



Business and Disaster Risk Reduction

Good Practices and Case Studies

2013

Overview

The UNISDR Private Sector Advisory Group represents the wider private sector and works with the UN Office for Disaster Risk Reduction (UNISDR) to address disaster risk reduction in the sector.

In early April of 2012 the UNISDR Private Sector Advisory Group began a coordinated effort to assemble global case studies that would stand as Good Practices in applying one or more of the Five Essentials for Business in their pursuit of Disaster Risk Reduction [See descriptions for the Five Essentials on page 4].

An original fourteen cases were collected for the Fourth Session of the Global Platform for Disaster Risk Reduction, held 19 – 23 May 2013 in Geneva, Switzerland. The information and insights from the Good Practice Cases focus on prevention and the power of applying one or more of the Five Essentials to reducing the risks and impacts from disasters.

To help navigate the cases, each is color coded to reflect one or more of the Five Essentials employed in that case. Cases apply these essentials, as an example to, climate-related, financial, design, socio-economic, and environmental risks and/or risks to life posed by natural, hazard related.

Within these cases, readers will find the strategies and tactics that illustrate how new working relationships, technologies, and creative solutions, can expand their organization's overall transparency, understanding and ability to significantly reduce the impacts of disasters.

Various types of collaboration and cooperation, core to the all Five Essentials are positioned as critical in minimizing or potentially eliminating disasters as well as disasters' effects on people, property and ultimately, the health, economy and resilience of workers, communities, regions and nations.

The UNISDR-PSAG will continue to expand the portfolio of Good Practices Cases and believes readers will find relevant concepts, guidance and inspiration among these pages.

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Five Essentials for Business in Disaster Risk Reduction

These good practices from businesses around the world illustrate how each of the Five Essentials for Business in Disaster Risk Reduction looks in action. The collection of private sector initiatives in disaster risk reduction is presented by the UNISDR Private Sector Advisory Group for Disaster Reduction (PSAG), together with member companies of Disaster Risk Reduction - Private Sector Partnership (DRR-PSP).

> More on PSAG [<http://www.unisdr.org/partners/private-sector>]

> More on DRR-PSP [<http://www.preventionweb.net/english/professional/networks/public/psp/>]

1	PPP DEVELOPMENT PROMOTE AND DEVELOP PUBLIC-PRIVATE PARTNERSHIPS
2	PRIVATE SECTOR LEVERAGE LEVERAGE SECTORAL PRIVATE SECTOR EXPERTISE AND STRENGTHS
3	COLLABORATION FOSTER A COLLABORATIVE EXCHANGE AND DISSEMINATION OF DATA
4	RISK ASSESSMENT SUPPORT NATIONAL AND LOCAL RISK ASSESSMENTS
5	POLICY DEVELOPMENT SUPPORT THE DEVELOPMENT AND STRENGTHENING OF NATIONAL AND LOCAL LAWS, REGULATIONS, POLICIES AND PROGRAMS



Photo: UNISDR / Brigitte Leoni



Photo: Scottish Government

A formal fire prevention framework has a real benefit for the Small and Medium Enterprises (SME) and their stakeholders.

01 > AXA Prevention Charters for SMEs

Country/Region	France
Organization	AXA France (AXA Entreprises Assurance IARD- Commercial P&C Insurance)
Partner	Local Customers
Key issues	Strong impact of fires on Small (SME's & Medium Enterprises), BCP Business (BCP Continuity Planning) and claims
Duration	5 years
Goals	Prevent and reduce fire accidents
Mission status	Work in progress for the second phase

01 > Financial Issues

Mainly the cost of design and printing for communications tools provided to support the signatories of the Prevention Charters.

02 > Project Description

Small and Medium Enterprise (SME) managers are sensitive to risk issues that break business continuity but do not have the resources to assess most of the operational risks. Moreover they often are not strong enough to overcome impact of business interruption or casualties among employees. In 2005, AXA France Entreprises decided to use its risk experts to provide technical advice to its SMEs clients to carry risk assessments and solutions guidance in the framework of a convention. Several Charters have been proposed: fire, motor, liability, environment, buildings and contractors, transportation business. For each type of Charter a toolkit including communication tools were provided by AXA. The most impactful is the Fire Charter. The programme has been assessed in 2010.

03 > Outlook

- Effectiveness of risk prevention guidance for SMEs
- Need for strong communication programs and resources in the Prevention Charter process

04 > Lessons Learned

In the case of the risk set on fire, AXA has recognized that a significant number of disasters could have been avoided - indicating that a formal prevention framework has a real benefit for the SMEs and their stakeholders, as well as for the insurance company whose claims are reduced.

Assessment: 38,000 conventions signed of which 14,000 concern the risk set on fire; 68% of the fire occurrences could be avoided; the impact of the damages could be reduced by 63%; the portfolio of contracts with charters are less vulnerable by 20% and the new business is by 5% compared to the portfolio of contracts without charters.

The agent or broker is key in communicating the benefits of the charter with the client to put the process in place. Thus, levels of client involvement need to be identified. This is why the objective is to integrate prevention communication into customer follow-up.

05 > Contact

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02 > Encourage Investment in DRR Through Advantageous Loan Rates and Incentives Tied to ‘DBJ BCM Ratings’

Country/Region	Japan (nationwide)
Organization	Development Bank of Japan (DBJ)
Key issues	DRR, BCP, BCM, credit rating system, financial services
Duration	2006, on-going
Goals	Encourage business continuity planning, business continuity management, and investment in DRR measures by private companies across Japan, through financial incentives tied into rating system.
Mission status	Ongoing

01 > Financial Issues

None. Regular product on the market.

02 > Project Description

DBJ offers the ‘DBJ business continuity management (BCM) rating’, an objective third-party evaluation of disaster preparedness measures taken by a private company. DBJ offers concrete financial incentives, such as preferential interest rates on loans for disaster risk reduction-related investment, tied into this rating system. Companies choose to apply and undergo an auditing process, similar to a financial auditing process, of their existing disaster risk reduction (DRR) and business continuity measures. DBJ was the first in the world to offer such ratings-based financial services, and has been profiled in international meetings and reports.

The BCM rating has proven to be a good tool for reducing resistance to DRR-related investment within the recipient corporation and its shareholders, and has also proven useful for corporate publicity. Together with DBJ’s other services including business continuity planning (BCP) consulting, DBJ’s suite of DRR-related products has been comprehensively encouraging DRR among their corporate clients since the inception of their evaluation program in 2006.

03 > Outlook

From 2006 to 2012, 54 companies were awarded BCM rating and 44.7 billion yen in related loans.

04 > Lessons Learned

Lending institutions already routinely audit corporations’ financial standing before giving out loans. With some additional work on both the bank and client side, an objective evaluation of disaster vulnerability can be made.

When good DRR practices are recognized by a third party and financially rewarded, it makes it easier for corporate leaders, in terms of shareholder relations and internal corporate management, to make the argument for investment in DRR.

05 > Contact

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03 > AXA Research Fund

Country/Region	Global
Organization	AXA
Partner	186 academic institutions
Key issues	Environmental risks, Socio-economic risks, Life risks
Duration	2007-2018
Goals	Foster academic progress and discoveries dissemination in order to nurture public debate and help societies to face and mitigate major risks.
Mission status	On track – recently extended until 2018

01 > Financial Issues

€99M granted as of March 2013 to 367 projects; from €120k (research fellowships) to €4M (endowed permanent chairs)

02 > Project Description

The AXA Research Fund (RF) provides philanthropic support for research focused on understanding and preventing the risks threatening the environment, human life and our societies. As of 1 March 2013,

€99 million have been committed and the AXA RF has given its support to 367 research projects, implemented in 27 countries by researchers of 49 nationalities. The selection of application is made on academic criteria only and the funds are granted based on a decision by the Scientific Board.

AXA RF both supports top-tier researchers working on risks all over the world and helps them to share their discoveries. The AXA RF thus tries to enrich the public debate and AXA's own expertise with academic knowledge. Through research philanthropic sponsorship, AXA aims to foster a safer and stronger society over the long term.

03 > Outlook

- Involvement of supported researchers in international conferences about risks
- Many researchers assisted to popularize their research toward a non-scientist audience and interactions created between AXA Risk experts and researchers
- New funding schemes proposed in 2013 to better cope with public debate

04 > Lessons Learned

367 research topics popularized in AXA RF Books of Knowledge, where discoveries about finance and systemic risks, socio-political risks, regulation, mathematics, climate change, weather hazards, volcanic and seismic risks, biodiversity, longevity, healthy lifestyle, (non-)infectious diseases, psychology, addiction and health policies are emphasized.

05 > Contact

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04 > Resilience Workshops

Country/Region	United States of America
Organization	Concrete Joint Sustainability Initiative
Partner	Cement, concrete and concrete product industry partners and the Insurance Institute of Home and Business Safety
Key issues	Increasing disaster losses, building code limitations, mitigation and resilience options
Duration	2012-2013
Goals	Raise awareness and knowledge of disaster risk, current code limitations and opportunities for mitigation options to local community leaders, building code officials, design professionals, insurance
Mission status	On-Going

01 > Financial Issues

Voluntary staff development and financial support by members of the Concrete Joint Sustainability Initiative.

02 > Project Description

This program was developed and presented to inform decision makers at the local level on the importance of enhanced resilience in construction to improve community continuity in the face of disasters such as hurricanes, tornadoes, fires, earthquakes and floods.

Topics include local disaster risk assessment and mitigation, resilient construction methods, FORTIFIED® design and construction programs, and building code requirements. The full day workshop is directed toward community leaders, builders, design professionals, insurance and building officials.

- Disaster mitigation techniques
- Building code requirements for residential and commercial buildings
- Benefits of disaster mitigation
- FORTIFIED for Safer Living and Safer Business
- Safe rooms and storm shelters, earthquake, flood and fire resistant construction
- Solutions with concrete building systems
- Enhanced resilience through building code modifications

Presented in 7 cities to approximately 140 attendees to date.

03 > Outlook

Awareness of resilient construction strategies continues to increase through evidence of more dialogue by national agencies, community leaders, green building advocates and media.

04 > Lessons Learned

- Disasters affect all aspects of a community, but only governmental units and emergency responders are prepared to react after a crisis.
- Increased awareness of risks and mitigation strategies is required in urban planning, architecture, engineering, construction and across the business community.
- Disaster losses in the U.S. are increasing at a rate far faster than population growth or the cost of construction.
- There remains continued pressure to reduce the initial cost of building at the expense of resilient and durable construction.

05 > Contact

The Concrete Joint Sustainability Initiative is a coalition of industry associations that represent companies that make or maintain concrete structures. We have a goal of educating ourselves, our members and our customers about the role and responsibilities of concrete in sustainable development. www.sustainableconcrete.org

05 > Emergency Aerial Photography Survey Agreement

Country/Region	Japan (nationwide)
Organization	Kokusai Kogyo Co. Ltd, and other member companies of APA (Association of Precise Survey and Applied Technology)
Partner	GSI (Geospatial Information Authority of Japan)
Key issues	Emergency agreement, technical services, fast response, DRR, DRM
Duration	2006 -
Goals	Update map information as quickly as possible following a disaster, using aerial photography, in a coordinated manner to prevent accidents and over- or under-surveyed areas
Mission status	Ongoing

01 > Financial Issues

Normal government procurement (fast-track sole-source contract)

02 > Project Description

Emergency agreements (EAs) support enhanced resilience by preparing for actions during and post-disaster in advance. EAs facilitate effective response and thus potentially reduce the impact of the disaster - an element of disaster risk reduction. In Japan, EAs are common practice across sectors and is a way for national and local governments to enter into relationships with private sector partners. We present here, as an example, an EA for disaster-related emergency survey work.

This EA has been in effect since 2006 between the GSI, an agency under Japan's Ministry of Land, Infrastructure, Transport and Tourism, and APA, with 94 member companies. According to the EA, APA will, at the request of GSI, identify and recommend member companies best suited for the required survey during or immediately following a disaster event from a shortlist kept specifically for this purpose. Via this EA, GSI agrees to enter into contract with the recommended company or companies on a fast-track sole-source contract basis for post-disaster work, and shortlisted member companies on their part agree to keep resources on hand for immediate mobilization. Because the EA is in place, GSI and APA can work out many of the details in advance, such as emergency contact information within their respective Organizations, the necessary technical specifications

for the product, and shorthand methods for communication, all of which are regularly updated and revised. APA member companies annually register their interest to join the shortlist. As companies will be remunerated at fair rates for their product, they have an incentive to join the list.

03 > Outlook

The agreement has been activated, and satisfactory products obtained, in several major earthquakes to date.

04 > Lessons Learned

- Fast-track utilization of technical industry expertise by government is possible, if agreement is made at the right level. In this case a national agency with a national-level industry association.
- EAs work in a similar manner to Business Continuity Plans (BCP); both try to reduce the impact of the disaster by preparing countermeasures in advance. EAs is a tool for public and private partners to come together and work out a set of countermeasures that take advantage of the strength of each partner for the benefit of the community.

05 > Contact

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Photo: Kokusai Kogyo Holdings Co., Ltd.



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06 > Flood Recovery at the Lakes Retirement Village

Country/Region	Bundaberg, QLD Australia
Organization	Lend Lease
Key issues	Flood impact and recovery
Duration	Approximately 5 days
Goals	Ensure the safety of residents within the village and protect the property
Mission status	Completed

01 > Financial Issues

The financial impacts were limited as there was minimal damage to the village.

02 > Project Description

In January 2013, Bundaberg experienced its largest flood in recorded history following ex-tropical cyclone Oswald, equivalent to a one in 200 year event. A Lend Lease retirement village, The Lakes Bundaberg, required evacuation under the instructions of the State Emergency Services. Fortunately the village was built with consideration of the climate risks in North Queensland. The homes, built near a river, have steel frames and roofs - which at the time they were built was more than what was legally required. The village was required to have a noise embankment to block sound from a nearby railway. The combination of good design by the original developer and the embankment protected the village from the floods and meant the clean-up and recovery was minimal. An event that could have taken months to clean up at a significant cost and disruption, placing stress on elderly residents, was merely a few days evaluation as the waters subsided. No homes were inundated in the flood.

03 > Outlook

The village is operating normally and better prepared for recovery from similar flooding.

04 > Lessons Learned

The experience at The Lakes Bundaberg, highlights the value of good design. This was a near miss and the consequences of major damage would have been significant for the village, the staff and especially the elderly residents. The Bundaberg Regional Council is enhancing the building requirements in affected areas as rebuilding takes place.

05 > Contact

Gregory Elphinston, Group Head of Corporate Social Responsibility, Lend Lease

07 > Lessons Learned From Hurricane Sandy

Country/Region	United States of America
Organization	Titan America

02 > Project Description

Titan American operates a major cement import terminal adjacent to a water dock at Port Elizabeth, Newark, New Jersey. Hurricane Sandy caused over a meter of seawater flooding, resulting in equipment damage. However, thanks to preparation and effective response, operations were restored in less than a week, a first among similar facilities in the NY/NJ area. At the same time, employees, their families and customers were assisted. Injuries and severe economic impact were prevented.

03 > Outlook

Titan America continues to build resilience capacity and strengthen plans to face major hazards. The Sandy experience enhanced Titan's reputation amongst customers and raised employee morale. Dedicated employees were later recognized company-wide.

04 > Lessons Learned

Adjusted definition of "major storm event". Greater than 500 year events can and will occur. Frequency of intense storms is increasing. Resilience building and planning now is being taken to higher level.

Disaster plan must be easily and readily deployed, even during false alarms. Can't await threat to reach clear and present danger before mobilizing response plan.

Cannot rely on public resources for quick response. Public decision making is too slow and resources will be overwhelmed during major event. In this case, the private response occurred within hours, whereas the public response to Titan's facilities would have taken weeks.

Decentralized decision making and action is critical to response and recovery effectiveness. Employees at many levels need to feel empowered to act. Titan's employees and managers felt that the company's values enabled them to take immediate decisions and actions, without seeking approval from higher management.

Preparation includes helping employees and families early on to stay safe and prevent damage. With homes and families safe, employees can concentrate on storm preparation and recovery, rather than being consumed with personal circumstances.

Personnel in the impacted area will be overwhelmed and challenged to manage recovery without support from out of the area. Plans are needed with critical personnel outside the impacted region, who will mobilize to help those involved in the recovery in the impact zone.

Coordinating with neighbouring facilities can benefit response effectiveness. In this case, a nearby tugboat prevented Titan's unloading barge from being beached.

Electricity is scarce commodity post storm. Off-grid power generation should be procured before storm arrives and moved into region after storm event. Waiting until after storm to procure backup power could result in no available resources. A refueling plan should be developed as part of the alternate power plan.

Plans need to be put in place to mitigate scarcities, including strategies to bring resources the stricken area and agreements with contractors in good times, to assure responsiveness in the bad times.

In Titan's case, out-of-the-area employees immediately organized fuel, water and food supplies and drove hundreds of miles daily to supply the facility, employees, families and even customers.

Out-of-the-area employees also drove long distances to assist with parts and repairs. Local electricians were engaged before other facilities were even ready to call on them.

05 > Contact

Tom Cerullo, Vice President, Norther Region, ST/Essex, Titan America, tcerullo@titanamerica.com

08 > People-Centered Early Warning in Mozambique

Country/Region	Central Mozambique, Save and Búzi river areas (Sofala province)
Organization	Munich Re Foundation (MRF), German Federal Ministry for Economic Cooperation and Development (BMZ)/IPConsult Stuttgart, Beira
Partner	INGC - Instituto Nacional da Gestão de Calamidades (DRM authorities of Mozambique) with advisory services provided by IP-Consult and Ambero
Key issues	People-centred flood warning, DRR, DRM
Duration	2005 – 2012
Goals	Capacity and resilience building in communities Establish a simple but efficient tailor-made flood early warning system Institutionalize disaster prevention in Mozambique
Mission status	Almost completed, handing over to local authorities (organizing ownership)

01 > Financial Issues

Annual MRF funding: 100.000 € plus additional work in kind

Revenues: despite severe cyclones and floods in the last years no lives were lost in the project areas. Real life test: cyclone Favio Feb 2007 and floods in 2008 and 2012. Losses could be minimized.

02 > Project Description

The Mozambique flood warning systems are simple but effective early-warning projects along the Rivers Búzi, Save and their tributaries. They are adapted to the specific needs and skills of the local people. Village officials take daily precipitation readings at strategic points along the rivers basin. At the same time, they monitor clearly marked gauges along the river. If precipitation is particularly heavy or the river reaches critical levels, this information is passed on by radio. If reports reaching the control centre indicate widespread heavy rain, the alarm is raised. Blue, yellow or red flags are raised depending on the flood-alert level and helper spreads the warning by megaphone. Critical areas are evacuated. Ongoing special training and local risk committees ensure that people are fully aware of the risk.

03 > Outlook

Ownership of the systems will subsequently be handed over to the authorities.

Seven local heads of district joined the early warning program in 2011, more to come.

A legislative initiative is planned to institutionalize flood warning at higher political levels

04 > Lessons Learned

- Human resources development – strengthening the INGC and civil society
- Organizational development – building DRR structures at all levels
- Network development – South-South and North-South cooperation
- Institutional development – making DRR everyone's business
- Including people at risk with their local and indigenous knowledge is important

05 > Contact

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The past decade has seen sweeping revisions to building codes to address sustainability, which challenge us to develop higher performing buildings.

09 > Resilience as a Fundamental Pre-requisite for Sustainability

Country/Region	United States of America
Organization	Portland Cement Association
Partner	Insurance Institute of Business and Home Safety
Key issues	Resilience integration into Model Building Codes
Duration	2011-2012
Goals	Prepare for consideration and adoption by state and local governments, modifications to existing building codes that would increase resilience for both commercial and residential construction in the face of nature and man-made disaster.
Mission status	Completed

01 > Project Description

Current model building codes for the United States are limited to immediate life-safety during a disaster event with little regard for functionality and operational continuity after the event. Evidence from hurricanes, tornadoes, floods and other natural disasters has shown that families, businesses and entire communities suffer long term consequences when disaster strikes. The past decade has seen sweeping revisions to building codes to address sustainability, which challenge us to develop higher performing buildings in the areas of energy, air and water quality, resource use and waste, but not for resilience. With that in mind, we have proposed that greater resilience be a fundamental consideration for sustainability.

While initially focused on green model building codes in the U.S., enhanced resilience criteria were developed to reduce the damage and resulting loss of functionality to those structures. Titled "High Performance Building Requirements for Sustainability, this document was written in code compliant language and enables community leaders and building officials the ability to adopt performance enhancements appropriate for the risks they encounter. Available for free download at: <http://www.cement.org/codes/hpbrs.asp#national>

Supporting this technical document is a white paper "Functional Resilience: Prerequisite for Green Buildings" that offers guidance to designers on the current practices, risks and performance enhancements, without the need for the aforementioned code revisions. Available for free download at http://www.cement.org/codes/pdf/HPBRS_prerequisites.pdf

03 > Outlook

Since the program initial roll-out, the need for enhanced resiliency in building design and construction has become embraced by several U.S. federal government programs, including both the Federal Emergency Management Administration and the Science and Technology Directorate of the U.S. Department of Homeland Security. A modified PCA program focused solely on the resiliency aspects of the High Performance Building Requirements for Sustainability has been used in the development of the national road map for enhanced resiliency. Awareness of resilient construction strategies continues to increase through evidence of more dialog by national agencies, community leaders, green building advocates and media.

04 > Lessons Learned

- Increased awareness of disaster risks and mitigation options is necessary at the local level for consideration of code revisions.
- Economic pressure for lowest first cost will remain a hurdle for increased resilient performance.
- Additional research to validate "return on investment" for increased resilience is needed

05 > Contact

Stephen Szoke, PE. Portland Cement Association, Skokie, IL, USA

10 > Resilient Buildings Workshop

Country/Region	Washington, DC
Organization	Concrete Joint Sustainability Initiative and the National Building Museum
Key issues	Disaster awareness and mitigation strategies, resilient design and planning tools.
Duration	8 October 2012 - full day program
Goals	<p>Promote and educate the private sector about the following governmental agencies:</p> <ul style="list-style-type: none"> • Demonstrate the Dept. of Homeland Security's high performance Database and Tools - Integrated Rapid Visual Screening Tool and High Performance Based Design for Building Enclosures, and Urban Blast Tool. to quantify disaster risk assessment • NIBS tools and programs to identify and incorporate resilience criteria for projects - Whole Building Design Guide • Discuss how to achieve resilient and sustainable design for all types of projects • Show how resilience goals are used to select resilient materials/systems for projects and showcase high-performance materials and their benefits • Collect feedback and engage attendees to gain their insights and improve available tools
Mission status	Completed

01 > Financial Issues

\$12,000 for speaker expenses and catering

02 > Project Description

On 18 October 2012, over 100 architects, engineers, government officials, contractors, and project managers representing the private and public sectors of the building and construction industry participated in a workshop designed to educate building professionals on the vital role of resilient, high-performance structures in achieving sustainable communities. Co-sponsored by the Concrete Joint Sustainability Initiative and the National Building Museum, the day long Resilient Buildings Workshop - Integrating Materials, Systems, Resilience, and Sustainability program addressed:

- Building materials as they relate to high performance and resilience
- Demonstrations of design tools and resources for assessing risk to help achieve higher performance and resilience

- Resilience as a critical component in sustainable design
- High-performance design and the role of life-cycle assessments;
- Assessment of a building's capability to withstand natural and man-made hazard events
- The role of building codes and standards in achieving resilient building enclosures and structures.

For more information about the program, visit:

<http://www.sustainableconcrete.org/sites/default/files/CI12%20Concrete%20JSI.pdf>

03 > Outlook

The concept of resilience as a strategy for community functional continuity continues to increase as more partners (both public and private) develop tools to assess risk, promote awareness and educate stakeholders.



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04 > Lessons Learned

- Collaboration between governmental and private sector is essential for preparing communities to face disaster, as governmental action alone is not adequate to restore operational functionality in a timely manner.
- Workshop participants tended to focus on immediate disaster response, rather than a holistic approach to hardening infrastructure and buildings to potential disaster.
- Current building codes are inadequate to address anything beyond minimum life safety during the event.

05 > Contact

The Concrete Joint Sustainability Initiative is a coalition of industry associations that represent companies that make or maintain concrete structures. We have a goal of educating ourselves, our members and our customers about the role and responsibilities of concrete in sustainable development. www.sustainableconcrete.org



SM Prime Holdings, Inc.

Designed in accordance with the National Structural Code of the Philippines to minimize the effects of flooding during storm or extreme tides and in anticipation of soil consolidation.

11 > SM Mall of Asia

Country/Region	Mall of Asia Complex, Pasay City, Philippines
Organization	SM Prime Holdings, Inc.
Partner	Design and engineering firms
Key issues	Disaster resilience, flood mitigation
Duration	Opened on 21 May 2006
Goals	Build a world-class shopping mall capable of withstanding disasters such as increase in sea level and flooding.
Mission status	Completed

01 > Project Description

Given its proximity to the ocean, SM Mall of Asia was designed in accordance with the National Structural Code of the Philippines. The foundation for the mall was reinforced by pilings that were driven down to improve its soil bearing capacity. Special considerations were taken to minimize the effects of flooding during storm or extreme tides and in anticipation of soil consolidation. The main road for Mall of Asia was constructed 3.0 meters from the mean sea level while the ground floor of the mall was constructed 1.5 meters above the road level. Thus, the final mall structure is actually constructed 4.5 meters from the mean sea level.

Its nautical design and architectural form reflects the fluidity of water, wind, and waves inspired by its location, the Manila Bay. The mall gives you a feeling of openness and spaciousness which brings the exterior inside through its generous skylights and expansive arcades. The open air spaces are created to reduce power consumption and make maximum use of natural elements.

SM Mall of Asia makes an architectural statement and at the same time created an environment friendly mall as it reduces power consumption and make maximum use of the natural elements in creating a comfortable yet exciting environment to delight our shoppers. SM Mall of Asia is functional, service friendly, and economically viable and sustainable.

02 > Outlook

Investment in disaster resilient structures attempts to alleviate the chances for low productivity and will save resources that may be used for further growth instead.

03 > Lessons Learned

Greater investments are needed to reduce the vulnerability of business to crises brought about by natural calamities. The SM Mall of Asia project can serve as a good example for the business community as a product of a progressive business model having incorporated safety and disaster resilience as a core component.

05 > Contact

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miguel.cuunjieng@smsupermalls.com

12 > SM City Masinag

Country/Region	Barangay Mayamot, Antipolo City, Philippines
Organization	SM Prime Holdings, Inc.
Partner	DSGN Associates, JRP Design Inc., D.A. ABCEDE & Associates, New Golden City Builders and Development Corp.
Key issues	Flood prevention
Duration	Opened on 6 May 2011
Goals	To build a shopping mall that will not only have minimal environmental impacts on the surrounding community, but also help alleviate their flood problem
Mission status	Completed

01 > Financial Issues

Return on investment seen in the 13% reduction in water expenses due to reduced consumption.

02 > Project Description

SM City Masinag, unlike any other SM Mall in the Philippines, has fully revolutionized SM's approach to green design. Given the mall's proximity to a highly flood-prone area, the design incorporates a 15,000 cubic meter holding tank to reduce the impacts of super typhoons that plague the area.

The holding tank is designed to collect rainwater from the mall's roof gutter, driveway and roadway drainage systems, and floodwaters from nearby subdivisions and Marcos Highway. This water is used for various mall purposes, preventing negative impacts of mall water consumption on the local communities. The tank has the capacity to hold the water volume generated from the constant rainfall of a storm at a similar strength to the infamous typhoon Ondoy over 12 hours.

SM City Masinag design and development also placed a premium on reducing the need for air conditioning units by installing Big ASS Fans that move cool air efficiently throughout the mall interior. Its strategic design of clerestory windows draw in natural light to reduce energy spent on artificial lighting and manage electrical cost related to lighting. Living green screens line the back wall of the mall's parking area.

03 > Outlook

Proper urban planning and strategic innovation can equally serve the best interests of the business and community where SM malls operate.

04 > Lessons Learned

The private sector is in a prime position to invest in and contribute to progress by implementing sustainable business practices that have significant impacts to the communities where their businesses are located.

05 > Contact

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13 > Where the Rain Falls

Country/Region	8 countries across Asia, Africa, and Latin America
Organization	CARE International and United Nations University
Partner	AXA Group and MacArthur Foundation
Key issues	Changing rainfall patterns, migration and food security
Duration	3 years and 9 months, 2011 - 2014
Goals	First, better understand how changing rainfall patterns related to climate change will have impact on household food and livelihood security and migration decisions in 8 countries. Then, based on the results of the research, implement community-based climate change adaptation projects in 4 countries.
Mission status	Ongoing

01 > Financial Issues

Corporate donation of €1,7M

02 > Project Description

Where the rain falls is a unique and innovative two-part project: First, an empirical research carried out by CARE International and the United Nations University in eight countries in Asia (Bangladesh, India, Thailand, Viet Nam), Africa (Ghana, Tanzania) and Latin America (Guatemala, Peru); Secondly, the development and implementation of community-based climate change adaptation projects based on the results of the research in four countries (India, Peru, Tanzania and Thailand).

The AXA Group, on top of providing a substantial financial support, has offered time and expertise of a climatologist working in the AXA Group Risk Management department. Moreover, the group's communications teams have worked closely with both non-profit Organizations to elaborate a communications and advocacy plan. In Thailand, CEOs of AXA entities are involved in local national seminars in order to facilitate community networking to climate change adaptation. On the ground partnerships between CARE and AXA are also being explored in India.

Research Methodology: The research is based on a 1,300 household survey and participatory research sessions involving 2,000 individuals. It further models future migration in Tanzania under different rainfall scenarios from 2014–2040.

<http://www.wheretherainfalls.org>

<http://www.axa.com/en/news/2012/wheretherainfalls.aspx>

03 > Outlook

- International and multi-stakeholder empirical research.
- Successful leverage of private sector expertise.
- Innovative research/adaptation project.

04 > Lessons Learned

- The research revealed that migration is an important risk management strategy for vulnerable households.
- Collaboration of Academic institutions and NGO with the support of the private sector can lead to unique and innovative results.

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14 > Making Beira Resilient to Floods and Cyclones

Country/Region	Central Mozambique, City of Beira
Organization	IPConsult Stuttgart commissioned by Gesellschaft für internationale Zusammenarbeit (GIZ), Eschborn, Maputo
Partner	INGC - Instituto Nacional da Gestão de Calamidades (DRM authorities of Mozambique) with advisory services provided by IP-Consult and Ambero
Key issues	People-centred flood warning in urban areas, DRR, DRM
Duration	2012 – 2013
Goals	<ul style="list-style-type: none"> • Capacity and resilience building in flood prone slum areas in Beira • Establish a simple but efficient tailor-made flood early warning system • A manual for the establishment of people-centred EWS for urban areas
Mission status	To be completed in 2013

01 > Financial Issues

- RISK Award winner 2012, organized by Munich Re Foundation, UNISDR and GRF Davos
- Funding: 100.000 € plus additional travel and work in kind
- Revenues: six disaster risk committees (task forces) in Beira are prepared for floods and DRM

02 > Project Description

The project first focused on the analysis of climate-related risks for the population and the infrastructure. In a second step, six local self-help Disaster Risk Reduction (DRR) Committees were founded in particularly endangered townships. They are linked to governmental institutions such as the city council and INGC. Actors were trained on issues of climate change and potential risks in an urban context. A simple flood warning system, based on digital contact sensors activated by the rising water level, with instant data uplink between the sensor and the users, has been developed with local materials and installed in critical places. Six local prevention committees have been trained in DRR-related measures and their equipment has been completed. During urban simulation exercises for floods and cyclones, they showed a very good reaction capability. Local authorities, integrated in the early warning system, actively took part in the simulation exercise. A manual on “Early Warning Systems for Urban Coastal Areas” has been submitted for approval to INGC.

03 > Outlook

- Beira project will serve as a best practice example for flood warning in urban coastal areas and other areas with a risk of flash flood, river flood or storm surge
- A manual “Early Warning Systems for Urban Coastal Areas” will be further developed and provided to the DRR community

04 > Lessons Learned

- Institutional development – making DRR everyone’s business
- Including people at risk with their local and indigenous knowledge is important
- Adapt technical systems to the needs of the people at risk

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