

Disasters can **seriously undermine business competitiveness** and longer-term economic sustainability. In the last two years, many businesses experienced **direct losses or impacts in the supply chain** affecting their profitability. If critical infrastructure such as transport networks and power supply are affected, businesses suffer. But business is affected not only as a consequence of direct and indirect losses but also owing to **wider impacts and macroeconomic effects**.

Market share may be lost as **clients transfer their business to competitors**; skilled workers may move or find other jobs; and relationships with suppliers and retailers can be severed. Consequently, business **image and reputation** may be permanently **damaged**, affecting longer-term sustainability.

Critically, global trade, financial markets and supply chains have become increasingly interconnected. When **local disasters occur in globally integrated economies**, the **impacts ripple** through regional and global supply chains causing indirect losses to businesses on the other side of the globe.

1.1 Like pouring water into a bamboo basket

The 1990s were what they call a “lost decade” for the Japanese economy as a whole, and the Port of Kobe was already losing its comparative advantage. However, it was the 1995 Great Hanshin-Awaji Earthquake that drastically accelerated its decline.

During the 1960s and 1970s, the Port of Kobe, Japan, was the principal transport hub between Asian manufacturers and markets in North America. In the 1980s, however, its market share began

to fall owing to high costs, inflexible operations and powerful labour unions (Containerisation International, 1998a).

Prior to the 1995 earthquake, Kobe was the world’s sixth-busiest port. After the quake, it failed to recover that prominence (see Box 1.1 below). Following two years of rebuilding, in March 1997, Kobe had fallen to 17th place worldwide (Chang, 2000b); by 2000, it fell further to 23rd place; and by end-2010, it ranked 47th (Nagamatsu, 2007). During the port’s reconstruction period, a big boost in trans-shipping business was given to other Asian ports, which provided lower costs, a large productive

Box 1.1 The Great Hanshin-Awaji Earthquake

At 5:46 am on 17 January 1995, a 7.3 Mw earthquake in the southern part of Japan’s Hyogo Prefecture killed 6,437 people (Government of Japan, 2011). Direct damage was estimated at US\$100 billion (Chang, 2000a; Nagamatsu, 2007) and damage to Kobe’s port accounted for 10 percent of that total, affecting all 35 container shipping berths; 177 out of 186 non-container shipping berths; and all gantry cranes, warehouses, bridges and utility lines (Chang, 2000a).

When the port shut down, devastating impacts rippled outward—the port had provided 39 percent of Kobe’s income and employed 17 percent of its population (City Government of Kobe, 2010). Disruption of port services cost US\$300 million per month—the equivalent of income loss for 40,000 employees in port-related businesses, manufacturing, wholesale and retail trade (Chang, 2000a). Businesses absorbed higher transportation costs, and only from March to December 1995, these secondary costs amounted to approximately US\$4 billion.





hinterland and growing consumer markets (Containerisation International, 1998a). Busan, Republic of Korea's second largest city, in particular, stood to gain substantially (OECD, 2009).

Booming business never returned to the port despite efforts to improve competitiveness—efforts included reducing harbour dues, wharfage and land rental fees, and operating around the clock. It was like “pouring water into a bamboo basket” said Rinnosuke Kondoh, former deputy secretary general of the Tokyo-based International Association of Ports and Harbours (Containerisation International, 2003). Even without the earthquake, the port would have most likely gradually lost market share; but there is no doubt that its competitiveness was fatally weakened by the quake.

An investment of US\$163 billion in rebuilding Kobe meant that its damaged infrastructure was quickly reconstructed. But this did not lead to sustainable economic recovery. Until 1995, Hyogo Prefecture was growing roughly in line with Japan as a whole. Except during the post-earthquake stimulus, when reconstruction spending gave a temporary boost, its economy then slid into a long decline (Hayashi, 2011).

1.2 Dimensions of disaster

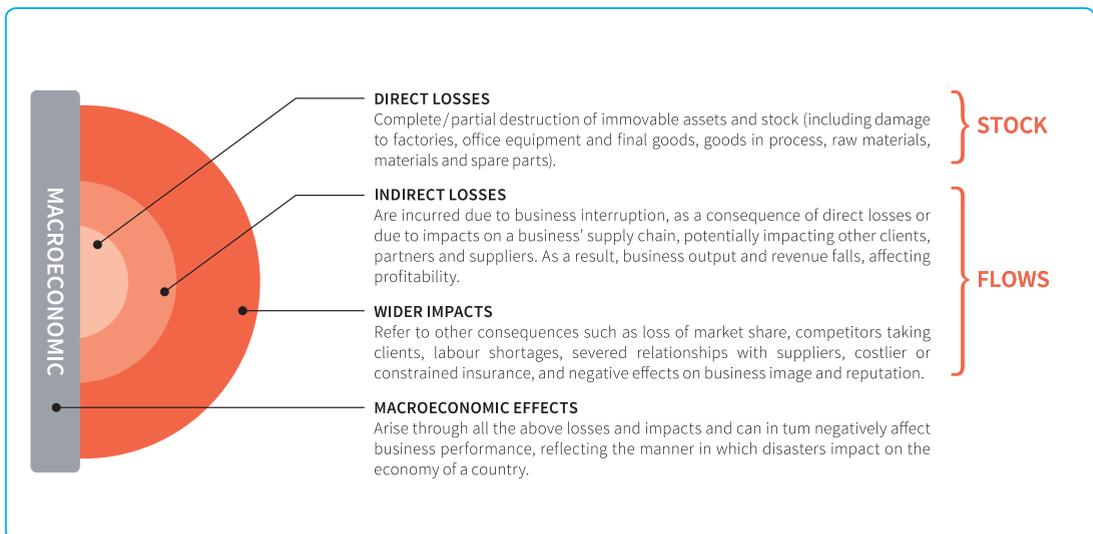
The increasing frequency and scale of disasters is demonstrated by how businesses today suffer direct and indirect losses and a series of wider impacts and macroeconomic effects.

Businesses are increasingly concerned with disaster-related direct losses to their assets or indirect losses in their supply chain causing a fall in output and revenue, thereby affecting profitability. But business is affected not only as a consequence of these losses but also owing to wider impacts and macroeconomic effectsⁱⁱ (Figure 1.1).

Businesses suffer direct losses when they have invested in locating factories, offices, plant, warehouses and other facilities in locations exposed to hazards such as floods, cyclones, earthquakes or tsunamis and without adequate investments to reduce risks.

But there are critical differences regarding how these losses affect business, depending on the kind

Figure 1.1 The different dimensions of disaster losses, impacts and effects on businessⁱⁱ



(Source: UNISDR, adapted from PwC)

of disaster and size of business. Large global businesses are rarely at risk from smaller extensive disasters, but may be severely affected by major intensive events such as the 2011 Great East Japan Earthquake or the 2011 Chao Phraya river floods in Thailand. Such intensive disasters often cause massive direct capital losses to factories, plant and stock as well as to critical infrastructure such as ports, airports, power stations and urban mass transit systems.

For example, on 11 March 2011, the Great East Japan Earthquake and tsunami generated direct losses of about US\$206 billion,ⁱⁱⁱ representing approximately 20 percent of average annual gross fixed capital formation from 2008 to 2012.^{iv} Similarly, direct losses from the Chao Phraya river floods were approximately US\$45.7 billion, which equals more than 60 percent of Thailand's average annual gross fixed capital formation from 2006 to 2010.^v Because so many businesses suffered simultaneously, the respective national economies were severely impacted. For example, at the beginning of 2011, Japan's projected annual GDP growth was 1.5 percent. Following the Great East Japan Earthquake, GDP fell by 3.1 percent in the first quarter of 2011 and by 2.1 percent in the second quarter of 2011 (Funabashi and

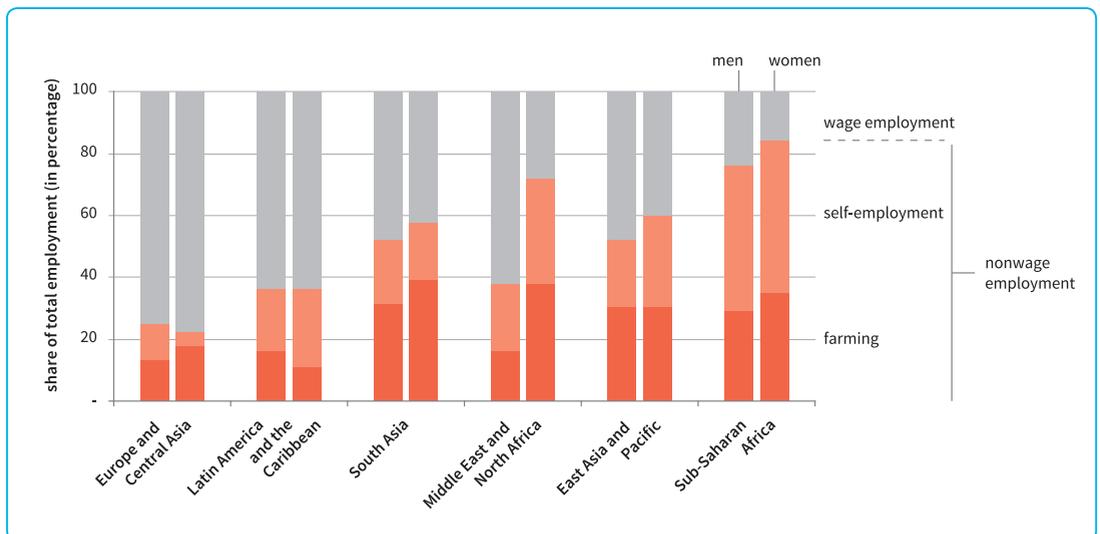
Takenaka, 2012). In Thailand, owing to damage to industrial estates^{vi} by the Chao Phraya river floods, GDP fell by 9.0 percent in the fourth quarter of 2011 compared with the same quarter in 2010.

Following intensive disasters large global businesses may be less hard-hit owing to diversified facilities and operations spread over many countries and regions and to insurance coverage; often only a small percentage of such companies' global capital stock is affected at any given time.

Micro and small and medium enterprises (SMEs)^{vii} play an important role in low, middle and high-income economies. They account for one-third of low-income countries' employment, and estimates of their contribution to total employment in high-income countries range from more than 50 percent (IFC, 2012) to 65 percent in OECD countries (UNDP, 2004) and 70 percent globally (ILO, 2012). In addition, they contribute between 51 percent and 55 percent of GDP in high-income countries (UNCTAD, 2005; Dalberg, 2011) and play a fundamental role in community dynamics (UNDP, 2013).

The informal business sector also plays a key role in employment in many economies. Smallholder

Figure 1.2 Share of wage and non-wage employment across the globe



(Source: World Bank, 2012a)



farmers and informal small and micro-enterprises occupy the bulk of the labour force in many parts of Asia and Africa (Figure 1.2).

Compared with global businesses, informal sector producers and SMEs are far less resilient, particularly in low and middle-income countries. Smaller businesses are at risk to recurrent localised extensive disasters, such as landslides, fires, floods and storms. More likely to be located in hazardous areas, with evolving extensive risk, these businesses are less likely to have invested in protective risk-reducing schemes.

A single disaster may wipe out all or a large part of businesses' capital; and only a small percentage of these smaller businesses have insurance coverage. In Pakistan, for example, uninsured SMEs took longer to recover from the major floods in 2010 than larger businesses; a good majority of SMEs did not survive (Asgary et al., 2012).

These losses may result in poverty outcomes. In normal times, asset holdings in small businesses—ranging, for example, from fishing boats, carpentry and welding equipment and tools to farm implements—increase the income generating potential of poor households, leading to higher welfare and less poverty. Asset holdings also offer a crucial means to buffer disaster losses (UNISDR, 2009). In the absence of formal and informal credit and insurance markets or safety nets and social security, however, the loss of asset holdings can reduce consumption in the short term and lead to an observable deterioration in health, nutritional and educational status and other welfare problems in the longer term. Disasters for business thus translate into disasters for households and communities.

1.3 When business loses its lifelines: indirect losses and infrastructure damage

Infrastructure—such as road, power and water networks, and health and primary education facilities—is a basic requirement of a competitive economy. Businesses rely on functioning utilities and communications networks, which are provided by a range of public and private actors. It is therefore vital for competitiveness and sustainability of an enterprise to ensure that critical infrastructure is resilient to shocks.

When infrastructure fails, businesses experience indirect losses, as production, distribution and supply chains are interrupted; consequently, production, output and throughput are reduced. Even when businesses do not experience direct losses, they depend on publicly managed or regulated roads and transportation lines, energy and water networks as well as on a workforce that in turn depends on housing, education and health facilities.

In New York and New Jersey, for example, many businesses that did not suffer direct losses caused by Super-storm Sandy (Box 1.2) were affected by transport and power network failures, airport closures and difficulties faced by employees whose homes were damaged or unable to get to work.

Intensive disasters such as Super-storm Sandy or the 2011 East Japan Earthquake can damage major infrastructure facilities such as mass transit systems, power stations, ports and airports. However, most damage to local infrastructure is associated with extensive disasters. In Figure 1.4, disaster loss data from 56 countries show that more than 90 percent of damage to roads, power and water supplies and telecommunications is associated with extensive risk.

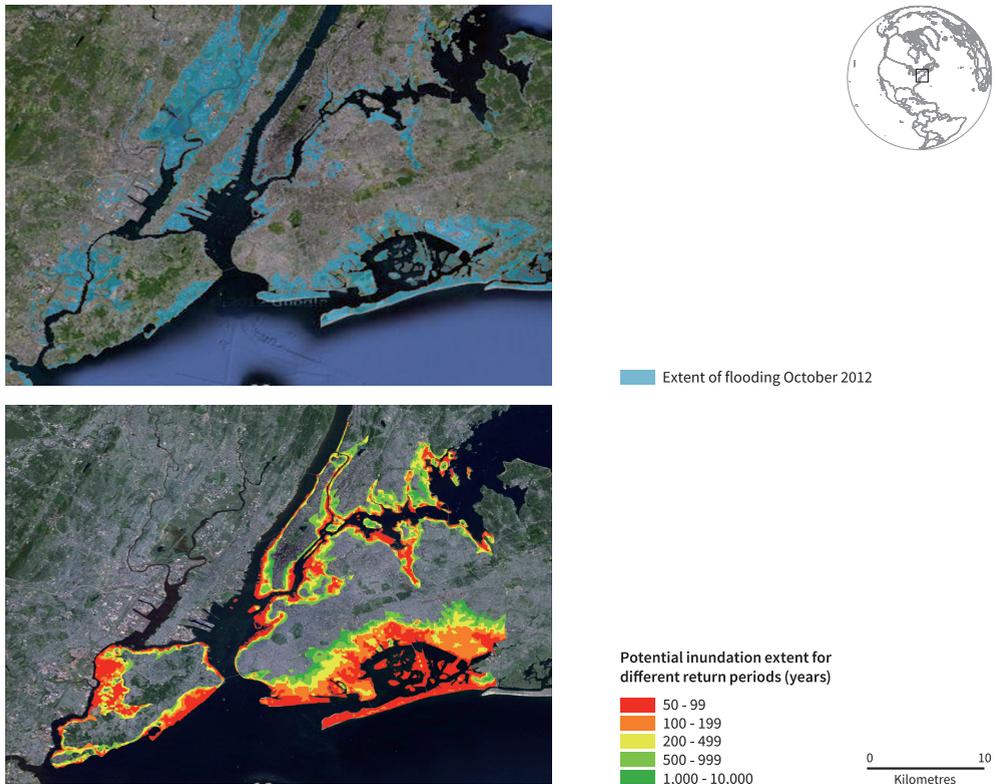
This example highlights the critical interdependence between business and the public sector. Although public investment may be no more than 15 percent

Box 1.2 'Super-storm' Sandy^{viii}

In October 2012, sub-tropical storm Sandy triggered the evacuation of thousands from the East Coast of the United States of America, leading to the shut-down of national and local transport systems and severely disrupted electricity and communication supplies, with power cuts affecting an estimated 8.5 million homes and businesses (RMS, 2012). Of the refineries in the East Coast of the United States of America, 70 percent had to be shut down for days; many New York City metro line subways were flooded; and about 15,000 flights were grounded across the Northeast (Time, 2012). Equity trading on all markets was cancelled for two days—the first two-day shutdown since 11 September 2001 (IHS Global Insight, 2012).

As Figure 1.3 shows, the event confirmed results from existing models that showed how New York would be at risk of severe losses from storm surges and flooding.

Figure 1.3 Extent of flooding in New York City due to Super-storm Sandy (top) compared with a hazard map showing areas that could be expected to be flooded due to storm surges (bottom)



(Source: Swiss Re Hurricane Storm Surge Model)

Soon after the storm passed, it was clear that indirect losses to business activity caused by disruption to public transport and energy supplies were likely to be greater than direct losses (EqCat, 2012; IHS Global Insight, 2012). The disaster revealed the dependency of businesses on publicly managed or regulated infrastructure.

(Source: UNISDR)



Figure 1.4 Proportion of infrastructure damaged in extensive disasters in 56 countries and 2 Indian states, between 1970 and 2011



(Source: UNISDR, based on National Disaster datasets for 56 countries and 2 states)

La Niña in Colombia 

Box 1.3 La Niña in Colombia

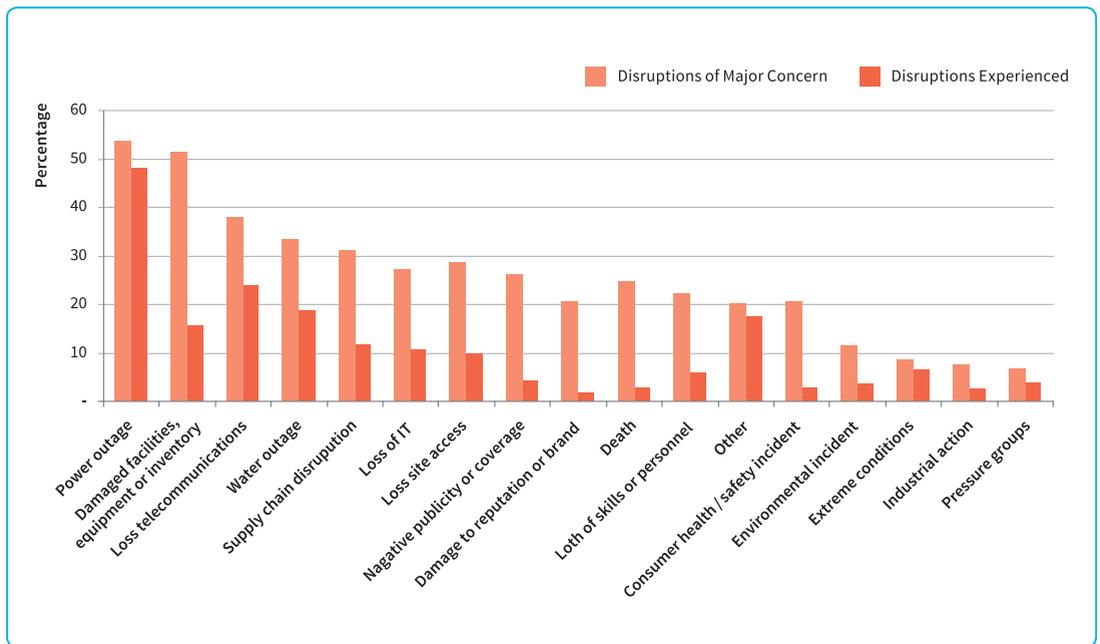
Between 2010 and 2012, a very strong, though not exceptional, La Niña affected Colombia. Of the country’s 1,041 municipalities, 93 percent were affected, mainly by flooding (OSSO, 2012) over a 14-month period.

Direct economic loss was estimated at about US\$6 billion, representing nearly 6 percent of the country’s gross capital formation (CEPAL, 2012). By the end of 2011, insured losses had exceeded US\$600 million, including US\$76 million to repair a flooded thermoelectric power plant (Marsh, 2012). Although only a small proportion of total losses were insured, the disaster resulted in an increase in deductibles for insurance of flood-related damage and loss. SMEs were particularly affected given that many were uninsured and did not have access to resources required for business recovery. Similarly, 93–95 percent of estimated household losses were uninsured (Fasecolda, 2011).

The housing and infrastructure sectors (transport and energy) each accounted for 38 percent of total direct losses. In particular, 14 percent of the national road network and 3 percent of its bridges were damaged. This represented US\$1.7 billion in repairs in 2011 alone (Government of Colombia, 2011).

(Source: UNISDR)

Figure 1.5 Hazard-related business disruptions: of major concern and that actually had been experienced during the last five years (in percent)



(Source: Sarmiento and Hoberman, 2012)

of total capital formation in many countries, how that investment is made, managed and regulated is fundamental to business resilience, competitiveness and sustainability. If public infrastructure is vulnerable, business is also at risk.

In Costa Rica, for example, direct disaster losses totalled US\$1.8 billion between 1988 and 2009. Of these, 62 percent were in public infrastructure, of which more than half was located in the business-critical transport sector (Government of Costa Rica, 2010).

In Colombia, road networks represent a major challenge to business competitiveness. As Box 1.3 shows, this competitiveness was eroded during the 2010–2011 El Niño Southern Oscillation (ENSO) episodes,^{ix} when a large number of extensive disasters caused major damage.

The importance of public infrastructure for business is confirmed in a survey carried out for this report in six disaster-prone cities of the Americas.^x As Figure 1.5 shows, three of the top four hazard-related

business disruptions – both of major concern and that had actually been experienced during the last five years – were related to disruptions in power, telecommunications and water utilities (Sarmiento and Hoberman, 2012).

Although larger businesses normally have the cash flow and reserves to absorb indirect losses, many smaller businesses simply never recover. Smaller businesses have a reduced, more localised customer base—often affected during disasters (UNDP, 2013; Battisti and Deakins, 2012). When lack of local customers reduces demand and thus cash flow, smaller businesses’ financial resources for recovery are limited (Villarroel, 2012; Vitez, 2013).

1.4 Globally integrated disasters: supply chain interruption

Global trade, financial markets and supply chains have become increasingly interconnected. When disasters occur in globally integrated economies, the impacts ripple through regional and global supply chains causing indirect losses to businesses on the other side of the globe.

As supply chains become globalised, so does the vulnerability of businesses to supply chain disruptions, for example, when disasters affect critical production nodes or distribution links. The interruption of one critical node or link produces regional and global ripples throughout the supply chain.

Global supply chains increasingly supply disaster risks as well as parts and services. For example, a survey of businesses in 62 countries found that 85 percent of organisations had experienced at least one supply chain interruption in 2011. Of these, 51 percent were caused by weather-related hazards and another 20 percent by earthquakes in Japan and New Zealand (BCI, 2011).

The impacts of the Eyjafjallajökull volcanic ash cloud in Iceland in April 2010 demonstrated how an eruption could affect business in a globalised world (Munich Re, 2010). For up to six days, air traffic in most European countries was shut down; and airlines lost US\$1.7 billion in revenues.^{xi} At its peak, the crisis impacted 29 percent of global aviation and affected

Box 1.4 From Japan to Thailand and back again

3.11 Tsunami



Following the 2011 earthquake and tsunami, automobile and electrical component production in Japan declined by 48 percent and 8 percent, respectively. But automobile production also fell by 20 percent in Thailand, 18 percent in the Philippines and 6 percent in Indonesia. Electrical component production fell by 18 percent in the Philippines and 8 percent in Malaysia (Ye and Abe, 2012).

The Renesas Electronics Corporation, the world's largest custom manufacturer of microchips for the automobile industry, and which serves Japanese automobile manufacturers, suffered estimated losses of US\$615 million. Toyota lost US\$1.2 billion in product revenue owing to parts shortages that caused 150,000 fewer Toyota automobiles to be manufactured in the United States of America; production stoppages at five plants in the United Kingdom; and reductions in production of 70 percent in India and 50 percent in China (Asano, 2012).

Following Tropical Storm Nock-Ten and heavy monsoon rains, the Chao Phraya River flooded in Thailand, inundating 15 provinces of the country (Haraguchi and Lall, 2012). From October to December 2011, more than 1,000 factories of 804 companies were flooded for up to two months. Of these companies, 451 were Japanese (Ibid.).

Although the factories of Nissan and Toyota were not flooded, they had to suspend car production owing to the difficulty in obtaining parts from affected suppliers. In November 2011, automobile production fell by 84 percent compared with the same month in 2010. Given that Thailand plays a key role in global supply chains in the electronics and automobile industries, Honda factories in Malaysia, North America and Japan had to reduce or halt production. Total loss of operating profit to Toyota and Honda was estimated at US\$1.25 billion and US\$1.4 billion, respectively. As in the case of the Japan earthquake, a significant proportion of these losses were because of one affected supplier that produced critical electronic components (Haraguchi and Lall, 2012).

At the time, Thailand also produced 43 percent of the world's hard disk drives (Okazumi et al., 2012). Leading producers such as Seagate, Western Digital, Toshiba and Hitachi were all located in the flooded area. During the floods, hard disk drive production fell by 77 percent, causing the price of some hard disk drives to triple between November 2011 and February 2012 (Ye and Abe, 2012).

Given the large number of Japanese companies in Thailand, Japan's manufacturing production index fell by 2.4 percent between October 2011 and January 2012, led by a reduction in electrical component production, which fell by 3.7 percent (Ibid.).

(Source: UNISDR)

1.2 million passengers a day.^{xiii} Businesses also lost billions in uninsured losses (Munich Re, 2010). Insurance payments are only made if business interruption is preceded by physical damage to the insured property itself or – with extended coverage – a supplier of parts or utility company. In this case, aircraft were not damaged; they were simply grounded.

In Japan and Thailand, businesses in areas affected by the 2011 disasters suffered direct loss to property, plant, equipment and stock or were indirectly impacted by power shortages or by damage to roads, railways and ports. As Box 1.4 shows, these losses and impacts had systemic regional and global implications.

Many large global businesses rely on SMEs as partners and suppliers, which means that supply chain risk is directly related to the capacity of SMEs to manage their disaster risks. Given that, as

highlighted above, the most frequent disaster risks faced by SMEs are related to utilities such as power, water and telecommunications; interdependence also exists between disaster risk management in the public sector and supply chain risk.

Thailand floods



1.5 When business leaves, it may never return

As the decline of the Port of Kobe highlighted, some businesses never recover from disaster. The wider impacts of disaster can linger for years, undermining longer-term competitiveness and sustainability.

As investors have learned, market share may be lost after disasters occur. Business image and reputa-

Box 1.5 Impacts of disasters on the nuclear industry

Less than an hour after the 11 March 2011 Great East Japan Earthquake hit, tsunami waves reached the Fukushima Daiichi nuclear power plant, exceeding the design parameters of the plant by approximately 5 metres and knocking out the emergency power and seawater cooling pumps. In the next days, three reactors suffered hydrogen explosions and fuel meltdowns causing a major release of radioactivity. Approximately 150,000 residents were evacuated, a restricted area of 20 kilometres around the plant was enforced, restrictions were placed on food produced in the region and all nuclear reactors in the country were shut down, immediately reducing national electricity production by approximately 30 percent (National Diet of Japan, 2012).

Before the disaster, the global nuclear industry was enjoying something of a renaissance, with plans for an expansion of generation capacity, averaging about 1 percent per year in OECD countries and 6 percent in non-OECD countries (Joskow and Parsons, 2012). These plans were driven by a number of considerations, including meeting targets for reductions in CO₂ emissions by 2020 and 2050, rising fossil fuel prices, technological improvements and a more favourable political environment. China, for example, planned to increase electricity generated by nuclear power from 1 percent to 6 percent by 2020, and Japan planned to increase the contribution of nuclear power from 30 percent to 50 percent (Ibid.).

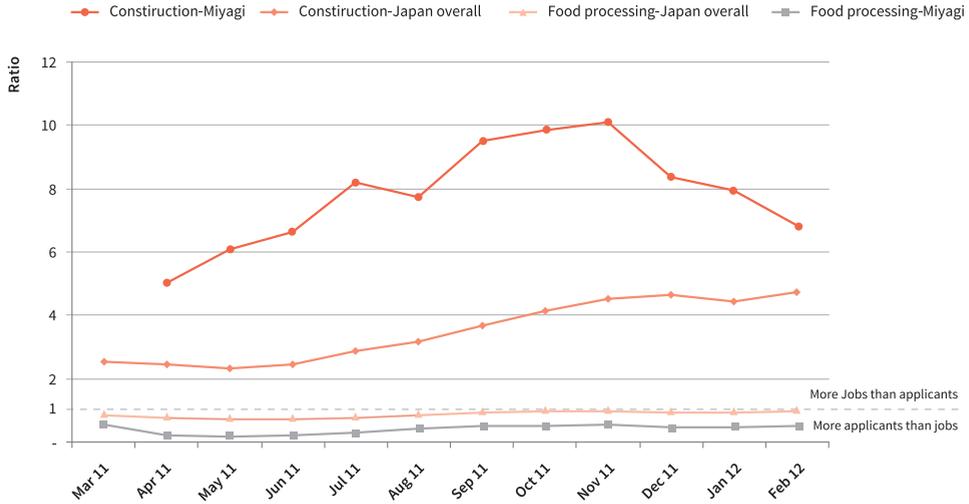
The Fukushima disaster questioned the safety of the nuclear power industry. Before the disaster, Germany, Switzerland and Japan together accounted for approximately 20 percent of global nuclear power production (Joskow and Parsons, 2012). In September 2012, following the Official Report of the Fukushima Nuclear Accident Independent Investigation Committee (National Diet of Japan, 2012), Japan announced that it would phase out nuclear power by 2040, although subsequently the new administration announced they would not follow this commitment, after considering energy and economic issues. Four days after the earthquake, on 15 March 2011, Germany permanently shut down the 8 oldest of its 17 nuclear units and in June 2011, Parliament passed a law to phase out the remaining plants by 2022 (Joskow and Parsons, 2012). The Swiss Federal Council also recommended that existing reactors be closed at the end of their licenses and not replaced; the final reactor would close in 2034 (Ibid.).



Box 1.6 Disaster impact on employment and SMEs

Employment in the Tohoku region of Japan was affected by both the global financial crisis beginning in 2008 as well as by the Great East Japan Earthquake in 2011. Though employment recovered quickly after both shocks, following the earthquake, there was a mismatch between labour demand and supply. For example, in the construction sector, there were 10 jobs available for every applicant, but in the locally important food-processing sector, there were 2 applicants for every job (Figure 1.6). Employment for women recovered slower than for men, partly because of the slow recovery of the female-dominated food processing sector, whereas new employment opportunities in the construction sector were mainly for men.

Figure 1.6 Ratio of job openings per application in construction and food processing, in Miyagi prefecture and Japan overall after the Great East Japan Earthquake



(Source: UNISDR, based on Miyagi Labor Bureau)^{iv}

The disaster affected SMEs particularly hard. One-third of SMEs had still not restarted business 10 months after the disaster in January 2012 (Government of Japan, 2012a). SMEs processing marine products were particularly affected by the tsunami. By January 2012, 50 percent had not resumed business and 30 percent had decreased their workforce (Ibid.).

After reconstruction is completed, labour demand in the construction sector in Tohoku will decrease. A Japanese think-tank estimates that unless new employment opportunities are created, 14,000 employees will have to change jobs and 82,000 will be forced to migrate to other regions by 2017 (Nomura Research Institute, 2011). Although reconstruction temporarily supports employment, efforts will be needed to boost and strengthen promising new industries as well as to invest in disaster risk reduction.

In the area affected by the Canterbury Earthquakes in New Zealand in 2010 and 2011, 97.2 percent of all enterprises were SMEs as of February 2011.^{xvi} In New Zealand, 75 percent of all enterprises in all sectors are SMEs, employing 30 percent of the working population and producing an estimated 40 percent of total value-added output. Although it is not known how many SMEs went out of business, in April 2012, 37 percent out of 128 surveyed SMEs in Christchurch reported reduced revenues. In another survey, 51 percent of businesses reported reduced revenue.

Employment declined significantly, on the one hand, in the women-dominated retail trade, accommodation and food services sectors—from 54,100 in June 2010 to 41,600 in June 2012 (Parker and Steenkamp, 2012). Employment in the construction sector, on the other hand, boomed from 25,900 to 32,800 in the same period (Ibid.). These phenomena show, as in Tohoku, Japan, that problems emerged with job mismatch creating new challenges for women in the labour market.

(Source: UNISDR)

tion may also be permanently damaged affecting longer-term sustainability. Insurance may become more expensive and its availability constrained. The 2011 Thailand floods, for example, caused a number of insurance and reinsurance companies to pull out of the Thai market altogether (AON Benfield, 2012a).

And these wider impacts may undermine entire industry sectors, as occurred with the global nuclear industry following the 2011 East Japan Earthquake and tsunami (Box 1.5).

The fate of businesses and cities and countries where they are located are mutually dependent. For example, productive and resilient businesses boost the prosperity of cities and countries that are attractive to investors, competitive and more likely to sustain growth. Likewise, competitive and resilient cities and countries provide an environment for productive and competitive businesses.

Disasters, however, can negatively affect the basic requirements for competitiveness, including sound infrastructure, macroeconomic stability and a healthy and educated workforce (WEF, 2012). As such, countries that are unable to manage their disaster risks are likely to be less competitive in the medium and longer terms. For example, disaster losses in Costa Rica from 2005 to 2009 were equivalent to 20 percent of its total public investment during that period. The resources spent on rehabilitating and reconstructing damaged infrastructure could have been spent on new roads, schools and health facilities and in building a more competitive economy (Government of Costa Rica, 2010).

Following intensive disasters, countries may find it more difficult to attract foreign direct investment (FDI), as investors flow to geographic competitors. Following the 2011 Chao Phraya river floods, several large companies relocated their plants either to less hazard-exposed areas of Thailand or to other countries in the region.^{xiii} More than 60 percent of directly affected manufacturers, mainly from

the electronics sector, temporarily relocated their production to other Asian countries, and several considered permanent relocation (Ye and Abe, 2012; JCCB, 2012).

In Japan, a survey undertaken just two months after the 2011 disaster shows that companies were concerned with increased production costs due to power outage induced interruptions and fragile supply chains.^{xiv} Almost 70 percent of companies surveyed considered the possibility of relocating parts or all of their production and suppliers abroad (Ibid.). Partly due to the disaster, the government postponed important policy decisions; such as its participation in the Trans Pacific Partnership (TPP) Agreement and a proposed reduction in corporate income tax, which would have improved competitiveness (Funabashi and Takenaka, 2012).

Disasters also have crucial consequences on employment. They directly affect the labour market for businesses, particularly SMEs, as well as for household economies and the macroeconomic environment. Box 1.6 highlights how disasters affected the labour market and SMEs following the 2011 Great East Japan Earthquake and the Canterbury Earthquake in New Zealand.

These wider impacts of a disaster are difficult to quantify but ultimately and over and above the direct and indirect losses suffered, may define disaster, both for business as well as for their employees and the countries and cities competing to attract business investment.



1.6 Business as usual?

It's no longer business as usual. Disaster losses and impacts are presenting critical problems for businesses of all sizes, ranging from major global corporations to SMEs to informal sector producers.

This chapter has highlighted how businesses not only face massive direct losses from floods, storms and earthquakes, but also depend on publicly managed and regulated infrastructure and services that can be interrupted by disasters. In a globalised economy, supply chains may be vulnerable to events occurring on the other side of the globe. Disasters can also lead to longer-term declines in business competitiveness and sustainability.

For these reasons, disaster risk is becoming a growing concern to business. Businesses are now getting to know their risks and exploring ways in which to reduce them. These nascent efforts are more often than not based on voluntary mechanisms within businesses and among business partners.

All business investment decisions have the potential to either increase or decrease disaster risk. The rest of this report is concerned with how those decisions are made and with the factors that mediate and condition those decisions. The report also highlights how investing in disaster risk management can be a compelling proposition in shared value, for businesses themselves as well as for the cities and countries competing to attract investment.

GAR13 comprises three main parts. Part I examines the new landscape of intensive and extensive risk (Chapter 2) and presents results from the new global risk model for earthquakes and tropical cyclones, as well as new exposure data for tsunamis and a proof of concept for floods (Chapter 3). In addition, this part features an analysis of the scale of economic losses associated with extensive risk (Chapter 4) and the implications for a country's economic and

financial resilience (Chapter 5); the risks to natural capital posed by wild-land fires, land degradation and agricultural drought (Chapter 6) and the special case of Small Island Developing States (Chapter 7).

Part II explores how disaster risk has become endogenous to the contemporary globalised economic landscape through business investment decisions that have usually externalised disaster risk. It analyses how investors have made business investment decisions that increase risks in key sectors such as urban development (Chapter 8), tourism (Chapter 9) and agribusiness (Chapter 10).

Part III presents how both global corporations and smaller businesses are managing disaster risk, including in global supply chains (Chapter 11) and how their investment decisions are mediated by investment markets and the role of insurance (Chapters 12 and 13). It further analyses how governments as regulators and mediators of investment, in a global economy, occupy changing roles and have yet to fully embrace a prospective approach to disaster risk management (Chapters 14 and 15).

Chapter 16 concludes and brings together several key findings of the report. It elaborates on how creating shared value can become a key feature of effective disaster risk management and – more important – how disaster risk management contributes to creating shared value for business and society essential for achieving economic stability, growth and sustainable development in a globalised landscape beyond 2015.

Notes

- i Macroeconomic effects are included to some extent in all of these estimates but are a different way of representing them; they should therefore not be added to the direct and indirect losses or wider impacts.
- ii This figure constitutes a simplification of the different categories that might partly overlap. Care must be taken when calculating total loss to avoid double counting. For example, the direct structural losses to a plant may be assessed either through the damage to the capital stock (e.g. production plant) or the equivalent loss of flows (i.e. future production).
- iii Exchange rate of 1US\$=JP¥81.84. The estimate was reported in June 2011 by the Cabinet Office of the Japanese Government (<http://www.bousai.go.jp/oshirase/h23/110624-1kisyu.pdf>). It estimates damages to buildings, lifeline facilities and infrastructures and excludes the impact of the Nuclear Power Plant accident.
- iv Here and in the next case of Thailand, data of gross fixed capital formation of the World Bank's World Development Indicators were used: <http://data.worldbank.org/indicator/NE.GDI.FTOT.CD?page=1>.
- v Economic loss as estimated by the World Bank in December 2011 (<http://www.worldbank.org/en/news/2011/12/13/world-bank-supports-thailands-post-floods-recovery-effort>). This estimate includes not only loss to physical investment but also other components such as loss to lost revenue by tourism and loss of agricultural output.
- vi In the same quarter, the manufacturing sector declined by -21.8 percent. Given that manufacturing represented 39 percent of Thailand's GDP in 2011, it was the disruption of the manufacturing sector that had such a large influence on the Thai economy.
- vii Small and medium enterprises are independent companies that have a smaller number of employees than a defined threshold. This threshold is different across countries. The OECD mentions the following thresholds: less than 250 employees in the European Union and fewer than 500 in the United States of America. However, in many countries, the threshold may be significantly lower, and small firms can be defined as having 10-50 employees, while micro-enterprises can be defined as having 1-10 workers (<http://stats.oecd.org/glossary/detail.asp?ID=3123>).
- viii References used in this box: NOAA National Climatic Data Centre, 2012 www.ncdc.noaa.gov/news/summary-information-post-tropical-cyclone-sandy; NOAA National Weather Service, 2012 www.erh.noaa.gov/phi/storms/10292012.html; RMS, 2012 www.rms.com/news/newsannouncements/Newspress.php?id=0.xml; Time, 2012 <http://business.time.com/2012/10/31/hurricane-sandy-estimated-to-cost-60-billion>; IHS Global Insight, 2012 <http://www.ihs.com/products/Global-Insight/industry-economic-report.aspx?ID=1065972961;EqeCat>, 2012 www.eqecat.com/catwatch/post-landfall-loss-estimates-superstorm-sandy-released-2012-11-01/; Financial Times, 2012 <http://www.ft.com/cms/s/0/c8f6c208-24f4-11e2-86fb-00144feabdc0.html#axzz2CtH3Q5xJ>.
- ix El Niño Southern Oscillation (ENSO) refers to the interaction between the global atmosphere and the tropical Pacific Ocean. It results in changes to weather patterns and ocean temperature across the globe, including changes in rainfall and storm patterns, and occurrence of floods and droughts. Within these changes, the El Niño phenomenon is associated with unusually warm ocean surface temperatures; La Niña is associated with particularly cold oceanic temperatures. Both occur approximately twice in a seven-year period and last for typically 9–12 months and occasionally up to two years. For exact definitions and more information, see: UNISDR terminology - preventionweb.net/english/professional/terminology/v.php?id=480 and WMO factsheets - <http://www.wmo.int/pages/mediacentre/factsheet/LaNinaQA.html>.
- x This survey, carried out by Florida International University (FIU), York University and the Central American Institute for Business Management (INCAE), covered Vancouver, Canada; Miami, United States of America; Kingston, Jamaica; San Jose, Costa Rica; Bogota, Colombia and Santiago, Chile.
- xi <http://www.iata.org/pressroom/pr/Pages/2010-04-21-01.aspx>.
- xii <http://www.iata.org/pressroom/pr/Pages/2010-04-21-01.aspx>.
- xiii Western Digital and Nidec, two important global players in the production of hard disk drive components, have relocated some of their manufacturing to Malaysia, China and less hazard-prone regions in Thailand. For more information: <http://e.nikkei.com/e/fr/tnks/Nni20121006D06JF389.htm> and <http://www.ft.com/cms/s/0/7d36186e-2937-11e1-8b1a-00144feabdc0.html#axzz2DuUmiO4x> (accessed 02/12/2012).
- xiv Ministry of Economy, Trade and Industry, Government of Japan: http://www.meti.go.jp/committee/summary/0003410/013_s01_00.pdf
- xv Miyagi Labor Bureau, "Balance of job openings and application," http://miyagi-roudoukyoku.jsite.mhlw.go.jp/jirei_toukei/kyujin_kyushoku/toukei/anteisyobetsu_kyujinkyusyoku_balance.html.
- xvi Data in this paragraph are taken from Hatton, Seville and Vargo (2012), unless otherwise stated.

