where trust and education lead to better risk management and prevention – because at the end of the day no business wants to make a claim, they just want to grow their businesses, knowing that they have a safety net should they need it."

Shaun Tarbuck,
Chief Executive, ICMIF (International Cooperative and Mutual Insurance Federation)

"The path to a resilient recovery from the current crisis will be not be simple, but a key area of priority must be a greater understanding of the challenges faced by SMEs, and the development of a suite of coherent policies that provide them with appropriate support and help to build business resilience. Only in doing so, will we be able to squarely address the three fundamental fragilities that have been exposed by the COVID-19 pandemic – economic exclusion, social inequality and environmental degradation – and to more thoughtfully manage global risks. ICC is committed to playing a leading role in these efforts through our Save Our SMEs campaign and the SME Climate Hub, including the recently launched "1.5°C Supply Chain Leaders" group in which large international companies commit to including climate-related targets and performance in their supplier purchasing criteria, and to work hand in hand with the SMEs in their supply chain to curb emissions and build resilience.

The abrupt halting of economic activity triggered by COVID-19 has to some extent led to a rethinking of global value chains. Governments and businesses alike are focused on improving their resilience in the face of further possible unsynchronised shocks. Many of the risks posed by the current global economic downturn, supply chain challenges and policy interventions designed to move production will inevitably fall on SMEs. With this in mind, ICC's Save Our SMEs campaign calls for governments to design interventions to focus on small businesses and the two billion workers employed by them in the real economy, as well as for multinational companies to protect smaller businesses that are part of their value chains. The SME Climate Hub will work to provide tools and resources for SMEs to help build climate resilience.

The need for enhanced collaboration, and tools for SMEs, is highlighted in the global report on Building Resilience of SMEs Through Disaster Risk Reduction developed by the UN Office for Disaster Risk Reduction (UNDRR), a partner of the ICC. ICC welcomes this report and looks forward to collaborating with UNDRR and its partners in its implementation."

John Denton,
Secretary General, International Chambers of Commerce

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ACRONYMS

BCM	Business Continuity Management
BCP	Business Continuity Planning
CBI	Connecting Business Initiative
ERM	Enterprise Risk Management
FBDRC	Fiji Business Disaster Resilience Council
GAR	Global Assessment Report on Disaster Risk Reduction
GCA	Global Center on Adaptation
GDP	Gross Domestic Product
GVC	Global Value Chain
ICC	International Chamber of Commerce
IFC	International Finance Corporation
ILO	International Labour Organization
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
MFI	Microfinance Institution
MFP	Microfinance Provider
MSMEs	Micro, Small and Medium Enterprises
NAPs	National Adaptation Plans
NbS	Nature-based Solutions
ODI	Overseas Development Institute
OECD	Organization for Economic Corporation and Development
REDD	Reducing Emissions from Deforestation and Forest Degradation
SDGs	Sustainable Development Goals
SGB	Small and Growing Business
SMEs	Small and Medium Enterprises
SMFEs	Small and Medium Forest Enterprises
SMMEs	Small, Medium and Macro Enterprises
TCFD	Task Force on Climate-Related Financial Disclosure
UK	United Kingdom
UNDP	United Nations Development Program
UNDESA	United Nations Department for Economic and Social Affairs
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP DTU	United Nations Environmental Program Danish Technical University
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations Office for International Strategy for Disaster Reduction (now UNDRR)
VAT	Value Added Tax
WEF	World Economic Forum
WRI	World Resource Institute
WTO	World Trade Organization

1. INTRODUCTION AND SCOPE

The Sendai Framework for Disaster Risk Reduction (The Sendai Framework) was signed by 196 Member States of the United Nations in 2015 with a goal to "…prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience." (UN 2015a, para 17) The Sendai Framework highlights that building resilience requires public and private collaboration. Paragraph 36(c) specifically stresses the role of the private and financial sector. It calls for integrating disaster risk management, including business continuity, into business models and practices through disaster-risk-informed investments, especially in micro, small and medium-sized enterprises. The Sendai Framework also serves to support implementation of the 2030 Agenda for Sustainable Development and its 17 global Sustainable Development Goals, or SDGs (UN 2015b), including SDG 13 on Climate Action and related targets under the Paris Agreement (UN 2015c).

Small and medium size enterprises (SMEs), including micro SMEs, play a critical role in preventing and reducing risk, building resilience and achieving the SDGs. Representing up to 99% of firms in the economy of many countries (OECD 2019), the ability of SMEs to reduce disaster risks by taking prevention measures is important not only for their own competitiveness and sustainability, but also for ensuring community resilience and wellbeing. The critical role of SMEs in the global marketplace also makes them a cornerstone in functioning supply chains and trade systems, and often though indirectly, for political, financial and social stability. This fact has been highlighted by the ongoing COVID-19 crisis and its cascading effects on SMEs, the communities and local markets around them, and the global economy and financial system within which they operate.

The focus on prevention is essential. While being prepared for, able to respond to, and recover effectively from any disaster is crucial for disaster management, activities and measures that can contribute to preventing the creation of new risks and reducing existing risks across multiple hazard clusters is essential for accelerating progress toward the 2030 Agenda for Sustainable Development and the Sustainable Development Goals.

We therefore need to urgently examine the resilience of SMEs, both in recognition of their particular vulnerabilities, but also as important catalysts in shifting from disaster response and recovery to prevention and risk reduction. The trend of growing risk inequality among those countries, communities, households and businesses that have only limited opportunities to reduce their risks and strengthen their resilience (GAR 2015) also points to the need to improve the capacity to develop and implement risk prevention measures. Challenges include the limited research and expertise available in this area, as compared to larger companies. Moreover, when the case of SME resilience is addressed, it is usually in the context of short-term response and recovery, namely through Business Continuity Planning. This, though important, covers only a part of disaster risk reduction and resilience building. More proactive, long-term and ex ante interventions, such as the role of risk-informed investment and resilience infrastructure, has received only limited attention to date within the context of SMEs.

AIM OF THIS GUIDANCE

The United Nations Office for Disaster Risk Reduction (UNDRR) is the mandated focal point for the Sendai Framework and aims to coordinate, trigger and incentivise action with partners who work directly with SMEs on prevention. The aim of this guidance by UNDRR is to provide support for how to build the resilience of SMEs to multiple hazards, enabling SMEs to be sustainable and competitive in the long run by reducing disaster risks, and specifically through risk prevention, i.e. activities and measures that help SMEs to "avoid existing and new disaster risks…while certain disaster risks cannot be eliminated, prevention aims at reducing vulnerability and exposure (UN 2016)," as outlined in Figure 2.

The findings and recommendations contained herein are directed at the organizations and associations that represent, support and work with SMEs, including governments and non-governmental organizations.

Figure 2: "Innovation curve" - from destructive to regenerative approaches

Source: GAR 2019

This guidance collates evidence on SMEs' awareness of risk and risk perception, applied coping and risk management strategies, and potential constraints to implement long-term prevention measures. It builds on the results of an SME survey undertaken by UNDRR between November 2019 and March 2020, covering most of the Americas and South Asia, with complementary evidence from Africa and Europe, and a wide literature review. Note that it is likely that respondents to the UNDRR 2020 survey are interested and active in risk prevention, or could be part of ARISE, the Private Sector Alliance for Disaster Resilient Societies. This may have resulted in inherent bias in response to the questions.

A NOTE ON TERMINOLOGY AND SCOPE:

The technical definition of SMEs in terms of number of employees, assets and sales vary from country to country. In this guidance, SMEs are defined as per the Organization for Economic Cooperation and Development (OECD) definition as organisations with fewer than 250 employees. This definition is also supported by a study from the International Finance Corporation (IFC) on SME definitions reflecting 155 economies around the world (IFC, 2014). The term 'SME' is used throughout this guidance and includes micro enterprises.

This guidance does not cover the informal sector; however, it is recognised that in many developing countries the majority of SMEs remain in the informal sector and this is a key source of risk. This guidance provides the evidence base to enable the sustained operation of SMEs as an important part of incentivising the formalization of the informal economy.

The table below presents some key terminology related to disaster risk reduction along with examples of prevention activities and measures that can help SMEs avoid the impacts of hazardous events and reduce their exposure and vulnerability, thereby increasing competitiveness, sustainability and resilience. It is recognized throughout this guidance that some activities and measures directed at disaster preparedness, response and recovery can also contribute to prevention, and so these are covered to provide important insight for building SME resilience.

Table 1. Key terminology and examples of activities and measures with the potential to help SMEs prevent multi-hazard disaster risks by avoiding hazards and reducing exposure and vulnerability.

KEY TERMINOLOGY OF DISASTER RISK REDUCTION (BASED ON UNITED NATIONS 2016)

RESILIENCE

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.

DISASTER RISK REDUCTION

Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development. Disaster risk reduction is the policy objective of disaster risk management.

DISASTER RISK MANAGEMENT

Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses.

PREVENTION

Activities and measures to avoid existing and new disaster risks. While certain disaster risks cannot be eliminated, prevention aims at reducing vulnerability and exposure in such contexts where, as a result, the risk of disaster is removed. Examples of prevention activities and measures include:

- Measures that avoid potential adverse impacts of hazardous events, such as by reducing GHG emissions
- Measures that reduce exposure to hazards, such as through facility location or practices like remote work
- Measures that reduce vulnerability, such as through facility enhancements and NbS, and that build adaptive capacity, such as through digitization

PREPAREDNESS

The knowledge and capacities to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current disasters. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning.

Example activities and measures supporting a prevention approach:

- Hazard forecasting
- Multi-hazard scenario planning, including to avoid risk creation
- Integrated Enterprise Risk Management and Business Continuity Planning that addresses prevention
- Building enhancements and supplies for hazard resilience
- Supply chain resilience, redundancy and relationship building
- Formalization of informal SMEs

RESPONSE

Actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected. Effective, efficient and timely response relies on disaster risk-informed preparedness measures.

Example activities and measures supporting a prevention approach:

- Digitalization and remote work
- Rainy day savings incentives
- Liquidity support and credit guarantees that incentivise investment in prevention, including for microfinance institutions
- Networking among and with SMEs

RECOVERY

The restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster affected community or society, aligning with the principles of sustainable development and "build back better," to avoid or reduce future disaster risk.

Example activities and measures supporting a prevention approach:

- Financing incentives to build back better (for resilience and resource efficiency)
- Finding new and alternative markets
- Training and redeployment
- Innovation and diversification in products/services and operations
- Insurance pricing and pre-requisites that incentivise prevention

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Hazard is defined as "a process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. " (United Nations 2016) Hazards may be single, sequential or combined in their origin and effects.

Based on a scientific study on the classification of Sendai Framework hazards, there are eight hazard clusters (UNDRR-ISC 2020):

- **Meteorological and hydrological hazards**
- **Extraterrestrial hazards**
- **Geohazards**
- **Environmental hazards**
- **Chemical hazards**
- **Biological hazards**
- **Technological hazards**
- **Societal hazards**

A **disaster** is "a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. " (United Nations 2016). Based on these terms **disaster risk** is defined as "the potential loss of life, injury, or destroyed or damaged assets which occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity. "

A note about the term **mitigation**: in the context of disaster risk reduction, mitigation refers to "the lessening or minimizing of the adverse impacts of a hazardous event." (United Nations 2016). In the business community, risk mitigation typically refers to "a systematic reduction in the extent of exposure to a risk and/or the likelihood of its occurrence. [also called risk reduction]" (Business Dictionary 2020) and can involve actions related to risk retention/acceptance, risk avoidance, risk sharing, risk transfer and risk reduction/limitation (Investopedia 2020). In climate change discourse, the term mitigation involves "actions that reduce the rate of climate change" (IPCC Working Group III 2020).

Other key terms are summarized in Annex 1: Key Terminology.

2. CONTEXT – IMPORTANCE OF SMEs IN ECONOMIES

Micro, small and medium enterprises (SMEs) represent a significant part of all economies. Globally,[6] there are an estimated 162.8 million registered SMEs, of which around 96.3 million are in emerging markets (IFC, 2014). According to World Bank Group estimates that number increases to 400-500 million SMEs globally, when unregistered SMEs are included (World Bank Group, 2017). However, SMEs are not only important in terms of number of firms but also for their contribution to GDP and employment. SMEs account for 90% of all firms and 50% of GDP in most countries worldwide (UNISDR, PWC 2016)[7]. These businesses account for more than two-thirds of all jobs and are an essential job creation engine. The "in-and-out" dynamic nature of SMEs allows them to innovate, eventually succeed and generate more stable employment.[8]

In all countries, but particularly low-and-middle-income countries, SMEs are a critical part of the economy, representing up to 90% of all businesses and are fundamental to inclusive and equitable development (UNEP DTU Partnership, 2018). SMEs also contribute to ensuring community and social resilience due to their role in promoting economic growth through improved productivity, innovation, and social mobility (IPA 2020).[9] SMEs also play a role in improving social integration,[10] due to the close relations SMEs have with employees and local communities (UNFCCC 2017, Surminski 2016).

Women-led SMEs are important engines of economic growth and equality. The World Bank reports that female-run enterprises are growing all over the world and make significant contributions to economic growth and poverty reduction. For example, in the United States women-owned firms are growing at double the rate of all other firms, and in developing countries there are upwards of 10 million SMEs with at least one female owner (World Bank 2020).

However, the impact of natural and human-made disasters on SMEs is one of the least explored areas in disaster risk reduction in low-and-middle-income countries (UNDP 2013). Most empirical analyses have followed anecdotal evidence and national case studies, including surveys, while very few systematic attempts have been made to analyse the impact at a global scale. There is little evidence on failed SMEs and to what extent disasters were drivers of this failure in developing countries (UNDP 2013), nor the impacts on the wider economy. Research into business resilience has focused mostly on large corporations, with conclusions being extrapolated to the SME context (ERC 2018).

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[6] The Micro, Small, and Medium Enterprise Country Indicators (MSME-CI) data from 155 economies shows that globally there are about 28.7 million formal SMEs, with about 18.6 million located in emerging markets; as well as about 131.4 million formal microenterprises, with emerging markets having about 77.0 million (TIPS & CANARI 2019).

[7] According to the data provided by the International Council for Small Business (ICSB), formal and informal MSMEs make up over 90% of all firms and account on average for 60-70% of total employment and 50% of GDP.

[8] SMEs create an up-or-out dynamic in the economy. Even though many small firms close in less than five years, they create a churn in the market where competition, new ideas, experience, etc. are fostered (Acs and Mueller 2008; Haltiwanger, Jarmin, and Miranda 2013; Hurst and Pugsley 2011; Mazzucato 2013).

[9] SMEs open doors for vulnerable stakeholders such as women and youth by allowing them to participate in the market. At the same time, SMEs are also thought to be more responsive to innovation and adaptable to new trends.

[10] SMEs open doors for vulnerable stakeholders such as women and youth by allowing them to participate in the market. At the same time, SMEs are also thought to be more responsive to innovation and adaptable to new trends.

CHALLENGES THAT SMEs FACE IN DISASTER RISK REDUCTION

Observations from the results of UNDRR's survey and the literature review suggest there are several challenges facing SMEs in relation to disaster risk reduction. These challenges cluster around five areas:

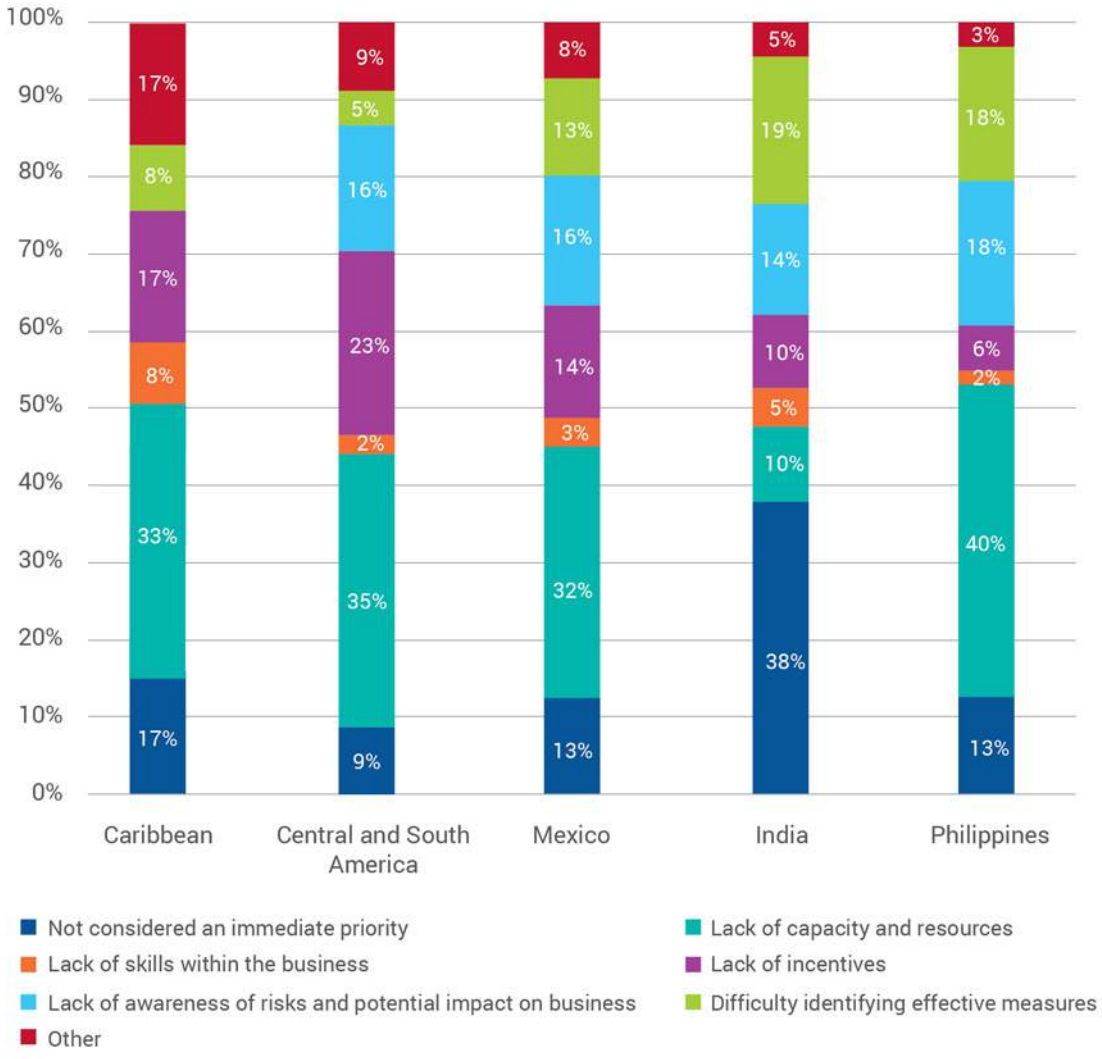
1. Inherent composition (i.e. size)
2. Access to financial resources and products
3. Awareness of risks and risk creation (including multi-hazard)
4. Business strategy challenges with a tendency to focus on response and recovery, rather than risk reduction and prevention
5. Operational aspects, such as vulnerability within global value and supply chains

1. INHERENT COMPOSITION

SME inherent characteristics, such as their size, limited resources, competition, industry, and market conditions, can limit their ability to grow and scale up (GCA, 2019b). Their limited ability to deal with risks, for example those driven by climate change, and their low adaptive capacity highlights their vulnerability to disasters (Red Cross, 2019; Wedawatta, Ingirige and Amaratunga, 2010; Crick, Gannon, et al., 2018). SMEs struggle to effectively adapt to risks such as climate change; this becomes particularly acute for microenterprises, globally only 28% have a climate strategy or plan in place (UNFCCC 2017).

Whilst there are regional differences, at the global level the UNDRR's survey[11] identified the lack of capacity and resources as the top obstacle preventing SMEs investing in measures to reduce disaster risks, followed by difficulty identifying effective measures, and lack of awareness of risks and potential impacts on business, amongst others.

Figure 2. What are some of the main obstacles that are preventing your business in investing in the measures to protect the business from disasters?



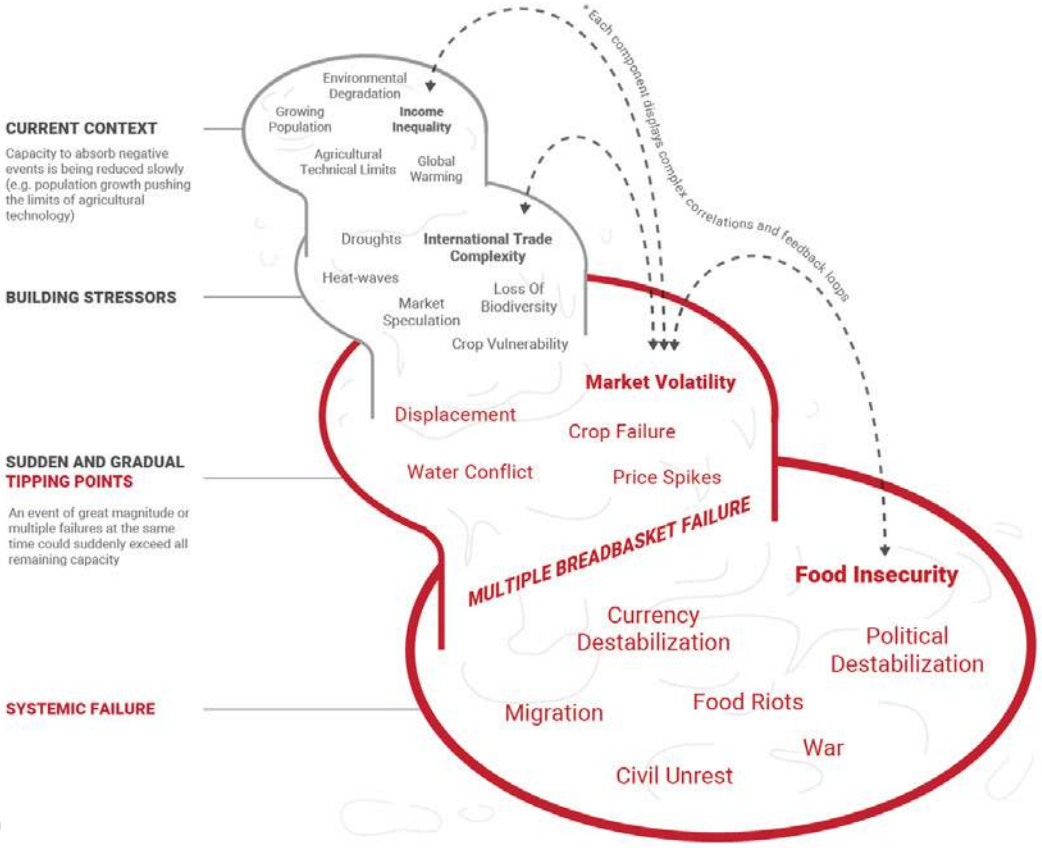
[11] Note that with regard to all references to the 2020 UNDRR survey, 'Central and South America' refers only to those countries from which survey responses were received: Colombia, Dominican Republic, Argentina, Chile, Costa Rica, Peru, Ecuador, Guatemala, Venezuela, El Salvador, Honduras and Panama. Reponses from this region were grouped, as disaggregation to country level would not have been representative.

Given their inherent characteristics, SMEs are disproportionately affected by disasters that have extensive economic implications[12]. In Pakistan, SMEs bore the brunt of the US$10 billion lost in the 2010 floods (APDC et al., 2015). In 2009, the destruction by Typhoon Ketsana caused the Philippine economy an estimated total loss of US$246 million. Of this, a loss of US$157 million was sustained by the agricultural sector, where SMEs are common, many of them already being in a disadvantaged economic position (APDC et al., 2015). The effects of COVID-19 on SMEs are also beginning to materialize. In summarizing the results of 41 national surveys on the pandemic's impact on SMEs, the OECD estimates that half of SMEs fear going out of business within three months without further support (OECD 2020a). In the second quarter of 2020, the ILO Monitor reported that working-hour losses due to the pandemic equated to 480 million jobs lost globally (ILO 2020a). A survey conducted by the International Trade Centre (ITC) found that nearly two-thirds of SMEs were strongly affected compared to about 40% for large companies (ITC 2020). Many of the sectors most at risk of the economic impacts of COVID-19 are dominated by small firms of fewer than 10 persons (OECD 2020a). The disproportionate impacts may run even deeper: recent data analysis point to a massive increase in the youth unemployment rate, particularly for young women (ILO 2020b); and youth-led and also women-led firms are at greater risk of being affected by the pandemic (ITC 2020).

It is worth noting that disasters can also provide short-term financial opportunities for some companies, large and small. For example, 10% of firms in agri-food processing experienced an increase in sales due to COVID-19 (ITC 2020); and sales increased for firms in sectors related to video conferencing and gaming, cleaning products, home fitness products, personal protective equipment, and online retail (CTV News 2020).

Whilst full extent of the pandemic's impact is yet unknown, its consequences may decimate SMEs. COVID-19 has provided a stark reminder of the systemic and cascading nature of risk. Present and future approaches to managing risk require an understanding of the systemic nature of risk, a point that had been highlighted before the COVID-19 pandemic struck (GAR 2019). Systemic risk "is understood to have a latent or cumulative potential to negatively impact overall system performance, when some characteristics of the system change," an example of which is illustrated in the Figure 3 below.

Figure 3. Systemic nature of risk illustrated in multiple breadbasket failure (e.g. climate shocks and consequent crop failure in one of the global cereal breadbaskets might have knock-on effects on the global agricultural market. The turbulences are exacerbated if more than one of the main crop-producing regions suffers from losses simultaneously – a scenario often described as multiple breadbasket failure.



Source: GAR 2019

[12] UNDRR recognises the implications go far beyond economic implications, and include a wide array of social, health, education and equity implications; however, for the scope of this guidance, the focus on the economic contribution of and impact on SMEs.

The impact of COVID-19 on value chains illustrates the nature of cascading risks: whilst the full impact on SMEs is yet unknown, the loss of income puts pressure on purchasing power, which creates a negative feedback loop. COVID-19 highlights the precarious systems upon which trade, food, energy, transportation, and social safety nets rely (GAR 2019). During COVID-19, impacts on SMEs have been observed on both the supply and demand side of the economy: on the supply side, firms describe not just interruptions in supply chains, but a reduction in labour supply due to workers either being unwell or needing to look after dependents and the restricted movement of workers (OECD 2020a). The ITC reports that in Asia alone, exports of industrial inputs are expected to drop by US$71.4 billion due mostly to lockdowns in China and the EU (ITC 2020). On the supply side, the OECD (2020a) notes that "over the longer term, it may be difficult for many SMEs to re-build connections with former networks, once supply chains are disrupted and former partners have set up new alliances and business contracts." On the demand side, the impact is reflected in a dramatic and sudden loss of demand and revenue, severely affecting the ability of SMEs to function and causing liquidity shortages (OECD 2020a). The ILO's COVID-19 Monitor observed that the economic sectors impacted the most severely to date include: wholesale and retail trade, including motor vehicle repair; manufacturing; real estate, business and administration activities; accommodation and food services; transport, storage and communication; arts, entertainment and recreation (ILO 2020b).

2. ACCESS TO FINANCIAL RESOURCES AND PRODUCTS

Opportunities to implement disaster risk reduction exist but financial barriers and insufficient market access hinder the ability of SMEs to exploit them. In the case of SMEs in Kenya and Senegal, financial barriers and insufficient market access increases the probability of business contraction (Crick et.al 2017, 2018). In the Arab States, an IMF study showed that there is a lack of information for SMEs to access financial services which, in turn, has hindered their growth (IMF 2019). For insurance products specifically, there is a lack of coverage among SMEs in developing countries, despite their important role in improving business resilience and productivity and developing the demand and supply of capital (Thom et al., 2019). Among the reasons cited for the lack of penetration of insurance markets in some developing countries are "distribution challenges in reaching small businesses, a lack of a sector value chain appreciation among insurers and a mismatch between the product offering and the tailored needs of SMEs."

Limited financial capital, savings and liquidity impacts the ability of SMEs to recover after disaster hits. Following a disaster many SMEs never recover – estimated to be 40-60% in the US (Financial Services and General Government Appropriations for 2014). During COVID-19, SMEs encountered difficulties related to supply chains, managing the exposure of their employees and recurring bills for rents, loans, utilities, etc. Without adequate and/or timely support, a number of SMEs may not survive, as once a SME closes, it is more difficult to re-open for business (Gans 2020).

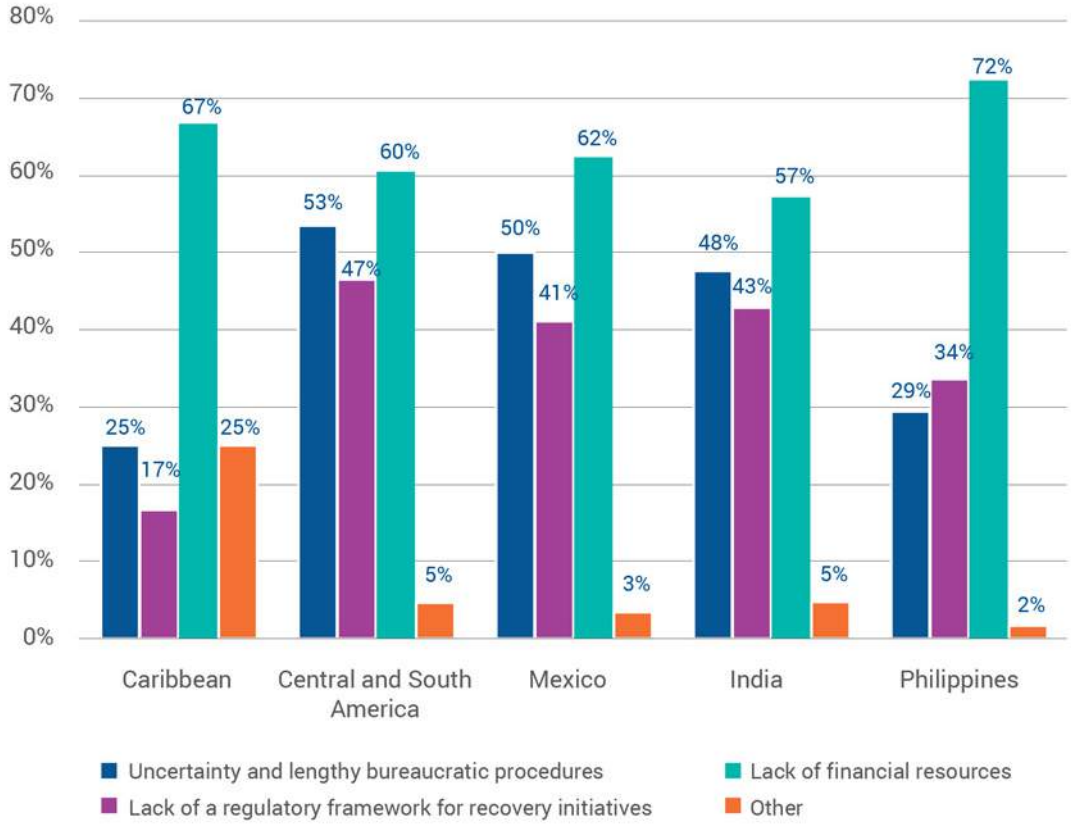
SMEs suffer greater impacts to their total business value in disasters than larger enterprises, due to their limited geographic range, lower likelihood of having taken preventive measures or lacking insurance for disaster-related losses (UNDP 2013). SMEs also tend to have fewer cash reserves or accessible funds through credit and loans, and therefore have a much lower tolerance for disruption, employee or customer loss, and reputation and market share loss in the aftermath of disasters (PWC 2013, IRP 2016, UNDP 2013).

For example, in the context of the COVID-19 pandemic, the SME Finance Forum facilitated discussions among member companies early in the crisis to better understand impacts and how to cope and build resilience (SME Finance Forum 2020). It was observed that illiquidity (i.e. assets not readily convertible into cash) was as dangerous as insolvency (i.e. inability to satisfy creditors).[13] With lockdown measures causing a squeeze on cash flow, the forum highlighted that SMEs typically have less than 27 days of cash on hand and needed rapid capital injections to avert a liquidity crisis.

UNDRR's survey echoes the literature review findings, indicating that across the regions, the major obstacle which delays businesses recovering following a disaster is a lack of financial resources, as indicated in the figure below.

[13] The liquidity issue is a global challenge as the COVID-19 pandemic has proven. A survey in the United States revealed that three-quarters of small businesses had two months or less of cash reserves (Bartik et al. 2020, in OECD 2020a). In a study on the liquidity of almost one million European firms across 16 countries, the OECD estimated that without policy intervention, 38% of firms would turn illiquid within three months (OECD 2020a). For the small and growing business (SGB) sector in particular, a survey by Startup Genome reported that only 60% of start-ups based in emerging markets have more than three months of cash runway in the bank (ANDE and Dalberg 2020, in Startup Genome 2020). Alarmingly, member countries of the Aspen Network of Development Entrepreneurs (ANDE) report that 42% of the SGBs they support globally are at risk of failing in the next six months (ANDE and Dalberg 2020, in Startup Genome 2020), with data in some countries revealing that up to 6% of SGBs have already shut down permanently as of April 2020 due to the pandemic (ANDE and Dalberg 2020).

Figure 4. What are some of the bottlenecks that can delay your business from recovering following a disaster?



SMEs tend to have limited access to risk financing products that are affordable and flexible enough due to weak policies, financial and economic barriers (i-Prepare Business, 2016). For example, the COVID-19 pandemic is causing a microcredit crunch across the developing world, highlighting the need to strengthen the resilience of the sector (The Economist 2020). Today, microfinance institutions (MFIs) are worth US$124 billion globally, (The Economist 2020) highlighting that the young industry is "in trouble" in the midst of the pandemic, describing that in-person payments to MFIs have plummeted, yet the banks and investors which provide MFIs with funds still expect money. Like many SMEs, current data indicate that almost one-third of MFIs do not have enough cash to meet outflows in the third quarter of 2020. The industry has grown in complexity to include insurance and leasing for example, and regulations have "struggled to keep up." Consequently, this regulatory gap has "lured for-profit lenders, some of which demand land titles as collateral, charge extortionate rates and use heavy-handed tactics to collect payments" (The Economist 2020).

Financial products can also be poorly suited to SME investments, possibly because funding is difficult for intermediaries and SMEs to access, or there are high costs and high risks associated with SME lending (Dalberg 2015).[14] The Arab States experience one of the largest gaps in the world in terms of access to financial resources for SMEs; large firms tend to take the bulk (IMF 2018, IMF 2019). As a result, in 2015, the Green Climate Fund (GCF) recognised the importance of engaging SMEs and approved a US$200 million SME pilot programme of which US$100 million was to be allocated to "deploy financial solutions for MSMEs in support of mitigation and adaptation activities in developing countries" (Green Climate Fund 2019).[15] Similarly, insurance mechanisms for risk transfer are limited because in most cases they cover direct damage caused by disaster but do not cover indirect damage by business disruption and associated liabilities.

[14] Increasing MSME access to climate finance (2015) https://cdkn.org/wp-content/uploads/2015/10/CDKN-Dalberg-Access-to-Finance-for-MSMEs_-final-1.pdf

[15] Review of the initial modalities for the Private Sector Facility – Review of the micro, small and medium-sized enterprise pilot programme 2019 https://www.greenclimate.fund/sites/default/files/document/gcf-b23-12-add04.pdf

3. AWARENESS OF RISKS AND RISK CREATION (INCLUDING MULTI-HAZARD)

Where measures may exist to invest in resilience, there is a lack of awareness of such measures suggesting that improvements in communication between governments and SMEs are important. In Europe, a UNDRR survey conducted in Italy[16] in 2019 pointed to a lack of DRR-related information for SMEs: 79% of SMEs engaged in the study stated they do not receive DRR-related information from their local governments or other sources. The 2019-20 UNDRR survey shows that a high percentage of respondents across regions are unaware of any incentives, despite measures being in place e.g. tax rebates, easy access to credit, reduction of insurance premiums that are provided by the national/local government or other stakeholders, as indicated in the figure below.

Figure 5. Are there any incentives (e.g. tax rebate, easy access to credit, reduction of insurance premiums) that the national/local government or different stakeholder provides, if you invest in resilience?

SMEs are also exposed to hidden risks when they are linked to or dependent upon activities and actors that fall outside the purview and scope of risk management legislation, regulation, and standards. Registered SMEs can be dependent on the informal economy to undertake activities in the supply and value chains, or reliant upon informal coping measures, such as reliance on friends or family of SME owners and operators for economic support to their business. As a result of the level of SME dependence on the informal economy, these SMEs may be more exposed to risks, through a lack of compliance with norms and regulations, coupled with a lack of social protection for their employees (UNDP 2013, KPMG 2016).

There are different perceptions of the top risks to SMEs, reflecting their heterogeneous nature and the fact that risk awareness and coping capacities vary widely and can depend upon the sector, geographic location, and wider economic and social contexts. The UNDRR survey identifies weather events[17] as the most likely to have an impact on SMEs in all but one region, as the diagram below shows. However, SMEs are aware of the multiple risks that they face: the graph below illustrates the regional differences in perception of future hazards with earthquakes and cyber-attacks also being highlighted.[18]

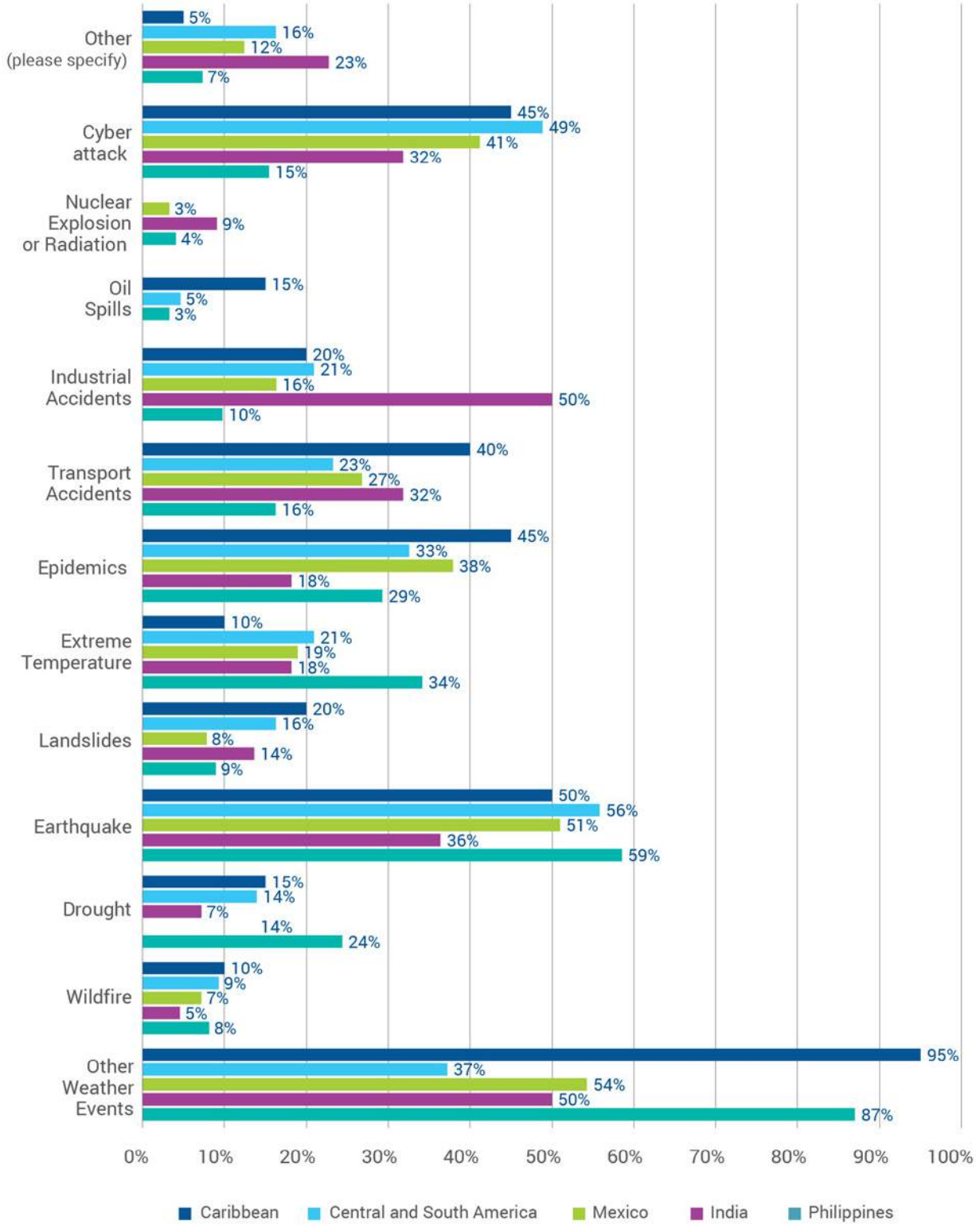
[16] Where relevant, data was also included in this guidance from a UNDRR survey conducted in 2019 on SME resilience in Italy (278 responses), where questions were directly comparable.

[17] Other Weather Events (Storms/Hurricane/Typhoons/Cyclones).

[18] The survey further included oil spills and nuclear explosions and radiations: Caribbean (15%, 0%), Philippines (0%, 4%), Mexico (3%, 3%), India (0%, 9%) and LATAM (5%, 0%)

Interestingly and in the context of COVID-19, both the Business Continuity Institute survey (2020)[19] and a 2020 WEF[20] report positioned the threat of infectious disease as second last and last (30 out of 30), respectively. In the UNDRR survey, administered before the Covid-19 pandemic started,[21] it appears that concerns about infectious diseases were emerging. In the Caribbean, 45% of respondents considered epidemics as likely to affect their business in the future; with 38% in Mexico; 33% in Latin America; 29% in the Philippines and 18% in India.

Figure 6. Which of the hazard(s) below is most likely to have an impact on your business in the future?



[19] Business Continuity Institute (2020), BCI Horizon Scan Report 2020.

[20] Since 2005, the World Economic Forum has created, assessed, and monitored 30 global risks using a survey of about 1000 major global stakeholders and players. The WEF definition of a global risk is "an uncertain event or condition that, if it occurs, can cause significant negative impact for several countries or industries within the next 10 years".

[21] This UNDRR survey ran from November 2019-March 2020.

Dealing with multiple hazards, both simultaneous and cascading hazards are important in building SME resilience.

Sequential and secondary hazards take on many forms, for example, a pandemic followed by a drought or flooding. Multiple hazards can occur simultaneously, cascadingly, or cumulatively over time, and taking into account the potential interrelated effects, as was recently experienced with a global supply driven, oil-price shock occurring simultaneously with the emergence of Covid-19 impacts (Advisor Perspectives 2020), or in the Pacific with Cyclone Harold in April 2020, or the Croatian earthquake in March, both occurring while the two countries were also managing the COVID-19 pandemic.

Cyber security is a key illustration of how risk can compound. Multiple studies indicate that SMEs are identified as a clear target of cyber-attacks, and they are less able to withstand such attacks: one study identified that 43% of SMEs are the target of cyber-attacks.[22] The current rush to digitise as part of the SME recovery and response to COVID-19 has increased the occurrence of cyber-attacks: one study estimates that spear-phishing attacks have increased seven-fold since the beginning of the pandemic (McKinsey 2020). The G20 has observed that ensuring digital security is an emerging area of policy innovation and cite examples of actions undertaken to help SMEs to strengthen digital security, including (G20 2020):

- **Japan:** Raising awareness throughout the supply chain and in SMEs of increasingly sophisticated cyber-attacks that are seeking to take advantage of the COVID-19 crisis.
- **Russia:** The Central Bank provided guidelines for financial organizations in terms of cyber security.
- **Turkey:** The National Computer Emergency Response Team has helped to address digital security concerns that have emerged in response to the COVID-19.

SMEs can also be a source of hazard and risk creation and accumulation – however there is a lack of data to quantify the extent of SMEs as sources of risk. Although the individual environmental footprint of SMEs may be low, they constitute most businesses, and their aggregate impact is considerable (OECD, 2015). This is particularly relevant to SMEs operating in certain sectors such as livestock farming, construction, metal finishing, waste treatment, food and drink industry, textile and leather manufacturing which have a significant environmental impact. However, there is a lack of data on the impact of SMEs on the environment or overall risk creation, apart from some studies that indicated that SMEs account for 60-70% of industrial pollution in Europe (Miller, K. et al., 2011) and 43% of all serious industrial pollution incidents in the UK (Blundel et al, 2011). This risk creation is exacerbated by the fact that, generally, SMEs are not monitored, for example as part of the due diligence by financing institutions.[23]

In the context of the COVID-19 pandemic, ecosystem encroachment, illegal wildlife trade and illegal wet markets are pathways for future pathogen transmission and thus potential future zoonoses (United Nations 2020, p.28). An April 2020 guest article on COVID-19 Stimulus Measures by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) highlighted that "rampant deforestation, uncontrolled expansion of agriculture, intensive farming, mining and infrastructure development, as well as the exploitation of wild species have created a 'perfect storm' for the spill over of diseases from wildlife to people (IPBES 2020, as cited in The Guardian 2020a)." SMEs are among the array of actors in these sectors, and so will have a role to play in reducing the risk of potential spill over of zoonotic diseases from biodiverse rich forest areas. Other research on the ecology and economics of pandemic prevention notes clear links between deforestation and virus emergence, "with forest bats the likely reservoirs of the Ebola, Sars and COVID-19 viruses, and tropical forest edges being a 'major launchpad' for new viruses infecting humans (Dobson et al., 2020, as cited in The Guardian 2020a)." Furthermore, "wildlife markets and the legal and illegal wildlife trade bring live and dead wild animals into contact with hunters, traders, consumers, and all those involved in this commerce" (Dobson et al., 2020; see also Webster 2004, Zhou et al., 2015).

Evidence for building resilience of SMEs tends to focus on the agriculture sector (PWC 2013), however with approximately 190 million SMEs in the trade and manufacturing sectors, they are also vulnerable and increasingly affected.[24] For example, the 2015 floods in India impacted SMEs in Tamil Nadu that supplied parts to large manufacturing and automobile sectors. The floods impacted both sectors directly, as 10,000 individual SMEs experienced damages and many were forced to close (KPMG 2016, Mercy Corps 2016). This led to downstream impacts in the supply chain globally.

[22] https://ibmsystemsmag.com/Power-Systems/02/2020/smb-target-of-cyberattacks

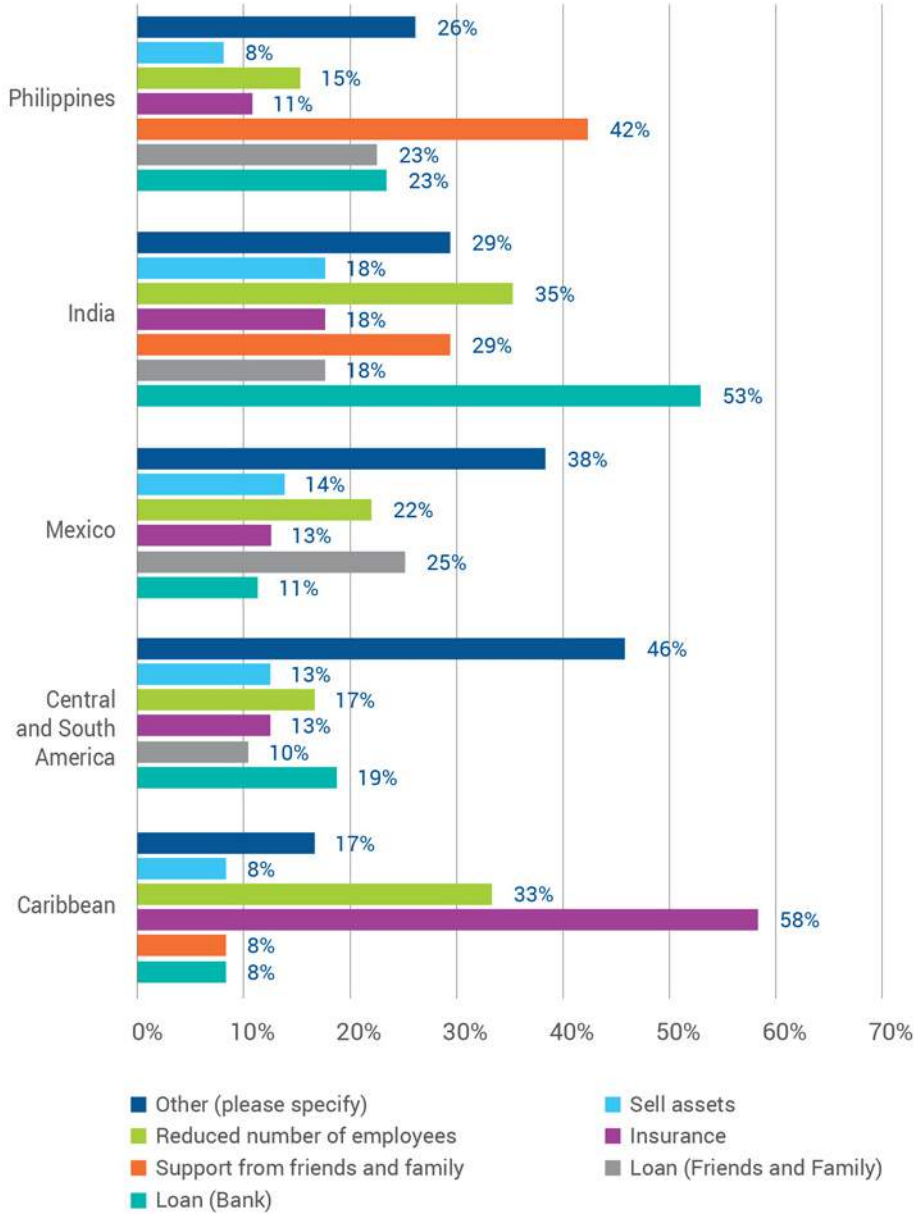
[23] https://firstforsustainability.org/risk-management/managing-environmental-and-social-risk-2_2/components-of-an-esms/environmental-and-social-due-diligence/due-diligence-for-small-and-medium-enterprises/

4. BUSINESS STRATEGY

A focus on response and recovery activities and measures alone can lead to business contraction. While SMEs employ a range of strategies to deal with risks (UNDP 2013), including risk analysis and management and maintaining business continuity ("sustainable adaptation"[25] or "business preservation"), where reactive strategies are implemented, that focus on recovery and response to overcome the worst impacts of a disaster, this can lead to a negative contraction in business activity ("unsustainable adaptation") (Crick et al., 2017).

SMEs tend to rely on personal savings, family, and informal financing to recover from disasters (i-Prepare Business, 2016). The UNDRR survey reflects a diverse set of response and recovery activities used by SMEs, including selling assets, support from family and friends and reducing the number of employees (see figure below). Related to the latter, the disaster response strategy of reducing the number of employees is applied by between 15% and 35% of SMEs, indicated in the responses to the UNDRR survey. This is consistent with surveys conducted in April 2020 on the impact of the COVID-19 pandemic on SMEs: 30% of SMEs across several Asian countries were expected to lay off 50% of their staff; and in the United Kingdom, 37% were expecting to furlough 75-100 % of their staff (in OECD 2020a).

Figure 7. How did you respond to impacts identified?



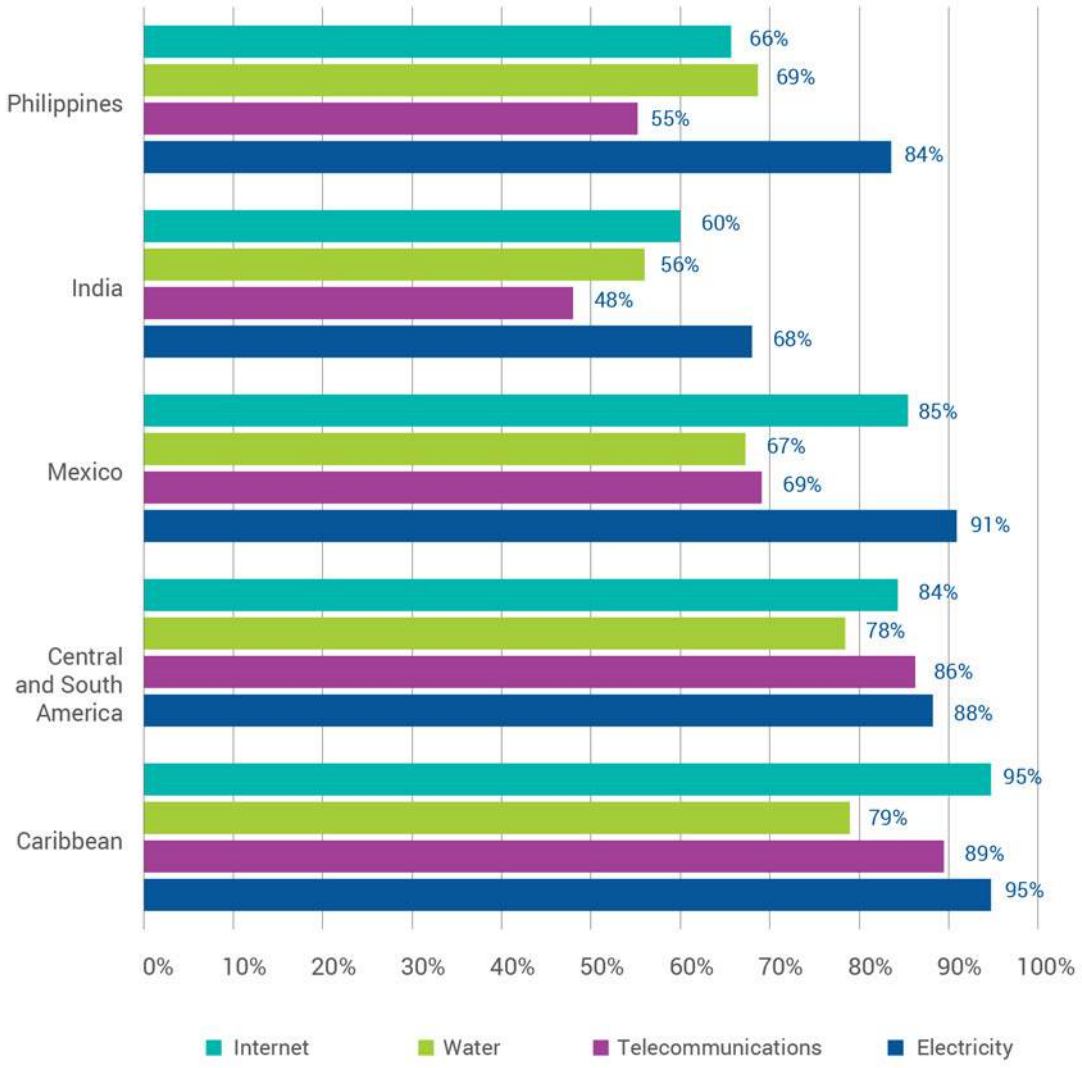
[24] The trade sector has the most MSMEs (140M), followed by agriculture (90M) and manufacturing (50M) Increasing MSME access to climate finance (2015) https://cdkn.org/wp-content/uploads/2015/10/CDKN-Dalberg-Access-to-Finance-for-MSMEs_-final-1.pdf (CDKN 2015)

[25] The trade sector has the most MSMEs (140M), followed by agriculture (90M) and manufacturing (50M) Increasing MSME access to climate finance (2015) https://cdkn.org/wp-content/uploads/2015/10/CDKN-Dalberg-Access-to-Finance-for-MSMEs_-final-1.pdf (CDKN 2015)

5. OPERATIONAL ASPECTS

Global value chains have become increasingly interconnected, complex and as such, increasingly hard to map, which in turn, increases risk. Research highlights that "the complexity of global industrial supply chains exponentially increases their risk," illustrated by an example in the auto-manufacturing sector: "on average, an auto manufacturer has around 250 tier-one suppliers, but the number proliferates to 18,000 across the full value chain." (McKinsey 2020). SMEs are also dependent on multiple utility sectors in order to operate; however the importance of different sectors varies across countries and regions (see figure below).

Figure 8. Which utility sector(s) do you need to operate?



Disasters affect SME operations both directly through impacts such as physical asset damage and indirectly through their supply and value chains. Whilst this guidance does not go into detail on direct impacts on critical infrastructure, or the crucial role of resilient infrastructure, this is an important topic for further research. Indirect impacts can amplify losses since they go beyond individual operations and can often be felt across companies, sectors, and countries due to the globalisation of value chains. The impacts of climate change and the current COVID-19 pandemic reveal the complexities and inequities that exist within value chains. In June 2020 the WTO reported on the impact of supply chain disruptions on SMEs across countries and sectors (WTO 2020). Specifically, the WTO observed that "supply chain disruptions may affect SMEs that are integrated into GVCs [global value chains] either through shortages of parts and intermediate goods or through shocks to the demand for trade in intermediate

goods produced by SMEs." As an example, in the Republic of Korea 72% of SMEs surveyed expected to be affected by the outbreak with half stating that they were unable to meet delivery dates due to factory closures in China. It was emphasized that supply chain disruptions varied across economies and sectors, disproportionately affecting sectors in which SMEs are highly integrated into GVCs such as in office equipment, electronics, chemicals, petroleum and plastic sectors. (WTO 2020).

Risks are unevenly distributed across supply chains: for example, risks to local livelihoods are particularly pronounced where global production depends on smallholder farmers. For example, smallholders account for 90% of global cocoa production, 80% of coffee production and 75% of cotton production (GCA 2020). Upstream suppliers are most often acutely affected, whilst downstream buyers, which can include large companies, can potentially shift sourcing to other locations, with "little recourse from the affected suppliers. This may be an effective short-term risk management strategy, however it abandons producers in risk-affected regions -and only works if there is a new supply location to move to." (Goldstein, et al., 2019).

SMEs are an important part of multinationals' value chains yet few companies within value chains understand how to manage risks beyond their business operations, leading to blind spots. These include: the invisibility of risks in the value chain through underestimation of the magnitude of some risks; underreporting of risk; under-valuing nature-based solutions; a lack of reporting on the costs of resilience measures; the failure to consider the possibility of high consequence risks, such as nonlinear climate change, and its impact on business results (GCA 2020), all of which can lead to a misallocation of capital and suboptimal use of resources.

But there is good news! SMEs can be a catalyst for resilience

Whilst SMEs can be significantly impacted by the range of natural and human-made hazards, they can also be a source of economic resilience, due to their flexibility and ability to adapt business practices rapidly after a shock. Therefore, it is important to distinguish the ability of SMEs to resist shocks and recover (Monsson 2017), as well as being leaders of innovation.

When enabled, SMEs have the potential to be drivers of innovation along with local economic and social regeneration, due to their entrepreneurship (UNDP 2013, OECD 2020a). For example, in coping with the COVID-19 pandemic, the OECD has observed examples of the entrepreneurial and creative nature of SMEs around the world (OECD 2020a). In Estonia, start-ups are helping put in place digital education tools for long-distance learning in other countries where schools have been closed. In China, blockchain technology, Big Data, 5G and artificial intelligence were reported as helping speed up business recovery of the country's SMEs through innovations such as unmanned healthcare production facilities and playing a role in controlling the spreading of the virus by powering diagnosis, prevention and treatment and efforts to develop a vaccine (in CryptoNews 2020, in OECD 2020a). The agility of SMEs to innovate and test new ideas and approaches – even in the wake of disasters – is recognised (Entrepreneur 2020, in OECD 2020a); agility in innovation can also lead to the prevention of technological hazards, as defined in the Sendai Hazard List (UNDRR-ISC 2020), illustrated in Box 1 below:

CASE STUDY BOX 1

It Never Rains, But It Pours YEN: SME Innovates And Reduces Technological Hazards

In Tokyo, Maehara Koei Shoten Co. Ltd. has sold umbrellas since 1948. They identified that umbrellas are the top item left behind in trains: in the city of Tokyo, one lost-and-found facility contains more than 900,000 lost items, with a 7,100-square-foot room dedicated just to umbrellas. In 2018, over 343,000 umbrellas, representing 8% of all lost items, were handed over to one facility – and on one rainy day alone, the facility receives around 3,000 umbrellas (Bloomberg, 2020). The SME wanted to develop a new umbrella that could be tracked when lost, using an Internet of Things-enabled device. The company decided to use crowdfunding to reduce direct investment costs. They only went ahead with manufacturing once there was enough financial support and they had tested the potential market response through receiving customer feedback (Japan Ministry of Economy, Trade and Industry 2019). Thus the company successfully used the crowdfunding-model to bring an innovative product to market. The SME used an innovative product, development and funding approach to lessen a local waste stream going to landfill, thereby reducing this technological hazard, as defined in the Sendai Hazard List (UNDRR-ISC 2020).

Past experience of hazards can positively shape SME awareness and attitudes to risk management: there is evidence that those SMEs that have already been impacted, for instance by climate change, were more likely to be engaged in adaptation and resilience (AXA UNEP FI survey 2015). For example, SMEs in Japan previously impacted by flooding took preventative measures (raised entrances, repositioning of electrical cables, outlets, equipment) to reduce exposure to future flooding (Japan Ministry of Economy, Trade and Industry 2019).

The insurance sector in the Netherlands has developed a digital water vulnerability scan for flood risk reduction to support climate change adaptation, motivated by past exposure to flood related impacts (see Box 2 on Blue Label's Digital Water Vulnerability Scan for Flood Risk Reduction).

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INSURANCE CASE EXAMPLE BOX 2

Blue Label's Digital Vulnerability Scan for Flood Risk Reduction

In 2019, the insurance co-operative holding company, Achmea, conducted a survey about the climate resilience of homes in the Netherlands. It revealed that most residents of the Netherlands want to adapt their homes to the effects of climate change, such as flooding. But residents didn't know how to do so or the costs involved. Through a partnership with Royal Haskoning DHV and consultancy Nelen & Schuurmans, Achmea invented BlueLabel – "a digital risk analysis tool that highlights areas vulnerable to flooding with an accuracy that can pinpoint individual buildings, properties and streets. BlueLabel translates the risk of flooding into an easily understandable ranking using a context labelling system. This is depicted visually for each property, street and infrastructure object – allowing people to understand risk at a glance."

As a digital information service, BlueLabel empowers governments, cities, industries, organisations and individuals to take targeted measures that focus on mitigating risk. The Netherland's Delta Programme for 2018 states that every municipality must have carried out a climate stress test by 2019. BlueLabel allows cities such as Rotterdam, an early adopter of the system, to map and measure the impact of flooding.

Source: ICMIF, Achmea (2020)

In Asia, a multi-country survey highlights that SME awareness of natural hazards and potential risks to business continuity is higher in, for example, the Philippines, which has continuously experienced extreme weather events. A survey conducted in Kenya on business preparedness and resilience of SMEs revealed that businesses in locations more prone to disasters are usually aware of natural hazards that sometimes follow a pattern or season, such as drought. However, in the Kenyan example, the analysis found out that even if most were aware of main hazards threatening their businesses, they had no contingency measures in place (CBI 2020).

Disasters can lead to systemic risk reduction efforts through changes in government policy and levels of private sector engagement (UNISDR 2018). In Bangkok, the devastating 2011 floods forced the closure of more than 800 factories that employed approx. 450,000 workers; damage to SMEs was estimated at US$2.25 billion (71.1 billion Thai Baht)/month, affecting 2.32 million jobs (UNFCCC 2019a).[26] This event triggered an increase in awareness of the importance of risk reduction. The 2011 floods in Bangkok and other disasters in South-East Asia have also reinvigorated new ways of working on systemic risk reduction (GAR 2019).

[26] https://unfccc.int/sites/default/files/resource/01_0.pdf

CASE STUDY BOX 3

Fiji Builds a One-Stop Shop for Disaster Resilience with National Government-Policy-Private Sector Interface

The Fiji Business Disaster Resilience Council (FBDRC) was created in 2016 to provide a platform for the public sector to engage directly with the private sector as a one-stop shop to improve the national government-policy-private sector interface. It was created in response to a strong desire for improved coordination between the public and private sectors in the wake of the Tropical Cyclone Winston response and recovery efforts. The FBDRC "supports businesses – particularly small and medium enterprises – to strengthen their resilience by providing training, tools and guidelines and integrates the private sector into national disaster management and resilience plans and processes," amongst other activities. The FBDRC has joined the Fiji Disaster Management Committee, worked with other organizations to survey 1,200 village heads and connect businesses with villages, launched a BCP toolkit and acquired funding to prepare its BCP trainers in the country. The council serves as a coordination mechanism where businesses can manage their own risk, strengthen resilience training and have a voice on matters related to disaster risk reduction.

Source: CBi (2016)

The Philippine Disaster Resilience Foundation (PDRF) has trained more than 7,000 businesses in Business Continuity Planning, focusing on direct impact of a range of hazards, the systemic impacts of hazards, and more traditionally recognized risks such as economic recession. After surveys were conducted, the Philippine Government determined that the country needed to build resilience, so it convened relevant government agencies and private sector organizations to improve public-private collaboration across business sectors, a collaboration which continues to build resilient capacity amongst SMEs in the wake of the COVID-19 pandemic (GAR 2019, ARISE Philippines):

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CASE STUDY BOX 4

Philippines Public-Private Partnership on Advancing Learning among Enterprises towards Resilience and Transformation (ALERT)

The Private Sector Alliance for Disaster Resilient Societies (ARISE), is a network of private sector entities led by the UN Office for Disaster Risk Reduction (UNDRR). ARISE Philippines partnered with the Department of Trade & Industry-Bureau of SME Development (DTI-BSMED) and the National Resilience Council (NRC) as a Public-Private Partnership (PPP) initiative: "Advancing Learning of Enterprises towards Resilience and Transformation (ALERT)" to promote SME awareness and understanding on disaster resilience and business continuity, in alignment to the DTI's MSME Development Plan 2017-2022 which highlights the resilience and business recovery as one of its priority areas.

One of the activities undertaken in 2020 included a two-part webinar on SME Resilience after the COVID-19 pandemic in line with the annual celebration of the National Resilience month (August 2020). It covers risk assessment, disaster risk reduction and management, Business Continuity Planning (BCP), and micro-insurance. The programme highlights the need for thorough preparation of BCP to minimize loss and damage to assets, protect lives and enable them to prioritize their response and recovery needs.

Sources: DTI-BSMED, ARISE Philippines and NRC

Peer-to-peer engagement among SMEs is also paving the way for broader risk reduction and resilience activities. For example, the International Chamber of Commerce (ICC) has created the Save Our SMEs (SOS) Network with a call to action issued for both governments and the private sector to ensure the continued viability of SMEs, including links to a wide range of policy briefs and recommendations from international organizations for building SME resilience (ICC 2020b).

At the national level, for instance, the Canadian Chamber of Commerce, has established the Canadian Business Resilience Network (CBRN) in the wake of the pandemic to bring together over 450 local chambers and other business associations to "help the business community prepare, preserve and ultimately, prosper (CBRN 2020)."

CASE STUDY BOX 5

Capacity Building for Prevention: ARISE Network of Caribbean Chambers of Commerce (CARICHAM) from the Caribbean Community

The ARISE Network of Caribbean Chambers of Commerce (CARICHAM) from the Caribbean Community, a network of 21 national Chambers of Commerce in the Caribbean, through its Disaster Risk Reduction pillar has focused on ensuring that all Chambers are able to improve its capacity to support SMEs within the membership of the various Chambers.

As such, institutional strengthening has helped the Membership within the Chambers to become more resilient through capacity building. An example of the work of CARICHAM includes an awareness campaign across the Chambers to share materials, tools and advice to increase the awareness of the business community to risks and recommended actions to support the prevention of disasters based on proactive action taken by the businesses. For instance, information has been provided on how to strengthen e-commerce, digitization, human resources and BCPs. This has proven to be helpful as knowledge transfer through guidance, help SMEs to include prevention measures in their businesses, which are key to their sustainability.

CARICHAM also initiated its Regional Growth Series to connect the private sector within the region to cutting edge information and key partners, as well as to build the knowledge base of the attendees of this series. The first episode in this series was hosted in partnership with the UNDRR Regional Office for the Americas and the Caribbean before the 2020 cyclone season. This focused on a multi-hazard approach to risk management, important to the Caribbean region, which is prone to many hazards.

Over the years, the Chambers within CARICHAM have reaffirmed that it is important to support SME resilience, as the actions of the businesses on an individual level have a tremendous impact on the resilience on their national economy, especially in the tourism sector, in which 80% of the companies are SMEs. Supporting the businesses to take preventative measures has shown that companies who have implemented the lessons learned have been able to reopen their business much quicker than those that had not received support to increase their resilience.

CARICHAM remains committed to partnering with various institutions and partners to continue supporting the resilience of the Caribbean Private Sector as significant benefits have been realized as a result.

See https://www.caribbeanchambers.net/ and https://www.carib-export.com/ for examples of action to support SMEs resilience with a multi-hazard approach.

Source: ARISE CARICHAM

SMEs can be important drivers for societal adaptation, "more likely to seize opportunities and act as bottom-up agents of change" (Montmasson-Clair, G. et al 2019). SMEs have the capability to create new innovative products, new business models or new markets ahead of impacts such as climate change, or in response to events such as COVID-19[27] – turning potential hazards into opportunities. In low- and middle-income countries after a disaster takes place, SMEs are often at the forefront of livelihood recovery, as they are the engine of local markets, underpinning effective, sustainable recovery efforts and resilient community structures and processes. Recognizing the importance of SMEs as change agents in developing countries, the Adaptation SME Accelerator Project (ASAP) was launched by a consortium of international partners to create a network of SMEs in emerging markets that

[27] COVID-19 related innovations by scientific and business communities: emergency ventilators cleaning air of virus; snoods and hands-free door handles, all already proven concepts using open source ways of working and designs shared publicly to ramp up production. https://www.bbc.com/news/uk-wales-52008745

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offer technologies, products and services that can help their customers and clients build resilience to the impacts of climate change (Lightsmith Group 2020). The project will create a public directory of SME solution providers around the world and will partner with existing incubators and accelerator programs to help provide support programming.

SMEs are well placed to go beyond increasing resilience, to be solution providers and catalysts for new goods and services (GAR 2013, Montmasson-Clair, G. et al 2019). The biggest opportunities exist (related to climate change) in business development (e.g. market growth and new markets) (56%), followed by the opportunity to develop new products, technologies and services (51%) and to expand existing ones (47%) (UNFCCC (2017).

SMEs have a multiplier impact on local and national markets, both through direct provision of jobs and through ensuring the well-being and resilience of their surrounding communities. Their link to local economies and supply chains at various levels can directly contribute to national and local political and social stability. Conversely, disaster-related business failure has a direct impact on households' access to goods and services, livelihoods and employment opportunities. The positive potential role that SMEs can play in societies depends on the local and sector context, and SME characteristics. The environments in which they operate, including diverse social, political and economic processes, are important in determining their adaptive capacity (WRI 2019, Crick et al., 2017). This is in line with evidence further confirming that a streamlined business environment can also foster SMEs' contribution to economic growth (OECD 2018; Gonzales 2014; Gaganis, Pasiouras & Voulgari 2018).

3. CRITICAL FACTORS FOR BUILDING SME RESILIENCE THROUGH DISASTER RISK REDUCTION

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There are four critical success factors for building the resilience of SMEs through disaster risk reduction:

1. Supporting and developing international and national policy frameworks that address the specific needs of SMEs.
2. Providing access to finance and financial products tailored to SMEs.
3. Combining Enterprise Risk Management and Business Continuity Management mechanisms to better incorporate and increase the focus on prevention.
4. Addressing interdependencies and inequities across supply and value chains.

1. SUPPORTING AND DEVELOPING INTERNATIONAL AND NATIONAL POLICY FRAMEWORKS THAT ADDRESS THE SPECIFIC NEEDS OF SMEs

The Sendai Framework for Disaster Risk Reduction explicitly emphasises the need to build the resilience of the SME sector to natural and human-made hazards. The SDGs also highlight the role that resilient and productive SMEs have in achieving the SDGs.[28, 29] Therefore, governments need to strengthen their risk governance systems focusing on prevention, recognising the multiple hazards that SMEs face. The recently-published UNDRR/ISC Sendai Hazard Definition and Classification Review Technical Report contributes to the implementation of the SDGs, the Sendai Framework and the Paris Agreement by providing a common set of definitions of 302 natural and human-made hazards comprised within the Sendai Framework, organised within eight hazard clusters (see diagram below), to help governments and the private sector in implementing these frameworks and agreements (UNDRR-ISC, 2020).

The litmus test for this is that not only are there international frameworks in place, but that these are translated into national and local strategies for disaster risk reduction tailored to the SME context, coupled with budgets and financing strategies to implement them. Evidence-based policy frameworks can be leveraged to help build the SMEs disaster resilience through prevention activities and measures that reduce exposure and vulnerability to disaster risks.

International policy frameworks and multilateral climate funds[30] should encourage collaboration among governments and SMEs to ensure successful implementation of prevention activities and measures.

[28] In 2017, the General Assembly, recognising the need to improve small business access to microfinance and credit, decided to designate 27 June as Micro-, Small and Medium-sized Enterprises Day through its resolution A/RES/71/279. SDG targets 8.3 and 9.3 call for enhancing the access of SMEs to financial services. In addition, SMEs are an important element in the implementation of SDG 8 (decent work and economic growth) and SDG 9 (industry, innovation and infrastructure). https://www.un.org/en/events/smallbusinessday/

[29] SDGs 1,2,4,5,8,9,10,12,17 http://www.intracen.org/MSME-Day-2017/SDGs/

[30] The Adaptation Fund portfolio and Global Environment Facility

National Adaptation Plans (NAPs) provide a framework for collaboration across national government, private finance and insurance companies for private enterprise including SMEs (Schaer & Kuruppu 2018). The New Urban Agenda[31] includes the Urban Governance and Legislation dimension, demonstrating the role of good urban governance in catalysing local prosperity. The 2015 Paris Agreement under the United Nations Framework Convention on Climate Change calls for the enhancement of the private sector's participation in the implementation of Nationally Determined Contributions and the enabling of opportunities for coordination across instruments and relevant institutional arrangements.

When governments understand SME needs, policy intervention can shape the ability of firms to better address risks (Crick et al., 2017). The business case for government intervention to encourage SMEs in low-and-middle-income countries to invest in resilience to climate change is clear (WRI, UNDP 2015). However, the public sector needs to understand the needs of SMEs, and focus its support accordingly (PWC 2013, GAR 2013, GAR 2015). SMEs are not a homogeneous group and hence there is no single entry point to such a diverse group. Business networks like the Chambers of Commerce and Industry provide a good entry point for governments to enhance communication outreach to the SMEs. Other networks, for example, UNDRR-led ARISE, UNDP-OCHA-led Connecting Business Initiatives (CBI), or the UN Global Compact, facilitate such communication.

There are co-benefits to disaster risk reduction measures adopted by SMEs that governments should consider. In Japan for example, it was found that the more a company adopts disaster risk reduction measures, the less time it takes to recover sales after a disaster[32].

Governments can help to ensure that finance for SMEs is available and adequate through various economic incentives and funds. In Japan, government strategies, and related SME policies include four activities: formulation of basic policies; approval of specific plans; roll-out of support measures such as tax benefits, priority adoption of subsidies, and financial support; and cooperation between the national government, local government and related parties such as chambers of commerce and industry associations working together to underline importance of prevention.

CASE STUDY BOX 6

Japan's 2019 White Paper on Small and Medium Enterprises

In Japan, the 2019 White Paper on SMEs in Japan (Ministry of Economy, Trade and Industry 2019) identified disaster risk reduction and prevention measures as priority actions for SMEs, recognizing them as potential catalyst for resilience. Specifically, recommendations are aligned with legislation such as the Small and Medium-sized Enterprises Business Enhancement Act. The Act was enhanced to further encourage SMEs to reduce impacts of disasters and implementing disaster preparedness and recovery measures (i.e. formulation and implementation of a plan to strengthen business continuity, insurance purchase, etc.) in cooperation with relevant parties such as large enterprises, local governments, and other stakeholders. The 2019 White Paper outlines other support measures, including tax benefits, financial support and subsidies, for example, investment in disaster risk reduction and prevention measures in SMEs is incentivized by a special depreciation (20%) for capital investments. The investments covered are limited to DRR measures. For prevention specifically, it includes more than JP¥600,000 for building accessories such as water-stop boards, fire prevention shutters, etc.

Two financial support interventions were established: a credit guarantee which adds a separate quota in the fidelity insurance of SMEs, and the expansion of BCP loans by the Japan Finance Corporation. Measures include reduced interest rates for loans to businesses located in areas prone to tsunami, floods and landslide damages. Reduced interest rates are also available for purchasing equipment related to DRR.

[31] http://www.newurbanagenda.org/

[32] A survey revealed that of the SMEs that prepared for disasters, only 8% of firms reported that they have not recovered sales to the original level, compared to 19% for SMEs that did not prepare for disasters (Japan Ministry of Economy, Trade and Industry 2019).

To date, there is limited research examining how to promote and facilitate private sector adaptation to impacts of climate change in low-and-middle-income countries and in particular how governments can create an enabling environment to stimulate and incentivise domestic private sector adaptation measures (Crick et al, 2018).[33]

In the context of the COVID-19 pandemic, governments across the world have implemented a mix of policies and financial instruments to help SMEs recover and respond to the immediate impacts of the pandemic. The examples illustrated are particularly interesting in that the measures featured (i.e. finding new and alternative markets, digitalization, and innovation) all have the potential to build long-term resilience to multiple hazard types, beyond pandemics, yet UNDRR estimate that only 15% of the policies aim to also strengthen the resilience of SMEs in the longer term (see Box below).

CASE STUDY BOX 7

National Governments Implement a Mix of Policy Measures to Support SMEs in Covid-19 Recovery, Building Resilience in the Process

Since the start of the Covid-19 pandemic, national governments have implemented a mix of policy measures to support SMEs. The OECD examined the policy responses of 55 countries across all global regions and categorized them as labour policies, deferral policies, financial instruments and structural policies (OECD 2020a). The first three categories provide urgent recovery support for SMEs while the fourth category, structural policies (and example of taking a risk reduction approach to recovery), is "designed to support both urgent short-term challenges and strengthen the resilience of SMEs and support their further growth (OECD 2020a)." Interestingly, structural policies "have been used only modestly, with a focus on teleworking and digitalisation, although over time the number of countries setting up such policies has increased." Of all the different policy measures observed across the 55 countries by the OECD, UNDRR estimates that only 15% were structural.

Overview of national policy responses to support SMEs during the Covid-19 Crisis (OECD 2020a, % estimates UNDRR)

COVID-19 POLICES AIMED AT HELPING SMES RECOVER	**Labour policies**	(Partial) redundancies	**85%** of policy mix
		Wage subsidies	
		Self-employed	
	Deferral policies	Income/ corporate tax	
		Value Added Tax (VAT)	
		Social security and pension contributions	
		Rent/utilities/local tax	
		Debt moratorium	
	Financial instruments	Loan guarantees	
		Direct lending to SMEs	
		Grants and subsidies	
COVID-19 POLICES AIMED AT BOTH RECOVERY AND STRENGTHENING SME RESILIENCE	**Structural policies**	New markets	**15%** of policy mix
		Teleworking/ digitalisation	
		Innovation	
		Training and redeployment	

[33] https://onlinelibrary.wiley.com/doi/abs/10.1002/wcc.505

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In relation to the four categories of structural policies examined by the OECD the following points highlight recovery measures that have the potential to contribute to multi-hazard risk reduction by reducing SME vulnerability:

- **Policy measures to find new and alternative markets:** "Some countries have adopted measures to support SMEs in recovering markets or finding new or alternative markets. Belgium, for instance, has opened up existing financial instruments for SMEs – such as the SME growth subsidy – to support firms to find alternative markets, particularly where supply chains are impacted. China is encouraging large enterprises to cooperate with SMEs, by increasing their support in supply chains, in terms of loan recovery, raw material supply, and project outsourcing."

- **Policy measures to support teleworking and digitalization:** "Several countries have introduced measures to support SMEs adopting teleworking (Argentina, France, Japan, Slovenia, Spain), which may also bring longer-term advantages in terms of adoption of technology and new practices. For instance, Argentina introduced a financing line of EUR7.2 million for SMEs to be used exclusively for supporting teleworking. Other countries have more generally intensified SME digitalisation support. In some countries, private initiatives have been also launched to support SMEs in this area. For instance, "in France, industry associations, support SMEs during the crisis through a toolkit on teleworking and advice to companies."

- **Policy measures to support innovation:** "Countries offer support for innovation by SMEs. In some cases, these measures aim to support start-ups and SMEs to help find solutions to the COVID-19 outbreak. In other cases, support is offered to strengthen SME innovation and competitiveness, to help them better withstand the impact of the crisis." For instance, "Enterprise Ireland and Údarás na Gaeltachta clients are eligible for grants for accessing consultancy services for immediate finance reviews, as well as for innovating, diversifying markets and supply chains. Local Enterprise Offices in Ireland are providing vouchers worth between EUR 2 500 and EUR 10 000 with matched funding for innovation, productivity and business continuity preparedness."

- **Policy measures to support training and redeployment:** "Several countries have opened up existing programmes for training and skills development by SMEs in the context of the outbreak, or launched new initiatives for this purpose. Enabling SMEs to maintain access to skills during the crisis, as well as develop further skills, constitutes an important aspect of the required structural policy response to the crisis."

Source: OECD 2020a

The public sector enables SMEs to move towards risk-informed investment and resilient infrastructure for SMEs by creating financial incentives and accountability frameworks (Crick, Gannon, et al., 2018, Atela et al., 2018). In Vietnam, 61% of SME respondents listed tax credits, deductions and exemptions for SMEs with a Business Continuity Plan in their top three incentives (ADPC 2016). The government in Vietnam introduced the Small and Medium Enterprise Development Fund in 2013 as a platform to support adaptation investments for SMEs which was subsequently expanded (WRI 2019).

2. PROVIDING ACCESS TO FINANCE OR FINANCIAL PRODUCTS TAILORED TO SMEs

SMEs need to be able to access finance and financial products to reduce their exposure and vulnerability to disaster risks. Challenges to doing this include:

- SMEs tend to have limited access to risk financing products that are affordable and flexible enough.
- Financial products can also be poorly suited to SME investments.
- Access to finance is a common constraint for SMEs and other small-scale businesses to adopt resilience technologies and practices.
- Opportunities to implement disaster risk reduction exist but financial barriers and insufficient market access hinder SMEs' ability to exploit them.

The following critical factors address these challenges:

Financial support for SMEs can take the form of various policy and financial instruments that reduce risks, transfer risks, or compensate for risks (WRI and UNDP 2015). The World Resources Institute and UNDP describe three categories of instruments in the context of financing climate change adaptation:

1. **De-risking instruments** include any type of policy that "creates a more enabling environment by addressing underlying barriers that create investment risk in the form of uncertainty or cost." (WRI and UNDP 2015)
2. **Risk-transfer instruments** are designed "to shift risk from the private to the public sector, including insurance products or loans from financial institutions that are backed by a government guarantee." (WRI and UNDP 2015)
3. **Risk-compensating instruments** "offer investors a higher financial return through grants, seed capital, and other instruments that provide benefits for innovation and investments in adaptation (i.e. public loans, equity or debt investment, angel investing, crowd-funding, peer-to-peer lending)." (WRI and UNDP 2015)

Increasingly, investors will need to target SMEs that produce and utilise DRR measures; the recently launched[34] Adaptation SME Accelerator Project (ASAP) Adaptation Solutions Taxonomy "offers a systematic approach to identify SMEs that produce technologies, products, and services that support adaptation to climate change ("Adaptation SMEs") and enables investors and governments to target investment and support" (Lightsmith Group 2020).

There are several initiatives underway to stimulate the creation of new financial products and services. Across Africa, Asia, and Latin America, microfinance has enabled SMEs to invest in drought-resistant crops, improve irrigation systems, and purchase climate insurance against crop failure. Microfinance can also help SMEs transition to low-carbon business models, by financing their efforts to adopt renewable energy sources and shift to sustainable production and supply chains (Business and Sustainable Development Commission 2016).[34] The Proadapt Programme includes 11 technical assistance projects in 14 Latin American and Caribbean countries and raises climate change awareness and promotes adaptation of SMEs (TIPS & CANARI, 2019). Lessons from the programme show that climate risks are leading to an increasing demand for private sector climate resilience solutions that include new financial and insurance products. (UNEP DTU 2018). In the Philippines and Indonesia, the increased use of credit guarantee schemes for institutions lending to SMEs is one approach demonstrating some success, and which has the potential to be extended to disaster risk financing (i-Prepare Business, 2016).

In the context of the COVID-19 pandemic, the fintech sector innovated to help SMEs respond and recover, which in turn, also helped to build the longer-term resilience of SMEs (see Box 8).

Digitalization is becoming more important in the finance sector to reduce risk and improve disaster resilience. In the context of addressing the microcredit crunch experienced in the wake of the Covid-19 pandemic, a survey conducted by the Foundation for Development Cooperation with 1,500 microfinance providers (MFPs) across 11 Asian countries found that "78% of microfinance clients mainly use and rely on cash because they either don't have access to, or hesitate using, digital or mobile money payments or deposits (Taylor 2020)." The survey noted the importance of "a renewed push for enhanced digital connectivity and economy and addressing the key challenges of sourcing capital for MFP investment in digital systems, adequacy of the supporting infrastructure, and the consumer and staff education path to scale."

[34] Launched 10 September 2020

[35] https://www.weforum.org/agenda/2016/08/a-small-and-medium-sized-way-to-build-climate-resilience

CASE STUDY BOX 8

Financial Technology Transforming SME Finance Solutions

The Financial Technology sector demonstrated innovation in providing support to SMEs in the wake of the Covid-19 pandemic. For example, Kenya's M-PESA, a mobile-based banking network, waived its fees for SMEs, and China's Ant Financial, described as a tech company that provides financial services, launched a "Contactless Loans" campaign to support the digital transformation of 10 million SMEs. Examples like this led the SME Finance Forum to conclude that this crisis could be a catalyst for transformation in SME finance, noting that some lenders have moved the entire credit journey online and have begun to think beyond loans and liquidity, to focusing on capacity building efforts.

The case of DBS Bank Ltd. in Singapore exemplifies the role of capacity building in long-term resilience building. The company quickly strengthened its e-training efforts via their SME Academy to enable businesses "to make the most of the current lull in business activity to upgrade their skills", the result being that more than 1500 SMEs have "freely benefited from guidance and insights on how to efficiently ensure business continuity amid the crisis."

The SME Finance Forum observed that learning, collaboration and digitization were three powerful tools at the disposal of the SME lending community and contributed to both short and long-term coping mechanisms. Specifically, when "used strategically, these methods could ensure business survival for affected SMEs, and could also eventually accelerate their recovery and bring long-lasting changes to the industry as a whole."

Source: SME Finance Forum 2020

CASE STUDY BOX 9

The Role of Digitization in Building Long-term Resilience Within the Microfinance Sector

Washington-based FINCA Impact Finance commented in July on the role of microfinance fintech in COVID-19 recovery. Informed by a recent survey of 8,000 microfinance institutions across their network in Africa, Latin America, Europe, the Middle East and Northern Africa, and Asia, the finance firm observed that "fintech options like mobile banking, e-wallets, or hyperlocal agent networks are keeping customers connected that would otherwise be unsafe or impossible during this time (FINCA Impact Finance 2020)." However, this recommendation came with a word of caution: "in the rush to digitize, key vulnerable demographics – notably women – are often left out." To account for this risk, FINCA emphasizes that "innovative financial products such as loans that include financial literacy components are critical to financial banking and long-ranging recovery."

Source: FINCA Impact Finance 2020

Some governments have set up coordination mechanisms to monitor the COVID-19 impact on business and design responses, and in some instances the situation of SMEs is explicitly considered (OECD 2020a). For example, Israel has created a new network of local government representatives for peer learning and communicating field knowledge to and from the Ministry of Economy.

Nature-based solutions (NbS) can enhance SME resilience and help reduce contribution to risk creation: Many SMEs, or parts of their supply chains, are dependent on 'services' provided by the natural environment, including everything from food and water to recreation. These services can be referred to as ecosystem services and can be expressed in different ways: e.g. socio-cultural (e.g. spiritual, physical interactions), provisioning (e.g. food and water), regulating (e.g. environmental pollution and climate) and supporting types of services (e.g. maintaining biodiversity of flora and fauna) (Navigant 2017). NbS[36] enable and enhance the capacity of the natural environment to function; when planned for, these solutions can prevent and mitigate a range of risks that impact SMEs, and even enhance their resilience and ability and opportunity to operate. Implementing NbS at multiple scales can enhance the resilience of SMEs, often way beyond the communities where SMEs are physically located.

Experts have long emphasized the important role of nature in DRR and climate change adaptation. NbS, natural infrastructure or ecosystem approaches have been shown to "be effective in reducing the impact of natural disasters, while they often provide co-benefits for the environment and communities, which conventional solutions like grey infrastructure do not provide (ProFor 2017)." A recent study showed that by investing in protecting mangroves globally from 2020 to 2030 could generate US$1 trillion in total net benefits (GCA 2019a); conversely, without mangroves, flood damages would increase by more than US$65 billion annually, and 15 million more people would be flooded.[37] In response to COVID-19, some countries, such as India are developing the concept of 'eco-system centric BCPs,'[38] recognising the role of NbS for SME resilience, and advocating for the sustainable use of ecosystem services in drought and water scarce areas, encouraging the promotion and recognition of sustainability commitments of SMEs.

Cities are now starting to quantify and capture the multiple benefits in a variety of metrics,[39] illustrating the dividends that NbS can provide in terms of avoided losses, economic benefits, and social and environmental benefits. A few examples of implementation within cities include transforming Berlin into a sponge city to combat urban flash flooding,[40] the bio-engineering of waterways in Singapore as a source of urban regeneration,[41] city cooling in Melbourne[42] and restoring urban water bodies in Vietnam.[43] Benefits include increases in tourism, (new) livelihood opportunities and income security, reduced business disruption with reductions in flood damage, cleaner urban areas and more opportunities for recreational activities.

Forest management provides many avenues for risk reduction, such as maintaining and enhancing mangroves which can reduce storm surge and the damage caused by coastal flooding, and afforestation on hillsides which can become unstable with heavy rains or earthquakes (ProFor 2017). Importantly, given the Covid-19 pandemic, research has shown that "land conservation, reduction of forest loss and fragmentation, creation of buffer zones through forest restoration could reduce human-wild animal interactions and thus reduce the risk of future disease outbreaks (Bloomfield 2020, in UNDESA 2020)."

There is a lack of systemic, detailed quantification of the co-benefits to SMEs, and examples of SMEs implementing NbS: Large corporations have already demonstrated their interest in leveraging NbS and there are numerous examples of multinational corporations making the business case for implementing NbS (Natural Infrastructure for Business 2020). However, studies that demonstrate SMEs implementing NbS and realizing many of the associated co-benefits are scarce.

[36] The same measures can be referred to under different terminology, depending on the policy priority: Green Infrastructure, Natural Water Retention Measures, Ecosystem-based adaptation or Ecosystem-based disaster risk reductions. Specific examples include xeriscaping, green roofs and walls, rain gardens, urban forests, blue infrastructure, amongst others.

[37] https://phys.org/news/2020-03-mangrove.html

[38] https://www.sciencedirect.com/science/article/pii/S2590061720300545 2020

[39] Adaptation and Mitigation Interaction assessment Tool: searchable database of quantified metrics: https://resourcecentre.c40.org/resources/interaction-between-adaptation-and-mitigation-actions

[40] Reusswig, et. al. 2016; Flussbad Berlin

[41] https://www.c40.org/case_studies/singapore-bio-engineering-works-at-bishan-ang-mo-kio-park-to-prevent-urban-flooding

[42] http://melbourneurbanforestvisual.com.au/

[43] https://reliefweb.int/report/viet-nam/ecosystem-based-adaptation-tool-increase-flood-resilience-vulnerable-evidence

CASE STUDY BOX 10

Nature-based Solutions: The Role of Ecosystem Management and SMEs in Disaster Risk Reduction

SMEs have for some time implemented nature-based solutions that have provided co-benefits for livelihood generation and DRR, including in forest and wetland management. For instance, the International Fund for Agriculture Development (IFAD) notes that "the more closely we align agriculture with ecosystems and natural infrastructure, the more farmers will be prepared to resist both immediate shocks like the COVID-19 outbreak, and more subtle, but (in the long term) equally dramatic shocks, such as climate change."

Specific mechanisms such as REDD+ (reducing emissions from deforestation and forest degradation), payment for ecosystem services regimes, and targeted funding programs have enabled landowners, agriculture producers and small and medium forest enterprises (SMFEs) to implement and realise NbS co-benefits.

In the context of climate change mitigation and adaptation, researchers suggest that **SMFEs "represent a potentially formidable tool for successful REDD+ implementation,"** noting their "potential to bring about high returns in terms of livelihoods, forest management, and climate change mitigation when compared to alternative forest uses (Hajjar et al., 2016)." Researchers at the International Institute for Sustainable Development (IISD) observed that "some medium- to large-sized private firms are leading the development of REDD+ projects" and doing so across the REDD+ supply chain including project design and implementation, capacity building and technical development, and carbon credit retailing (IISD 2012).

The Overseas Development Institute (ODI) observed in 2006 that SMFEs "represent a promising option for poverty reduction and forest conservation through sustainable forest management (ODI 2006)." For example:

Uganda: As of 2006 there were approximately 2,500 SMFEs operating in timber production and processing and the supply of environmental and recreational services. The organization of SMFEs through the Uganda Wood Farmers Association successfully sued the Uganda Investment Authority over the planning of an industrial park overlaying members' land. [Source: ODI 2006]

Laos PDR: The FAO's market analysis and development methodology was used in six forest dependent communities to establish 10 SMFEs creating income for 240 residents. [Source: ODI 2006]

Payment for ecosystem service schemes (UNDP 2020) is also an NbS-centred DRR mechanism (UK Department for Environment, Food and Rural Affairs 2013). Natural infrastructure, in the form of both natural and engineered wetlands, represents a "cost-effective way to mitigate material financial losses that would otherwise result from flooding (Insurance Bureau of Canada 2018)." Such payment systems can incentivize small and large-scale landowners and agriculture producers to maintain various ecosystem services to help mitigate flood risks, as in the case of the Alternative Land Use Services (ALUS) program in Canada.

Canada: Alternative Land Use Services (ALUS) is a voluntary, incentive-based, private land conservation project that pays landowners and farmers to maintain and enhance the natural assets that they manage. In the province of Manitoba, a system of payments for ecosystem services provided by wetlands, natural areas, riparian areas, and ecologically sensitive lands was established for local landowners and

agriculture producers based on the level of environmental benefit provided. Approximately 21,000 acres were enrolled in the project with CAD$1.2 million in payments issued. Manitoba experiences frequent flood-related disasters in both rural and urban areas. Across Canada, the ALUS program is funding 15,500 projects. [Source: Government of Manitoba 2009, Government of Manitoba 2013, ALUS Canada 2020]

Targeted funding programs / financial incentives can also incentivize SME targeted NbS such as Bolivia's ACCESOS program and EIB's Natural Capital Investment Facility.

Through Bolivia's ACCESOS program, with support from IFAD's Adaptation for Smallholder Agriculture Programme (ASAP), one community started a beekeeping business with native tree species. This started a reforestation process, and a separate community in the same watershed restored riverbanks with native trees and bushes to prevent erosion. This combination of upstream and downstream investments made the entire watershed much more resilient in the face of frequent flooding. [Source: IFAD 2020]

The European Investment Bank hosts the Natural Capital Investment Facility, a programme accessible to businesses to support pioneering conservation and NbS projects. It consists of a flexible finance facility (typically providing direct/intermediated debt or investing in equity funds) in combination with a technical assistance support facility (grants for project preparation, implementation, monitoring and evaluation).

Source: EIB

3. COMBINING ENTERPRISE RISK MANAGEMENT AND BUSINESS CONTINUITY MANAGEMENT MECHANISMS TO BETTER INCORPORATE AND INCREASE THE FOCUS ON PREVENTION

As outlined in the previous section, SMEs face a number of challenges that constrain their DRR efforts. Getting Business Continuity Management (BCM) right is important for business resilience. It should be viewed as one element in a raft of interventions.

Combining the roles of Enterprise Risk Management (ERM) and Business Continuity Management (BCM) and Business Continuity Planning (BCP) tools and checklists can help to prioritise procedures and reduce SMEs vulnerability and exposure to hazards.

In a 2020 compilation, PWC outlined the benefits of combining ERM and BCM. Their observation was "organizations that integrate ERM into their strategic planning efforts have found that BCM enhances both their value creation objectives and their protection objectives (PWC 2020b)." The focus of ERM "is to identify, assess, monitor, and report major risks that could impede or otherwise negatively affect achievement of an organization's strategic goals and operational objectives", and the focus of BCM "is to enhance enterprise resiliency and help an organization respond and recover from both unanticipated and anticipated business interruptions."[44] Noting that the term 'prevention' in this guidance also includes "measures (that) can also be taken during or after a hazard event to prevent secondary hazards or their consequences" (United Nations 2016), in this light, BCM contributes to prevention to a limited extent – but there is potential for it to be strengthened. ERM programs also use risk scenario analysis (sometimes referred to as 'strategic foresight') as a "structured process that leads to a better understanding of the ways multiple factors can combine to both cause vulnerabilities and create opportunities."

In the future, integrated ERM and BCM mechanisms will need to better incorporate and increase focus on prevention aspects, including addressing the potential hazards and risks that business operations could be contributing to or creating.

[44] BCP according to ISO 22301: 2012 is defined as "documented procedures that guide organizations to respond, recover, resume and restore to a pre-defined level of operation following disruption" <https://www.thebci.org/resource/bci---drj-glossary-of-terms.html>

There is a range of existing tools that focus on helping SMEs reduce disaster impact.[45] Regional bodies such as the Asia-Pacific Economic Cooperation (APEC) support the Business Continuity Planning of SMEs[46] and UNDRR regional offices have introduced a range of guidance and tools for SMEs (see UNDRR compendium), including a tool called *"Is Your Business Resilient to COVID-19?"* to facilitate BCP preparation. The Quick Risk Estimation (QRE) Tool helps small businesses and enterprises, including those in the informal sector, to better understand their exposure and vulnerability to disaster risks, especially in the context of the COVID-19 pandemic (UNDRR 2020).

Certification related to Business Continuity Management (BCM) can be linked with reduced insurance costs: ISO 22301:2019,[47] the first International Standard for implementing and maintaining an effective Business Continuity Plan was updated to recognise the distinctive characteristics of SMEs, including the unnecessary cost and complexity of implementing the standard. 27% of respondents to a survey by the Business Continuity Institute said that certification for Business Continuity Planning has helped to reduce insurance costs (Business Continuity Institute 2020). In the same vein, the Hotel Resilience certification is an example of **good practice** that could also be linked with insurance premiums reductions to create additional incentives for SMEs to invest in disaster risk reduction (UNDRR 2019b).

However, SMEs may not have Enterprise Risk Management and Business Continuity Management processes in place (UKCCRA 2 2016, University of Salford 2008, KPMG 2016, Asgari 2020, UNDRR 2019), and a UNDRR study from Italy[48] has shown that 69% of BCPs do not include disaster risks. One reason is that they may not have sufficient "organisational slack" to undertake any BCP activities in general (University of Salford 2008). This is also reflected elsewhere: in Uganda and Kenya, 58% of survey respondents indicated they did not have written BCPs and 9% were unsure whether their businesses had one (Red Cross Red Crescent Climate Centre 2019). In Japan, fewer than 10% of SMEs overall have formulated BCPs; this varies considerably with firm size: approximately 34% in firms with 101 to 300 employees, compared to approximately 2% for firms with fewer than 20 employees. One factor that seems important in the rate of BCP implementation in Japan is whether clients demand it. For firms with more than 20 employees, as many as 68% of firms implemented BCPs when encouraged by direct clients, whereas only 8% implemented a BCP when not requested by clients (Ministry of Economy, Trade and Industry 2019).

In another literature review on SMEs and risk management, Falkner and Hiebl (2015) found that despite the reality that "misjudging or failing to recognize risks can – in the worst case – have disastrous consequences, ranging from customer loss to damaging liability, environmental damage and possibly even bankruptcy…many SMEs do not – or not adequately – apply risk management practices, mostly because they cannot afford to rededicate resources due to their constraints."

This has recently been evidenced through a survey conducted in the Philippines by the United Nations Industrial Development Organization (UNIDO), which found that 75% of micro firms did not have an existing BCP in place, with businesses citing such reasons as not being aware of what a BCP is or having no capacity to develop one (UNIDO 2020). This is consistent with earlier studies dating back to 2008 in Australia, where focus groups conducted with SMEs revealed that none had engaged in any planning for a pandemic and most were not concerned about the risk (Watkins et al., 2008).

Without a clear business case for investing in resilience, SMEs will remain more reactive than proactive in their approaches to risks such as climate change (UNEP DTU Partnership, 2018). In Japan, fewer than half of the enterprises recognize risks posed by natural hazards. Even though hazards maps are available and considered as effective tools to understand risk, the number of firms that consistently review risks remains low (less than half), even when the company might be facing disaster risk. Evidence suggests that the level of awareness increases with firm size.[49]

However, the UNDRR 2020 survey reveals that in most instances the majority of respondents had a strategy and/or plans in place (such as BCPs) which they feel address the risks they had identified, as indicated in the survey results below:[50]

[45] Initiatives based on best practices such as the "Resilience in a Box", designed to educate newcomers on business resilience, a collaborative partnership between the UPS Foundation (ARISE member), the U.S. Chamber of Commerce Foundation, the World Economic Forum (WEF), and the Disaster Resistant Business (DRB) Toolkit Workgroup. The Philippine Disaster Resilience Foundation (PDRF) launched "Katagan in a Box," a mobile application version.

[46] https://www.apec-epcc.org/programs-and-events/programs/business-continuity-management/

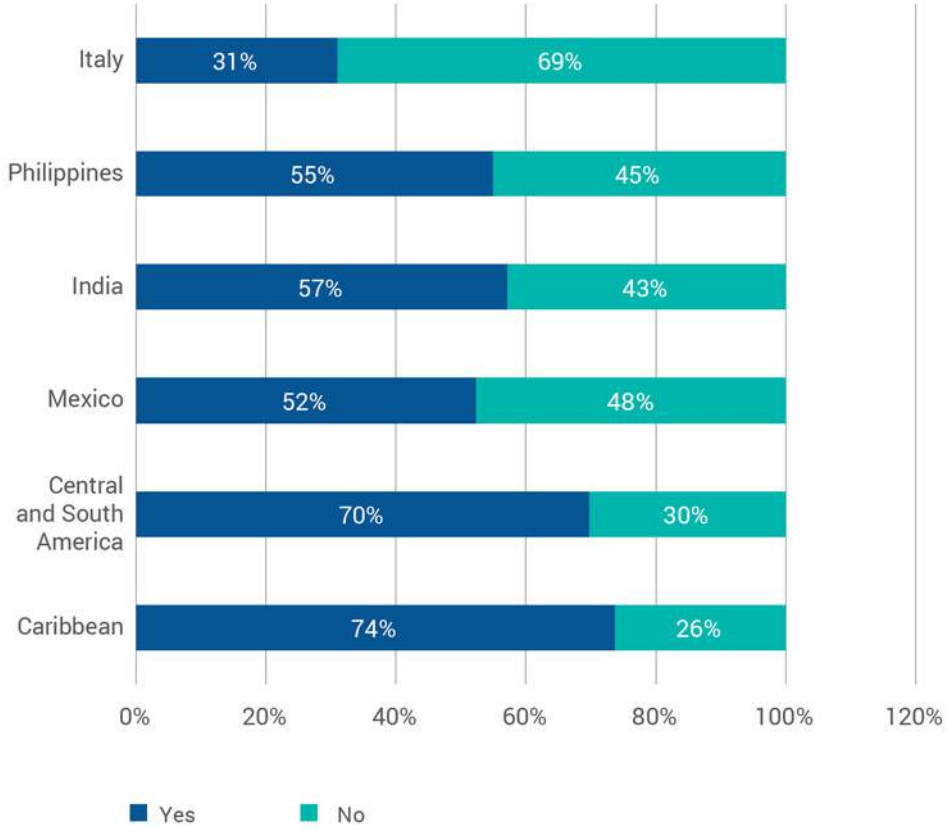
[47] https://www.iso.org/standard/75106.html

[48] Where relevant, data was also included in this guidance from a UNDRR survey conducted in 2019 on SME resilience in Italy (278 responses), where questions were directly comparable.

[49] The 2019 White Paper on SMEs in Japan indicates that data is coming from the "Survey on Disaster Measures of SMEs" and "Survey on Disaster Measures of Small Enterprises" (Mitsubishi UFJ Research and Consulting Co., Ltd.).

[50] As highlighted above, this result may be linked to the fact that many respondents to UNDRR 2020 survey could have been part of the ARISE Private Sector Alliance which focuses on private sector resilience and risk prevention. Note: Where relevant, data was also included from an earlier UNDRR survey conducted in 2019 on SME resilience in Italy (278 responses), where questions were directly comparable.

Figure 9. Does your company have any strategy/plans in place to deal with the risks that you have identified? E.g. a Business Continuity Plan



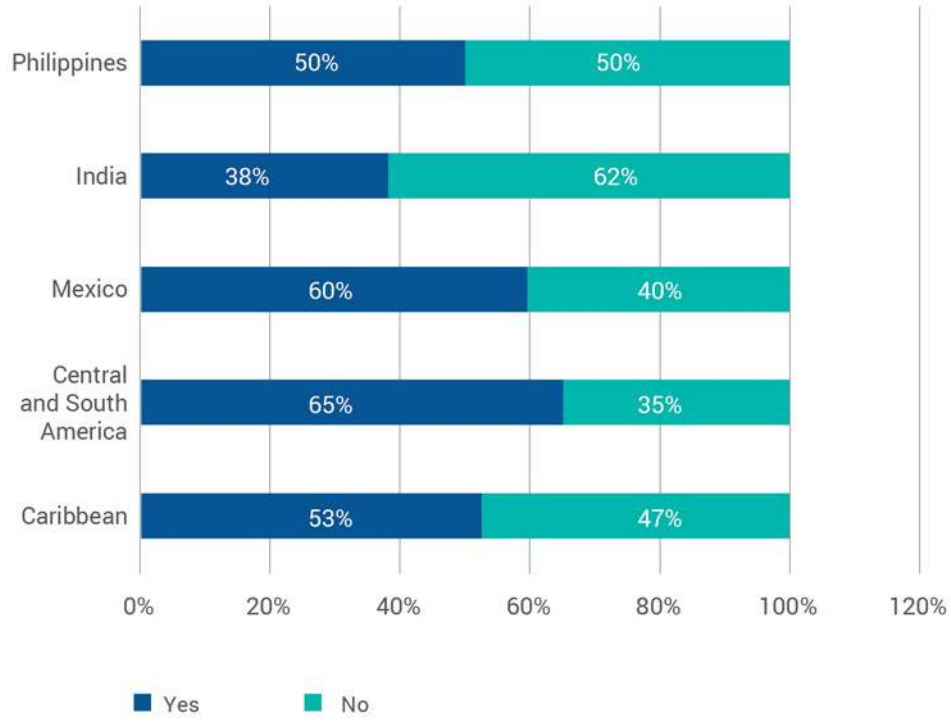
Relying on BCPs, particularly if they are largely focused on short-term response and recovery may not ensure businesses are sufficiently able to deal with risk. ERM and BCM need to systemically include DRR measures, as well as risk-informed investments and resilient infrastructure for SMEs in order to build business resilience and to build back better. This shift and expansion in focus has implications on the knowledge, approaches and tools for business resilience, ensuring that they offer other alternatives beyond or complementary to BCP. Businesses not only need to strengthen their resilience when disasters occur but also measure how their investment decisions are modifying the levels of disaster risk that they face. In Dominica and British Virgin Islands surveys following hurricanes Irma and Maria revealed low levels of integration of DRM practices, even though 67% of respondents had BCPs and other guidance procedures in place (UNISDR 2018).

A new genre of ERM, BCM and BCP tools may provide the best entry point for introducing other risk reduction focused risk assessment tools. The current international definition of a BCP[51] does not focus on the prevention aspect of risk management, or disaster risk reduction, which are key elements when preparing for uncertain futures. In re-thinking resilience, "organizations should think about reassessing and reviewing their risk assessment and business impact analyses, to look at the potential threats and vulnerabilities to the organization and identify the longer-duration, lower-duration disruptions." (PWC podcast June 2020). Prevention is also about SMEs – and those bodies that invest and lend to them – assessing their underlying disaster risks and reducing them to an acceptable level, as part of Business Continuity Management (BCM) (i-Prepare Business 2016). There has been an increased focus on the importance of risk assessment as a tool for prevention as well as for identifying business opportunities, however this is focused more on large corporates (e.g. TCFD 2017): little evidence exists on SMEs taking a scenario-based, comprehensive, multi-hazard risk and opportunity approach into BCP activities and the role this can play in prevention.

The UNDRR survey confirms mixed levels of awareness of the potential of tools such as local risk assessments that could help SMEs understand the risks they might face.

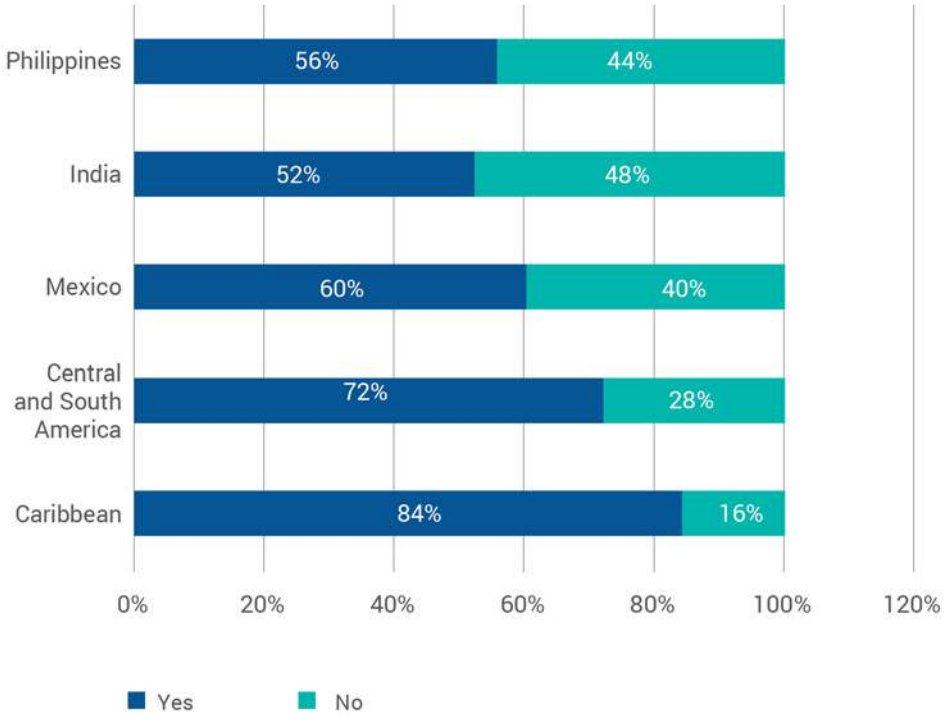
[51] ISO definition of Business Continuity Plan: "Documented procedures that guide organisations to respond, recover, resume and restore to a pre-defined level of operation following a disruption." ISO22301: 2012

Figure 10. Are you aware of any tools that can be used to understand the risks that you may face? (e.g. local risk assessments)



Taking a more comprehensive risk assessment approach could inform investment decisions: the majority of respondents state that they carry out risk assessments prior to any new investments for their business, as indicated in the adjacent figure, (noting that the UNDRR 2020 SME survey was carried out after events such as Hurricanes Irma and Maria).

Firgue 11. Do you carry out risk assessments prior to any new investments for your business?



Building the resilience of SMEs through disaster risk reduction, across both supply and value chains, is essential.[52]

Building resilience within supply and value chains is a significant challenge for SMEs and large companies alike, however solutions will differ depending on where SMEs are situated in global value chains. Supply and value chains need to be mapped to enable support to be targeted to the management of and investment in resilience of suppliers, distributors and third parties, which is critical to building resilience and achieve sustainable business activity (PWC 2016).

Resilience can also be achieved through collaboration within the supply and value chains and cross-sector, by including disaster risk considerations into the development of new and existing infrastructure, buildings, business operations or supply chains (TIPS & CANARI 2019, UNEP DTU 2018, UNDRR 2019). SME resilience requires cooperation between companies within the supply and value chains, broadening and adapting of existing SME assessment tools to enable SMEs to prevent risks and identify business opportunities (Canevari 2016, WBCSD 2015, Ingirige et al., 2008, Samantha 2018, PWC 2013).

Partnerships create shared value and can be a mechanism for building resilience across sectors and within the communities where SMEs operate. In Japan, for example, following the Great East Japan Earthquake and Tsunami in March 2011, financial institutions launched Business Continuity Planning partnerships and DRR incentives to support SMEs to build resilience and recover more quickly from disasters, creating shared value and better outcomes for SMEs, the banks and the communities they operate in (UNISDR 2013b). One study suggests that there are opportunities to build resilience within supply and value chains on three fronts: (i) rethinking business models, such as by shifting focus away from solely selling products and services to create new revenue streams; (ii) securing value-chain competitiveness, such as by taking action to improve customer access; and (iii) digitization, such as through demand-sensing and predictive analytics. Recommendations include businesses stress-testing their industrial supply chains to consider such risk factors as concentration, supplier interconnectivity, supply-chain depth, dependency, substitutability and visibility (McKinsey 2020). As noted in a May 2020 article by the Harvard Business Review, "a small minority of companies that invested in mapping their supply chain networks before the pandemic emerged better prepared (HBR 2020)."

CASE STUDY BOX 11

Supply Chain Management in the Aftermath of Earthquakes

Maiya Co., Ltd is a local supermarket chain in Iwate Prefecture, Japan. After the Great East Japan Earthquake and Tsunami in March 2011 when other local stores and national convenience store chains closed because of interrupted supply chains, Maiya continued operating to provide food and other necessities for community residents. Maiya secured supplies in two ways. It established local community networks where trusted relationships helped with emergencies. It also participated in a national association of more than 200 local supermarkets that provided backup supplies to each other during disasters.

After the earthquake and tsunami, Maiya continued to sell its products in affected areas and opened satellite stores in temporary housing units where other stores were destroyed by the tsunami. Maiya also reached residents in temporary housing and isolated communities by using truck stalls loaded with fresh foods. After three months, Maiya opened its first temporary retail space in Rikuzentakata City, where most of the buildings had been destroyed by the tsunami. The temporary store thrived as people had nowhere else to shop. Maiya was able to open four more stores within the next year. Although only 10 of Maiya's 16 stores survived the tsunami, the company's annual sales volume was equivalent to that of the previous year, with more revenue per store than in previous years.

Source: ADPC (2015)

[52] This report refers to supply chains to include activities relating to product development, sales and distribution, e.g. from the supply of raw materials through to the final product reaching consumers; value chains relates to activities where value can be added to the product (e.g. to include after-sales services). SMEs are an inherent part of activities within supply and value chains.

Downstream companies have a significant role to play in strengthening resilience within supply and value chains: some larger businesses are beginning to develop strategies for reducing and managing risks within their supply chains and developing goods and services of use in climate adaptation or DRR efforts, e.g. water-efficient technologies, drought-resistant seeds, insurance products (UNEP DTU 2018). SMEs in the UK, for example, are less likely to take steps to ensure their supply chains are resilient to climate change and adopt different attitudes to extreme weather events compared to large companies (UKCCRA 2 2016, Surminski 2018); similarly, a study conducted across six cities in the Americas (Bogotá, Miami, Kingston, San José, Santiago and Vancouver) found a significant lag in addressing the issue of risk by the private sector, especially SMEs. It showed that the larger the company, the more the possibility that the business would take active steps to implement and sustain Business Continuity Plans (FIU, 2019). There is also some evidence, globally, of larger enterprises investing to reduce their own vulnerability by strengthening the resilience of smaller businesses that are suppliers and partners.[53]

The recently launched SOS SME Climate Hub recognises the role that supply chain leaders can play in building the capacity of SMEs in their supply chain, through their "1.5°C Supply Chain Leaders" group: large international companies commit to including "climate-related targets and performance in their supplier purchasing criteria – and to work hand in hand with the SMEs in their supply chain to deliver net-zero greenhouse emissions before 2050. They will also provide concrete tools, share knowledge and exchange best practices for implementing robust climate strategies through the SME Climate Hub" (ICC 2020b).

In the wake of the COVID-19 pandemic, one study examined supply chain impacts and observed that "for organizations that understand the vulnerabilities in industrial supply chains, there is an opportunity to prepare for future shocks and build resilience without hurting efficiency" (McKinsey 2020). A survey conducted in May 2020 by the McKinsey Global Institute revealed that "93% of supply-chain leaders were planning to increase resilience and that 44% would increase resilience at the expense of short-term savings." Such efforts strengthen business sustainability via securing local employment, increased productivity, tax revenue and welfare (UNISDR 2016).

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[53] For example, The Climate-Resilient Value Chains Leaders Platform, launched September 2018; Mars Sustainable in a Generation Plan https://www.mars.com/sustainability-plan

4. RECOMMENDATIONS FOR BUILDING THE RESILIENCE OF SMES THROUGH DISASTER RISK REDUCTION

These recommendations put forward taking a multi-hazard and systemic approach to building the resilience of SMEs through prevention activities and measures, in line with the Sendai Framework.

SMEs can provide a strategic entry point to mainstream resilience measures across sectors and along supply and value chains, delivering positive benefits to both local and national economies. Because they are often embedded in local communities, but have a cumulative impact on national economies, SMEs make for good change agents, demonstrating resilient solutions through their ability to innovate and capacity to test flexible business models (Montmasson-Clair, et al., 2019). Given their relationship with local government, SMEs are also well placed to be effective communicators and crucial advocates of resilient business reform.

As summarized in Table 2, we propose the following recommendations for building resilient SMEs through prevention across four critical factors:

1. SUPPORT AND DEVELOP POLICY AND LEGAL FRAMEWORKS THAT ADDRESS THE NEEDS OF SMEs FOR BUILDING RESILIENCE THROUGH PREVENTION:

- **Collect disaggregated data on SMEs and disasters to strengthen and inform targeted and intersectional policy and fiscal approaches.** The evidence to date reveals data gaps, with evidence focussed towards the private sector in high-income countries[54] and larger companies[55] (WRI 2019, Surminski 2013,[56] Frick et al., 2017). Standardization of country-specific baseline data on SMEs is required to build tailored approaches to capacity building and to design DRR and prevention measures that are inclusive of SMEs. Data could be collected and aggregated under commonly used thresholds, (for example in number of employees) enabling more rigorous and far-reaching research (Gonzales, Hommes & Mirmulstein 2014).[57]
- **Undertake systematic evaluation (ex-ante and ex-post) of different government interventions** to establish which

[54] Studies cited include Linnenluecke et al., 2013, Agrawala et al., 2011

[55] Studies cited include Averchenkova, Crick, Kocornik-Mina, Leck, & Surminski, 2016

[56] Surminski, S. 2013. "Private-Sector Adaptation to Climate Risk." Nature Climate Change 3: 943–45.

[57] For example, country A provides X number of microenterprises under a 10-employee threshold and country B provides Y number of microenterprises under a 5-employee threshold. These statistics are hard to aggregate whereas if countries collect and report data under commonly agreed thresholds (for example, 5, 10, 50, 100, 150, 250, and few more) countries can still accommodate data to their own definitions while researchers are able to aggregate figures across countries.

SME-focused policies work best for incentivising SMEs to undertake disaster risk reduction efforts.

- **Implement international policy frameworks through comprehensive national and local disaster risk reduction strategies** coupled with financing strategies developed by ministries of finance, that enable SMEs and related investments to be resilient rather than sources of risk creation. Disaster risk reduction financing strategies should enable the integration of disaster risk reduction into other national financing processes, such as integrated national financing frameworks (INFFs).
- **Engage SMEs in policy development through local and national government and multi-sector platforms and peer-to-peer networks.** Where such platforms and networks exist currently, they provide a mechanism for deeper engagement, collaboration, promotion and strengthening of the enabling policy, regulatory and fiscal environment for SMEs and their communities. Mechanisms that enable public-private sector dialogue can ensure SMEs' voices are included and to ensure risk reduction measure have the greatest reach. Such platforms can be replicated in regions where this interface is lacking, to take account of national and regional contexts and to establish knowledge transfer systems to capture lessons learned between companies, start-ups and entrepreneurs.
- **Incentivise the legalization of informal SMEs, coupled with social protection measures, to ensure more SMEs have access to disaster risk reduction measures and are aware of how their business may be contributing to or creating risks.** In order to for DRR measures to reach and be implemented by SMEs at scale, and to reduce the exposure and vulnerability of the informal sector, the ease and scale of formalization needs to increase and be incentivised. Formalization needs to be coupled with social protection benefits (e.g. health care, retirement and unemployment protection schemes) and incentivised though additional benefits (e.g. easier access to credit, training, business advisory and development services. (UNCTAD, ILO 2016).

2. PROVIDE ACCESS TO FISCAL AND FINANCIAL PRODUCTS AND INSTRUMENTS TAILORED TO SMEs THAT SUPPORT A PREVENTION APPROACH TO BUSINESS MANAGEMENT, STRATEGY AND OPERATIONS:

- **Tailor economic incentives, disaster risk financing and transfer instruments to accommodate the particular needs of SMEs** (APDC et al., 2015): grants, low-interest loans and tax incentives for SMEs to go beyond compliance and invest in DRR and greener technologies (OECD 2018).
- **Incentivise SMEs to build back better by integrating DRR into investment and lending decisions of financial institutions and government support programmes:** building on existing approaches to integrate climate change considerations into investments in country and in large companies,[58] resilience planning to include comprehensive risk assessments undertaken by investors and lenders. Coupled with assessment action plans and a range of financial incentives, where there is evidence that SMEs are starting to consider and managing such risks, these combinations of approaches and products can act as catalysts for change and enable SMEs to build back better, modifying the levels of disaster risk they face.

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- **Incentivise SMEs to implement nature-based solutions (NbS) to reduce the exposure and vulnerability to disaster risks of the business and the communities in which they operate:** National and local governments should reorient policies, financing and investments, including developing programs to better mobilize private sector support to incentivise the implementation of nature-based solutions at all scales. Public and private-sector investment should go beyond protecting individual assets to ensuring that whole systems are more resilient and contributing to systemic risk reduction, including through consideration of large-scale site selection, as well as linking and connecting existing zones in which NbS are allocated.

- **Promote insurance pricing and pre-requisites that incentivises SMEs to adopt prevention activities and measures.** The insurance sector could play a key role in implementing approaches for variable pricing of insurance, reinsurance or co-insurance coverage to provide incentives for policyholders to reduce their risks, as well as reflecting various risk reduction pre-requisites (e.g. current examples of managing residential and business property development in floodplains) (OECD 2020b).

- **Provide support to microfinance institutions (MFIs) to incorporate prevention activities and measures:** including financial instruments to ensure liquidity in the wake of disasters, capacity building for digitization of lending and payments and regulatory reforms to keep pace with the growing list of services provide by MFIs (i.e. leasing and insurance) to limit predatory lending practices.

3. COMBINE ENTERPRISE RISK MANAGEMENT AND BUSINESS CONTINUITY MANAGEMENT MECHANISMS TO BETTER INCORPORATE AND INCREASE THE FOCUS ON PREVENTION:

- **Build capacity for integrated Enterprise Risk Management and Business Continuity Planning that mainstreams prevention and better connects risk analysis and reduction.** Taking a comprehensive approach would mean embedding prevention into Enterprise Risk Management and Business Continuity Planning and integrating these processes within businesses, and providing awareness raising, capacity building and financial support to SMEs for adopting such internal planning practices. This implies a focus on activities and measures that reduce an SME's exposure and vulnerability to risks.

- **Establish a common understanding of disaster risk reduction and resilience that applies to SMEs.** To help build SMEs' awareness of the importance of disaster risk reduction and enable them to measure how their investment decisions are modifying the levels of disaster risk that they face, terminologies and processes should be clarified and include disaster (and) risk terminology (prevention; preparedness; response; recovery) through suggested key performance indicators for SMEs, in line with relevant international standards, to assess and track their disaster risk reduction and resilience efforts, beyond response and recovery (UNDRR 2019b).

- **Develop the capacity of SMEs to incorporate strategic foresight, scenario building and scenario planning** to identify multiple and intersecting hazards and their cumulative impact. SME resilience needs to be looked through a systemic lens, since businesses do not operate in isolation, to avoid managing risks on a hazard-by-hazard basis. This would facilitate identifying measures to prevent risk creation and strengthening resilience to multiple hazards and residual risks by reducing exposure and vulnerability to potential impacts.

4. MAP AND ADDRESS INTERDEPENDENCIES, COMPLEXITIES AND INEQUITIES IN SUPPLY AND VALUE CHAINS RELATED TO DISASTER RISKS:

- **Incentivise those working with SMEs to build the capacity of SMEs to map and stress-test their supply and value chains:** larger downstream companies should commit to mapping and stress-testing their supply chains (McKinsey 2020) and publicly disclose risks by employing scenario-planning, supplier engagement and assessment approaches that look beyond direct risks to consider the complexities of the value chain, considering upstream (often smaller) suppliers which can lack capacity to invest in resilience measures as well as downstream stakeholders (GCA 2019b).

- **Enhance collaboration among stakeholders within supply and value chains and across sectors to reduce exposure and vulnerability to disaster risks.** This includes incorporating disaster risk into the development of new and existing infrastructure, buildings, business operations and supply chains (TIPS & CANARI 2019, UNEP DTU 2018, UNDRR 2019). SME resilience requires cooperation between companies within supply and value chains and a broadening and adapting of existing assessment tools to enable SMEs to prevent risks and identify business opportunities (Canevari 2016, WBSCD 2015, Ingirige et al., 2008, Samantha 2018, PWC 2013). Partnerships create shared value and can be a mechanism for building resilience across sectors and within the communities where SMEs operate.

Table 2

CRITICAL SUCCESS FACTORS	RECOMMENDATIONS TO GOVERNMENTS AND INTERNATIONAL BUSINESS ORGANIZATIONS AND ASSOCIATIONS	PRIMARY AUDIENCE (I.E. IMPLEMENTERS)
1. Support and develop policy and legal frameworks that address SMEs' for building resilience through prevention	Collect disaggregated data on SMEs and disasters to strengthen and inform targeted and intersectional policy and fiscal approaches.	• Statistical organizations and governments
	Undertake systematic evaluation (ex-ante and ex-post) of different government interventions to establish which SME-focused policies work best for incentivising SMEs to undertake disaster risk reduction efforts.	• Governments and international business organizations and associations
	Implement international policy frameworks through comprehensive national and local disaster risk reduction strategies coupled with financing strategies.	• Governments
	Engage SMEs in policy development through local and national government and multi-sector platforms and peer-to-peer networks.	• Governments
	Incentive the legalization of informal SMEs, coupled with social protection measures, to ensure more SMEs have access to disaster risk reduction measures and are aware of how their business may be contributing to or creating system risks.	• Governments and international business organizations and associations
2. Provide access to fiscal and financial products and instruments tailored to SMEs which support a prevention approach to business management, strategy and operations	Tailor economic incentives, disaster risk financing and transfer instruments to accommodate the SMEs' particular needs.	• Governments and financial institutions
	Incentivise SMEs to build back better during recovery by integrating disaster risk reduction into investment and lending decisions of financial institutions and government support programmes.	• Governments and financial institutions
	Incentivise SMEs to implement nature-based solutions (NbS) to reduce the exposure and vulnerability to disaster risks of the business and the communities in which they operate.	• Governments and financial institutions
	Promote insurance pricing and pre-requisites that incentivise SMEs to adopt prevention activities and measures.	• Insurance providers and associations
	Provide support to microfinance institutions to incorporate prevention activities and measures.	• Governments and financial institutions
3. Combine Enterprise Risk Management and Business Continuity Management mechanisms to better incorporate and increase the focus on prevention	Build capacity for integrated Enterprise Risk Management and Business Continuity Planning that mainstreams prevention and better connects risk analysis and reduction.	• Business organizations and associations
	Establish a common understanding of 'business resilience' and other disaster risk reduction terminology that applies to SMEs.	• Business organizations and associations
	Develop the capacity of SMEs to incorporate strategic foresight, scenario building and scenario planning to identify multiple and intersecting hazards and their cumulative impact.	• Business organizations and associations
4. Map and address interdependencies, complexities and inequities in supply and value chains related to disaster risks	Incentivise those working with SMEs to build the capacity of SMEs to map and stress test supply and value chains.	• Governments and international business organizations and associations
	Enhance collaboration among stakeholders within supply and value and supply chains and across sectors to reduce exposure and vulnerability to disaster risks.	• Governments and international business organizations and associations

NEXT STEPS

SMEs will continue to be critical actors at the local level in building resilience and reducing disaster risk. UNDRR is committed to supporting SMEs and the broader business sector to recognize risk and invest in prevention to safeguard sustainable development. UNDRR recognizes that globalization offers opportunities for replication and scaling, but that connectedness also brings higher exposure to systemic risk with cascading impacts. UNDRR works with Member States to develop national and local disaster risk reduction strategies that are cognizant of the particular needs of SMEs, so that a whole-of-society risk reduction approach is implemented. UNDRR also works with other UN system partners and through our ARISE private sector network, identifying learning and best practice examples, disseminating guidance and tools. Specifically, working in close collaboration with partners, UNDRR will continue to develop resources that build SME resilience through DRR, with a focus on the following:

1. Assess how risks are distributed across different sectors (e.g. agriculture, construction, transport and utilities) and selected value chains therein, to investigate disaster impact for SMEs and the gaps preventing resilience building of SMEs as both upstream suppliers and downstream buyers.
2. Make the business case to SMEs, policy makers and business leaders, for integrating SME resilience across business planning processes by articulating long-term economic advantages for building the resilience of SMEs.
3. Develop a "next generation" of comprehensive Business Continuity Planning (BCP) as an entry point for risk assessment tools and DRR measures with a focus on prevention, including integration of strategic foresight, scenario building and scenario planning and the role of Nature-based Solutions.
4. Develop policy, fiscal and SME-focused recommendations, including differentiated recommendations related to the sectors and value chains assessed, to integrate SMEs as part of national and local DRR strategies.
5. Develop concrete guidance recommendations and resources on how to improve the resilience of SMEs in selected sectors and value chains, which could be tested in different regions and sectors in 2021.

With this work, UNDRR is aiming to catalyse SME risk reduction efforts, moving away from preparedness and response towards prevention, and in doing so, build SME resilience to multiple hazards and systemic risk and enable them to thrive and innovate.

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ANNEX 1: KEY TERMINOLOGY

Adaptation – The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as: "The process of adjustment to actual or expected climate and its effects." Resilience is "The capacity of ... systems to cope ... responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation."

Adaptation is therefore a process that increases resilience and resilience is the ability to restore functionality after disruption as well as to reduce vulnerability. Resilient systems continually adjust to threats so they are able to recover swiftly.

Business Continuity Management (BCM) – (ISO 22301:2012) "Holistic management process that identifies potential threats to an organization and the impacts to business operations those threats, if realized, might cause, and which provides a framework for building organisational resilience with the capability of an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities."

Business Continuity Plan (BCP) – (ISO 22301:2012) Documented procedures that guide organizations to respond, recover, resume and restore operations to a pre-defined level following disruption.

Coping capacity (UNISDR) – The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

Disaster (UNISDR) – A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disaster Risk (United Nations 2016) – The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity.

Disaster Risk Management (DRM) (United Nations 2016) – Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses.

Disaster Risk Reduction (DRR) (United Nations 2016) – Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development.

Annotation: Disaster risk reduction is the policy objective of disaster risk management, and its goals and objectives are defined in disaster risk reduction strategies and plans.

Hazard (United Nations 2016) – A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Hazards may be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity or magnitude, frequency and probability. Based on a scientific study on the classification of Sendai Framework hazards, there are eight clusters of hazards (UNDRR-ISC 2020):

- **Meteorological and hydrological hazards:** are those resulting from the state and behaviour of the Earth's atmosphere, its interaction with the land and oceans, the weather and climate it produces and the resulting distribution of water resources.
- **Extraterrestrial hazards:** are those originating outside the Earth, such as asteroid and meteorite impacts or solar flares.
- **Geohazards:** are hazards with a geological origin. They have been divided into three hazard clusters, two of which – seismogenic and volcanogenic – are the result of Earth's internal geophysical processes, and a third – shallow geohazards – are the result of surface or near-surface processes, generally resulting in erosion or some type of mass movement.
- **Environmental hazards:** arise through degradation of the natural systems and ecosystem services upon which humanity depends.
- **Chemical hazards:** include chemical hazards that have immediate (acute) effects, as well as chronic effects, often resulting from long-term exposures with adverse health outcomes.
- **Biological hazards:** include pathogenic microorganisms, and toxins and bioactive substances that occur naturally or are deliberately or unintentionally released. Bacteria, viruses, parasites, venomous animals and mosquitoes carrying disease-causing agents are also examples of biological hazards. Exposure to zoonotic pathogens is often the source of emerging infectious diseases in humans, which puts a focus on risk assessment and risk management measures at the human-animal-environment interface.
- **Technological hazards:** arise from the possibility of failure of an existing technology as well as from emerging technologies.
- **Societal hazards:** are brought about entirely or predominantly by human activities and choices and have the potential to endanger exposed populations and environments.

Micro, Small and Medium Enterprise (MSME) – There is no unique definition; therefore the definition varies from country to country and from organization to organization.

The World Bank[59] defines MSMEs based on number of employees: firms with less than 5 employees are micro businesses; firms with 6-49 employees are small; firms with 50-99 employees are medium sized; and firms with more than 100 employees are considered as large firms.

International Finance Corporation (IFC) definition of MSMEs: micro enterprises: 1–9 employees; small: 10–49 employees; and medium: 50–300 employees. IFC also uses assets and annual sales as variables for their MSME definition. There is also an IFC loan size proxy for defining MSMEs.

EUROSTAT and SME Performance Review EU use several breakdowns to accommodate different SME definitions: 0–9 (0 to 9 persons employed), 10–19 (10 to 19 persons employed), 20–49 (20 to 49 persons employed), 50–249 (50 to 249 persons employed), GE250 (250 or more persons employed).

Mitigation (United Nations 2016) – The lessening or minimizing of the adverse impacts of a hazardous event.

Annotation: The adverse impacts of hazards, in particular natural hazards, often cannot be fully prevented, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures include engineering techniques and hazard-resistant construction as well as improved environmental and social policies

[59] https://www.semanticscholar.org/paper/Micro-%2C-Small-%2C-and-Medium-Enterprises-Around-the-%3A-Kushnir-Mirmulstein/99ab1c743d6463e53734a8ad9f19c6450a4aae5c

and public awareness. It should be noted that, in climate change policy, "mitigation" is defined differently, and is the term used for the reduction of greenhouse gas emissions that are the source of climate change.

Multi-hazard (United Nations 2016) – (1) the selection of multiple major hazards that the country faces, and (2) the specific contexts where hazardous events may occur simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects.

Preparedness (United Nations 2016) – The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises.

Prevention (United Nations 2016) – Activities and measures to avoid existing and new disaster risks. Prevention (i.e. disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts of hazardous events. While certain disaster risks cannot be eliminated, prevention aims at reducing vulnerability and exposure in such contexts where, as a result, the risk of disaster is removed. Examples include dams or embankments that eliminate flood risks, land use regulations that do not permit any settlement in high risk zones, seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake and immunization against vaccine preventable diseases. Prevention measures can also be taken during or after a hazardous event or disaster to prevent secondary hazards or their consequences, such as measures to prevent the contamination of water.

Recovery (United Nations 2016) – The restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster affected community or society, aligning with the principles of sustainable development and "build back better", to avoid or reduce future disaster risk.

Resilience (IPCC2) – The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.

Response (United Nations 2016) – Actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Vulnerability (United Nations 2016) – The conditions determined by physical, social, economic and environmental factors or processes that increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.

[60] https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/priorities/ifcs+definitions+of+targeted+sectors

[61] https://www.researchgate.net/publication/281281793_MSME_Country_Indicators_2014_Description_Note

ANNEX 2:
UNDRR SURVEY RESULTS

ANNEX 3:
UNDRR COMPENDIUM OF SME RESOURCES