



 Give2Asia

IIRR 

## DISASTER VULNERABILITY & DONOR OPPORTUNITIES

*In South & Southeast Asia*

### ***AN IMPORTANT NOTE ON TERMS USED***

***Disaster preparedness*** activities are directed at saving lives and property during hazard events such as floods, earthquakes, droughts, storms and more. This includes setting up early warning systems, emergency evacuation planning and drills, organizing emergency response teams and information or education campaigns on what to do in case of emergencies. ***Disaster risk reduction (DRR)*** seeks to resolve the underlying causes of disaster risk. It is closely linked to development work. DRR is based on the premise that unsustainable development patterns reduce the capacity of people to cope with hazards, thereby causing disasters. Together these two approaches build ***disaster resilience*** – the ability to emerge from hazard events with minimal damage and disruption.

Cover Photo: Rapa Lopa, Executive Director of Philippine Business for Social Progress meets with students from Typhoon Yolanda-affected Tagasa Primary School in Northern Cebu, Philippines in January 2014. Photo taken by Matt Grager.

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# Introduction

Propelled by the catastrophic earthquake and tsunami that struck Indian Ocean countries in December 2004, international disaster philanthropy has grown exponentially over the past decade. Give2Asia has sought to direct this growing investment from individuals, foundations and corporations in the US toward local groups already working within affected communities. This long-term and locally-owned approach to disaster response has proven effective at rebuilding homes, communities, and economic activity in some of the worst disaster zones in recent memory: Aceh, Indonesia in 2004; Sichuan Province, China in 2008; Tohoku, Japan in 2011; and Eastern Samar, Philippines in 2013. However, a decade after the Indian Ocean Tsunami, it is clear that disaster response philanthropy – no matter how robust – is no longer enough.

International donors have grown accustomed to the severity and destruction of natural disasters and climate change. The visible effects of current disasters and their predicted increase in frequency due to climate have been well studied. These extreme weather events are not once-in-a-lifetime occurrences as once thought; rather, they are being recognized as the new normal.

When it comes to climate change, the effects are already being felt. In Bangladesh, the predicted rise in sea level will cover 17 percent of the country by 2050, displacing 18 million people<sup>1</sup>. In fact, migrants are already leaving coastal communities due to soil erosion and re-locating to slums in Dhaka, where they exacerbate flood risks by creating dense settlements

in the most vulnerable areas. These are some of the first climate change migrants, a trend that will continue to grow in the decades ahead, making urban migration both a cause and result of increased vulnerability. Meanwhile in the Philippines, poverty and resource depletion push fishing communities to resort to dynamite fishing, destroying reefs and mangrove forests, leaving their communities more vulnerable to typhoons and storm surges, which will only push them further into poverty. These are the Catch-22s in which the world finds itself in 2014.

"UNDP reports that for every \$1 spent on preparedness and resiliency, \$7 are saved in relief and recovery."

It is clear now, that in order to save lives, protect economic investments and ensure future prosperity for all, communities need to get ahead of climate change and mitigate the effects of disasters through preparedness and risk reduction. While this the most cost effective approach – the UN Development Programme (UNDP) reports that for every \$1 spent on preparedness and risk reduction, \$7 are saved in relief

and recovery<sup>2</sup> – it is also severely underfunded. The Overseas Development Institute (ODI) reports that some of the world's poorest countries receive approximately \$160,000 in relief and recovery funding for every \$1 for preparedness and resiliency<sup>3</sup>.

Luckily, many devoted and capable organizations are working on disaster preparedness and resiliency in Asia, including the United Nations (UN), the Association of Southeast Asian Nations (ASEAN), the Asian Development Bank (ADB) and national governments. Yet, the complexity of the problem and the limited available resources and funding demand that all stakeholders become a part of the solution.

<sup>1</sup> Gardiner Harris (New York Times, March 28, 2014). "Borrowed Time on Disappearing Land." <http://www.nytimes.com/2014/03/29/world/asia/facing-rising-seas-bangladesh-confronts-the-consequences-of-climate-change.html>

<sup>2</sup> UNDP (2013). "Act Now, Save Later [video]." [http://www.undp.org/content/undp/en/home/ourwork/get\\_involved/ActNow/](http://www.undp.org/content/undp/en/home/ourwork/get_involved/ActNow/)

<sup>3</sup> Jan Kelleet & Alice Caravani (Overseas Development Institute, Sept. 2013). "Financing Disaster Risk Reduction: A 20 year story of international aid." <http://www.odl.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8574.pdf>



This paper aims to give corporations, foundations and individual donors the tools and information necessary to support climate change and disaster preparedness and risk reduction programs in Asia. It includes an assessment of the threats facing communities in six of the most vulnerable South and Southeast Asian nations:

- Bangladesh
- India
- Indonesia
- Myanmar
- Philippines
- Vietnam

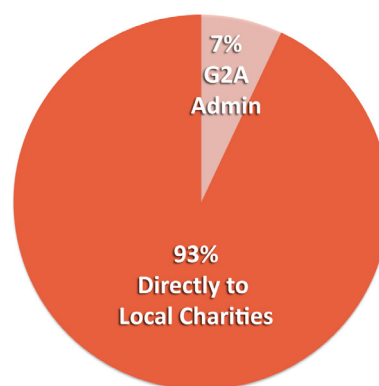
The paper outlines opportunities for donors of all kinds to support disaster preparedness and risk reduction programs in those countries. Finally, it offers strategic advice for donors to make the most impact with each investment, and how to integrate resilience into current strategies. The paper comes as a part of the Give2Asia and International Institute of Rural Reconstruction (IIRR) NGO Disaster Preparedness Program, which aims to catalyze philanthropic investment in disaster preparedness and resilience in Asia. Over the course of this program, Give2Asia and IIRR will build upon these donor opportunities and strategic advice to improve the quality of disaster philanthropy in Asia.

The NGO Disaster Preparedness Program builds on Give2Asia's 40 disaster response campaigns since 2004, and IIRR's 50 years of experience performing local, community-inclusive disaster preparedness and resiliency work in vulnerable communities across Asia and Africa.

The specifics of disaster and climate vulnerability vary greatly between countries, but the urgency remains the same. In India, 80 million people are affected annually by predictable disasters such as flooding and drought<sup>4</sup>. In Indonesia, 90 million people are vulnerable, mostly to unpredictable disasters such

as earthquakes, tsunamis and volcanic eruptions<sup>5</sup>. For the first group, non-action means a cycle of migration, poverty and reconstruction, while for the second, it is a deadly and high-risk gamble that could erupt at any time. Neither situation should be acceptable to donors who care about and invest in Asia's future. We invite you to work with us to address these issues in the communities you care about most.

### THE NGO DISASTER PREPAREDNESS FUND



*Give2Asia and IIRR believe that all individual, foundation and corporate stakeholders have a role to play in preparing communities for disaster and climate change. To demonstrate the impact each donor can have, Give2Asia & IIRR have launched the NGO Disaster Preparedness Fund, which offers funding for preparedness and climate change adaptation programs underway in our target countries.*

*By further supporting this fund, donors large and small can help some of the world's most vulnerable communities prepare for future disasters and adapt to the effects of climate change. For every \$1 donated to the NGO Disaster Preparedness Fund, 93 cents goes directly to local organizations preparing their communities for disaster and climate change.*

*Learn more or contribute to the NGO Disaster Preparedness Fund at [give2asia.org/disasterprep](http://give2asia.org/disasterprep).*

<sup>4</sup> India Disaster Knowledge Network. "Disaster Profile." [http://www.saarc-sadkn.org/countries/india/disaster\\_profile.aspx](http://www.saarc-sadkn.org/countries/india/disaster_profile.aspx)

<sup>5</sup> The World Bank (Oct. 2011). "Indonesia: Advancing a National Disaster, Risk Financing Strategy – Options for Consideration." [http://reliefweb.int/sites/reliefweb.int/files/resources/INDONESIA\\_DRFI\\_M9.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/INDONESIA_DRFI_M9.pdf)

## NOTES ON SELECTION OF TARGET COUNTRIES

*The hard work, experience and support of many people and organizations went into the production of this paper. Collectively, our hope is that knowledge of the challenges that climate change and natural disasters pose to South and Southeast Asia combined with clear and contextual opportunities for donors will begin to shift the attention of the international community from its long-held focus on immediate relief to disaster preparedness and resiliency. Give2Asia and IIRR would like to thank everyone that contributed to this paper and believes in that goal.*

*This paper was based on extensive research by Give2Asia's in-country field advisors:*

- *Hasan Muzumdar and Shameem Siddiqi in Bangladesh;*
- *Surya P. Loonker and Catalyst Social Development Consultants in India;*
- *Anna Juliastuti in Indonesia;*
- *Erin McDevitt and Sandee Pyne from Community Partners International in Myanmar;*
- *Alexie Ferreria Mercado in the Philippines;*
- *Dinh Kieu Nhung in Vietnam.*

*In addition, Give2Asia's Research Associate Christa Ogata provided thorough background research into existing disaster preparedness and resiliency studies, best practices and literature. Wilson John Barbon and Marise Espinelli at IIRR contributed their wealth of knowledge and experience working with DRR practitioners in Asia. Finally, many conversations and experiences with Give2Asia's grantees who are unfortunately too numerous to list were incorporated into this paper.*

*The Give2Asia & IIRR NGO Disaster Preparedness Program began by selecting target countries based on disaster vulnerability and need. The research listed above contributed greatly to this process and was combined with the following objective metrics to make selections:*

## World Risk Index

*The World Risk Index, developed jointly by the United Nations University Institute for Environment and Human Security, Bonn (UNU-EHS) and Alliance Development Works, is one of the most commonly used indices available. The World Risk Index takes into account four indicators: 1. Exposure, 2. Susceptibility, 3. Coping/Readiness, and 4. Adaptive Capacity. It analyzed vulnerability at different levels, including social, ecological and economic factors, to provide a comprehensive risk assessment and identified global disaster hotspots.*

## Global Climate Risk Index

*The Global Climate Risk Index (CRI) developed by Germanwatch, a German-based nonprofit organization that promotes sustainable development using analytical data, measures extreme weather events based on the direct impacts and economic losses. CRI focuses on the level of exposure examining the following indicators: 1. Number of deaths, 2. Number of deaths per 100,000 inhabitants, 3. Sum of losses in US\$ in purchasing power parity (PPP), and 4. Losses per unit of Gross Domestic Product (GDP). The index is ranked from most to least impacted, and it can be used to warn countries of future risks.*

*The two indices above measure different components of exposure and vulnerability. CRI focuses primarily on historical data, whereas WRI studies past events and current conditions. However, we notice that the rankings are closely similar. In some cases where a country is ranked high in CRI, but slightly lower in the WRI, we can infer that the country has carried out efforts to mitigate disaster risks. On the other hand, if a country is ranked lower in the CRI and higher in the WRI, it indicates that a country is moderately exposed to disasters in comparison to other countries, but it has not made significant progress in disaster readiness.*

# Bangladesh

**Population:** 150,039,000

**Major Threats:** Floods, Droughts, Cyclones,  
**Populations Affected:** Urban & Rural Poor, Farmers, Women & Girls

**Locations Affected:** Northern Districts (drought and flood), Southern Districts (flood and sea-rise/salinization)

**Industries Affected:** Agriculture, Manufacturing

**Compounding Issues:** Urban Migration, Poor Land-Use Planning, Environmental Degradation, Climate Change

**World Risk Index Ranking:** 5/173

**Global Climate Risk Index:** 5/178

Bangladesh is one of the world's most vulnerable countries to climate change and natural disasters, with over six percent of the population affected by disasters each year. Between 1980 and 2013, the average Bangladeshi was personally affected by two disasters<sup>6</sup>. The primary threats to Bangladesh are floods, droughts, cyclones and sea-level rise due to climate change. Over the last thirty years, Bangladesh has experienced nearly 200 of these climate-related disasters, which have killed thousands of people, destroyed homes and livelihoods and cost the nation around \$16 billion in damage and economic losses<sup>7</sup>.

The northern districts of the country are highly susceptible to drought, while the southern districts experience heavy rainfall that results in major floods. Both these events have a significant effect on food security for the entire nation.

Across all regions and disasters, it is the poor and marginalized, particularly women and girls, who suffer the most. Those living on small offshore islands (chars), indigenous people, and poor communities



engaged in climate-sensitive livelihoods, are also acutely affected because when disaster strikes they become even poorer and are forced to move to even more vulnerable areas in search of cheaper living.

The national government of Bangladesh, international agencies such as the UN and World Bank, and international non-governmental organizations (INGOs) and local NGOs have been working for decades to prepare for disasters and mitigate the effects of climate change. However, "their ability to voice community priorities for government support, and reduce vulnerability to long term climate change impacts such as salt water intrusion, sea level rise, and extreme and unpredictable weather patterns remains highly questionable," according to Hasan Mazumdar, Give2Asia's Field Advisor and The Asia Foundation Country Representative in Bangladesh.

To address these issues, international donors have the opportunity to support these communities

<sup>6</sup> Centre for Research on the Epidemiology of Disasters – CRED. "EM-DAT: The International Disaster Database." <http://www.emdat.be/>  
<sup>7</sup> ibid.

## CLIMATE CHANGE IMPACT ON WOMEN

*The low-lying southern areas most at risk due to rising sea levels carry a high burden of poverty and higher proportions of female-headed households. Many of the men no longer live in these areas, leaving the burden of feeding the household on the shoulders of women. Climate change and rising sea levels will further limit availability of clean drinking water, which will in turn increase the burden on women, who regularly fetch household water from wells further and further from home.*

*“[Women] will be trapped in drudgery, having less time to complete household chores and having no time for recreation,” wrote Hasan Mazumdar. “In recent years, women in saline affected areas have increasingly been suffering from premature abortion, which is attributed by local doctors to exposure to highly salinated drinking water.”*

*Climate change induced saline rise will reduce vegetable production through courtyard gardening – a common practice by the women in rural Bangladesh. Such reduction will in turn affect nutrition of all members of the households, most acutely women, who tend to ensure their family is fed before eating.*

*Many women are already forced to drink water from sources that are unsafe for consumption. Almost all women lack privacy in sanitation, an overwhelming majority face skin ailments, even reproductive health related problems due to prolonged exposure to filthy water. Research indicates the situation appears to be so grave that men do not want to marry women who have been brought up in water-logged areas.*

with grassroots solutions such as adapting farming practices to climate change and educating rural communities on early warning systems, evacuation routes, and shelters already in place.

## MAJOR THREATS & THE ECONOMY

Densely populated with a third of its 155 million people living below the poverty line, Bangladesh's natural vulnerability is made worse by the living conditions of many of its citizens.

Agriculture, which employs 49 percent of the population, is one of the most vulnerable industries in the country, along with fishing and livestock. Despite only 17 percent of the country working in the industry, manufacturing is also threatened by natural disasters<sup>8</sup>. Khulna, Bangladesh, known as the Industrial City and Bangladesh's third most populous city is rated as one of the top 10 most vulnerable cities in the world in terms of economic assets at risk<sup>9</sup>. Traditional economic activities and livelihoods are also badly affected by climate change and disaster, including crafts made from local resources, and local salt production.

## CLIMATE CHANGE IMPACT

Climate change has caused many hazards in Bangladesh and is likely to worsen the impact of future disasters, especially hydrometeorological disasters. As mentioned in the introduction, predicted sea level rise by 2050 would cover 17 percent of the country. The effects of climate change and rising seas are already being felt, as many people from poor coastal communities inundate Dhaka and its suburbs after losing land to soil erosion.

According to Give2Asia's field team in Bangladesh, the populations most affected by climate change

8 Asian Development Bank (2012). "The Informal Sector and Informal Employment in Bangladesh." <http://wiego.org/sites/wiego.org/files/publications/files/Asian-Devt-Bank-informal-sector-informal-employment-bangladesh.pdf>

9 The World Bank (Aug. 19, 2013). "Which Coastal Cities Are at Highest Risk of Damaging Floods? New Study Crunches the Numbers." <http://www.worldbank.org/en/news/feature/2013/08/19/coastal-cities-at-highest-risk-floods>



are women, small marginal farmers, sharecroppers, laborers, urban slum dwellers, indigenous and minority groups and other marginalized groups, such as the disabled.

Intrusion of saline water in the fresh water rivers, canals, ponds and paddy fields has been on the rise over the past two decades in the southern coastal areas. In addition, local shrimp farming brings salt water to the inner lands. The salinity affects water for drinking and cooking, fresh water agriculture and fisheries, forests and other plantations, livestock, and overall livelihoods of people.

## HYDROMETEOROLOGICAL VULNERABILITY

### Floods

With over 310 rivers and their tributaries, including the Ganges, Brahmaputra and Meghna, which empty into the Bay of Bengal through Bangladesh, flooding affects more Bangladeshis than any other disaster<sup>10</sup>. The three rivers that make up the Ganges Delta, the largest delta on Earth, provide livelihoods for farmers and fishermen, who as a result bear the brunt of nearly all hydrometeorological disasters.

It is estimated that 30-50 percent of Bangladesh floods annually, with the most severe happening in July and August<sup>11</sup>. Flash floods affect the north, center and some southern parts including the Chittagong Hill Tracts in the Southeast. River erosion affects all the banks of the mighty rivers. Floods, including on both sides of the Jamuna and Brahmaputra rivers, regularly affect children's education, with school

attendance dropping 50 percent during flooding. These areas cut across all the way from Kurigram district in the north to close to the middle of the country. When the water recedes it goes through the meeting point of these two mighty rivers into the river Padma and affects districts like Faridpur and Manikgonj, which are quite close to Dhaka, the capital city.

In 2004, a large-scale flood inundated over half the country, caused 766 deaths, and caused \$2.2 billion in economic losses<sup>12</sup>.

### Drought

Drought affects the second most Bangladeshis, following flooding. It is most common in the northwestern region, but can occur along all the major rivers. When drought occurs, the country's food security is at risk, including losing up to 17 percent of its largest harvest, the Aman crop<sup>13</sup>. Land subsidence depletes groundwater resources, worsening

drought during the dry season.

### Cyclones, Storm Surges & Salinity

Tropical cyclones from the Bay of Bengal are often accompanied by intense storm surges that can reach up to nine meters in height. These surges contribute to high casualties and property losses, mainly in the southern coastal regions.

In this century, casualty figures have decreased to several thousand despite growth in storm intensity. A lot of credit goes to preparedness

10 CRED. "EM-DAT."

11 The World Bank (Feb. 11, 2009). "Bangladesh Policy Note on Climate Change." [http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2012/04/24/000386194\\_20120424002426/Rendered/PDF/682490ESW0WHIT0hange0Policy0Note020.pdf](http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2012/04/24/000386194_20120424002426/Rendered/PDF/682490ESW0WHIT0hange0Policy0Note020.pdf)

12 The World Bank (ReliefWeb, Sept. 27, 2004). "Key donors say Bangladesh flood damage stands at \$2.2 billion."

13 Department of Disaster Management (Government of Bangladesh). "Drought." <http://www.ddm.gov.bd/drought.php>

work done at various levels – local to national – and the engagement of many stakeholders from the government, civil society including NGOs, international donors, development partners, and the general public.

## **ADAPTATION & CIVIL SOCIETY**

Currently, the UN, the national government, INGOs, and local NGOs are all playing a role in disaster preparedness and climate change adaptation. The government recognizes that many communities are poorly informed about evacuation plans and the use of emergency shelters. Many people simply do not understand the early warning signals, lack sense of awareness, and are unwilling to leave their assets or properties behind.

### *Role of Government*

The national institution responsible for disaster management is the National Disaster Management Council (NDMC), headed by the Prime Minister. The NDMC manages disaster-related policies and coordinates with other agencies to disseminate warning signals, conduct trainings, and raise public awareness. In 2012 the government established the Ministry of Disaster Management and Relief to strengthen collaboration, reduce risk across sectors and carry out humanitarian assistance to those who are affected by disasters.

The national government has constructed 2,590 cyclone shelters, 200 flood shelters, and used funding from Japan to replace an early warning system in the borough of Agargaon, Dhaka, install a new radar system at Rangpur, and a satellite ground receiving station at the storm warning center in Dhaka. This new equipment will help forecast and warn the country of flooding events.

In response to flood risks, the Ministry of Water Resources is leading the water management effort creating the Flood Action Plan, Flood Hydrology

Study, Flood management Model Study, National Water Policy and Flood Early Warning System. The government has also established an operations center in Dhaka to respond and coordinate emergency relief with district committees.

### *Adaptation & the International Community*

To improve community resilience to natural disasters, the United Nations Development Programme (UNDP) worked with NDMC of Bangladesh to construct disaster-resilient homes and develop new crops that can withstand drought and salinity. UNDP has also trained government officials in emergency response, provided expertise for development plans and advocated for civil society empowerment and engagement.

Many large national and well-known INGOs are in Bangladesh – The Red Crescent, CARE international, Oxfam, Save the Children, BRAC, and others. And, while there are over 2,000 local NGOs registered with the government that perform some program work in disaster preparedness and climate change adaptation, the best estimate is that only around 300 of them are currently active.

Large projects are funded through consortiums or directly in collaboration with national government, including: a comprehensive disaster management program, the Chars Livelihood Programme, Shiree Economic Empowerment of the Poorest, National Alliance for Risk Reduction and Response Initiatives and Developing and Strengthening Humanitarian Assistance and Risk Reduction Initiatives.

### *Adaptation & the Local Community*

Local NGOs and community-based organizations (CBOs) have been trying to address the immediate impacts of climate change primarily through disaster risk reduction and adaptation initiatives. This includes organizing volunteer groups to respond to disasters, providing information on ways to reduce

risk and vulnerability, constructing cyclone shelters, supporting alternative livelihoods, and adapting to extreme weather.

## **INVESTMENT**

Currently, there are a large number of financing sources to advance climate change related activities in Bangladesh, however a significant proportion is small in amount, unpredictable in nature, and is generally tagged for sporadic projects. These small projects are generally handled by NGOs to pilot certain ideas or to promote good practices of other NGOs and agencies. Apart from these small-scale initiatives, bilateral donors and UN bodies sometimes invest small to medium sized funding (often not exceeding US\$5 million) which is re-directed through government agencies as well as national NGOs. Three large funding windows are the Bangladesh Climate Change Trust Fund, Bangladesh Climate Change Resilience Fund and the Pilot Program for Climate Resilience.

## **OPPORTUNITIES FOR INTERNATIONAL DONORS**

The need for disaster preparedness, risk reduction and combating climate change is enormous in Bangladesh. There are many areas for donors to have impact or to add value to existing programs in communities of interest.

- Invest in knowledge management and research on disasters and climate change.
- Disseminate knowledge and hold trainings on use of evacuation centers and early warning systems to local communities.
- There is a need for programming and advocacy work to share best practices from the US and other countries, including South-South cooperation with local NGOs and CBOs in Bangladesh.
- Construction of cyclone-resistant housing, schools, hospitals and shelters.
- Invest in adaptations to saline intrusion,

including knowledge and technology sharing for rain water harvesting, as it will be critical for saline affected areas.

- Develop long-term reading and learning materials on disaster preparedness and climate change adaptation for university students.
- Include local NGOs and CBOs in all program design and implementation to build capacity of local sector and increase community ownership and involvement.
- Support and train volunteer groups to respond to disasters.
- Support alternative livelihoods for communities whose resources or livelihood is threatened due to climate change.

# India

**Population:** 1,210,000,000

**Major Threats:** Floods, Cyclones, Earthquakes, Landslides, Droughts

**Populations Affected:** Urban & Rural Poor, Dalits, Women & Children, People with Disabilities

**Locations Affected:** Northern Regions (Flash floods, landslides), Coasts (storms, floods)

**Industries Affected:** Agriculture, Technology/Communications, Manufacturing

**Compounding Issues:** Urban Migration, Informal settlements, Environmental Degradation, Climate Change

**World Risk Index Ranking:** 74/173

**Global Climate Risk Index:** 18/178

Though it only comprises two percent of the world's landmass, India is home to one-sixth of the world's population. Approximately 85 percent of Indian land is vulnerable to one or more natural hazards, with 68 percent vulnerable to drought, 57 percent to earthquakes, and 12 percent to floods<sup>14</sup>.

Drought and flood have a widespread effect on the population. The India Disaster Knowledge Network estimated that 50 million people are affected by droughts and 30 million by floods annually<sup>15</sup>.

India has experienced high economic growth, especially in the communications and technology industry. Thus, a large-scale disaster can have a significant impact on the country's economy and destroy any progress in economic development. Human factors such as deforestation, poor agricultural and land use practices, urbanization and construction of large infrastructure all contribute to disaster risks and people's vulnerability.



"India has a highly diversified range of natural features. Its unique geo-climatic conditions make the country among the most vulnerable to natural disasters, which occur with amazing frequency and regularity," said Surya P. Loonker, Give2Asia

Field Advisor in India. "While the society at large has adapted itself to these regular occurrences, the economic and social costs continue to mount year after year."

International donors can help people, communities and industries across India defend against disasters through community-based programs, including rainwater harvesting and recycling systems, training first responders to floods, and implementing early warning systems and evacuation plans.

"The economic and social costs continue to mount year after year."

<sup>14</sup> India Disaster Knowledge Network. "Disaster Profile."

<sup>15</sup> *ibid.*



## MAJOR THREATS & THE ECONOMY

Population growth and urbanization has increased India's vulnerability to natural disasters, as more people reside in slums and informal settlements. There has been a great push from administrators, practitioners and NGOs to re-examine settlements constructed by private developers which can increase the population vulnerability and the impact of disasters.

Approximately 25 percent of the population lives in poverty and are therefore least resilient to disasters. The poor often extract and exploit environmental resources to sustain their living which exposes them to even greater risks.

## CLIMATE CHANGE

Due to climate change, disasters are occurring with higher frequency and intensity. They are also happening in new areas, causing more damage to populations that are less prepared. The warmer climate will increase snowmelt and the occurrence of avalanches leading to fatalities and property damage, flooding in the lower basin and prolonged droughts. Drought will not only affect agricultural activities, it will affect the availability of water for the entire country.

As the global temperature increases, sea level rise will contribute to coastal erosion and displacement of many densely populated coastal communities. Cyclones will also continue to be a threat to these coastal communities.

"Several studies show a decreasing trend in the frequency of tropical cyclones and monsoon depressions over the Bay of Bengal in recent years," said Loonker. "However, their potential for damage and destruction still continues to be significant."

## HYDROMETEOROLOGICAL VULNERABILITY

### Floods

The most common disaster in India is flooding, which constitutes 46 percent of all disaster events and contributes the highest economic loss<sup>16</sup>. About 3,000 square miles flood annually.

The northern region of India experiences recurring floods from major rivers, including the Ganges and Brahmaputra and their tributaries, especially during monsoon season. The plains of Uttar Pradesh and Bihar are frequently affected by water overflow from major rivers. Excess rainfall over a short period can also lead to flash flooding, while insufficient rainfall will lead to drought.

High magnitude floods during the monsoon season are considered to be India's recurring and leading natural disaster. The country has to face loss of life and damage to property due to severe floods time and time again. Heavy flood damages were experienced in the country during the monsoons of 1955, 1971, 1973, 1977, 1978, 1980, 1984, 1988, 1989, 1998, 2001 and 2004. The Central Water Commission has compiled the damage figures due to flood since 1953 and reports yearly average loss to life to be about 1,590 and that damage to public utilities has totaled approximately \$132 billion<sup>17</sup>.

Severe losses were also caused by floods in the recent past. Heavy monsoon rains triggered landslides and flooding in India in July 2006, specifically in the regions around Mumbai. Over 1,100 people lost their lives, and the insured property damage amounted to US\$800 million.

In a report by *Swiss Re* covering the 20 worst catastrophes of 2007, India was shown to be one of the most victim-prone countries, as more people were affected inside India that year than in all non-Asian nations combined.

<sup>16</sup> CRED. "EM-DAT."

<sup>17</sup> *ibid.*

## Cyclones & Other Storms

Storms are the second most recurring disaster following floods. Of India's 7,500 kilometers of coastline, approximately 5,700 kilometers are prone to cyclones and other storms from both the Bay of Bengal and the Arabian Sea. The East coast of India is vulnerable to cyclones and coastal flooding during the months of May to June and October to November. Storms are frequent in Andhra Pradesh, Orissa, West Bengal and Tamil Nadu along the Bay of Bengal and parts of Maharashtra and Gujarat on the Arabian Sea<sup>18</sup>.

## Drought

Although drought is of a low three percent of the total recorded disasters, it causes the most fatalities and number of people affected. A single drought event impacts an average of 75 million people - more than the combined population of California and Texas - whereas a flood impacts 3 million people.

Thus, although drought occurs less frequently, it has a widespread effect on the whole country<sup>19</sup>.

Drought is recurrent in the Rajasthan, Gujarat and some parts of Maharashtra state, and it has a widespread impact on people's livelihood, food security, and health. Droughts are aggravated by the El-Nino Southern Oscillation (ENSO) and shortage of food production. About 68 percent of arable land in India is vulnerable to drought<sup>20</sup>.

During 1999, 2000 and 2001 drought conditions prevailed over some parts of India, not affecting the country as a whole significantly. During 2002 twelve out of 36 subdivisions of the country were struck by moderate to severe drought with about 29 percent

of the total area of the country affected.

## GEOPHYSICAL VULNERABILITY

### Earthquakes & Landslides

India lies along major fault lines between the Indian Plate and the Eurasian plate that run through the mountainous region making it vulnerable to seismic activities. Another friction exists between the Indian Plate and the Burmese Micro-Plate in the Bay of Bengal and the Indian Ocean, which exposes India to tsunami threats. In total, about 60 percent of India is

vulnerable to seismic damage of buildings to varying degrees<sup>21</sup>. The Himalayan, Sub-Himalayan, Kutch, and the Andaman and Nicobar Islands are particularly prone to this hazard. Areas surrounding the Himalayas are also exposed to avalanches and landslides.

The Kutch Earthquake in 2001 was one of the worst earthquakes experienced in India. The event devastated

7,633 villages in Gujarat, killed 13,805 people, injured 167,000 and caused \$2.6 billion in economic damage<sup>22</sup>.

Northeast India, including Bihar, Uttarakhand, Himachal Pradesh, Jammu and Kashmir and Gujarat, is prone to earthquakes, but the buildings are not resistant to seismic activities and can contribute to huge damages and casualties. Scientists advise that a severe earthquake can occur at anytime and can be detrimental to densely populated cities. Landslides in the Nilgiri Mountains are also common due to melting icecaps and logging activities. The catastrophic events destroy settlements, agricultural fields, electricity lines, and public infrastructure<sup>23</sup>.

<sup>18</sup> India Disaster Knowledge Network. "Disaster Profile."

<sup>19</sup> CRED. "EM-DAT."

<sup>20</sup> India Disaster Knowledge Network. "Disaster Profile."

<sup>21</sup> *ibid*.

<sup>22</sup> Ministry of Home Affairs (Government of India, 2011). "Disaster Management in India." [http://www.us.undp.org/content/dam/india/docs/disaster\\_management\\_in\\_india.pdf](http://www.us.undp.org/content/dam/india/docs/disaster_management_in_india.pdf)

<sup>23</sup> *ibid*.

## CYCLONE PHAILIN: A CLOSER LOOK

On October 29, 1999, a severe Super Cyclone with winds of up to 250 km/h crossed the coast in Odisha province along the west coast of India. This was the worst cyclone of the century in the region and is responsible for 10,000 deaths, leaving millions homeless and for extensive damage.

In October 2013, the situation looked as if it were playing out once again as Super Cyclone Phailin barreled toward Odisha and Andhra Pradesh. As the storm approached, India launched the largest evacuation effort in its history, bringing over 1 million people<sup>1</sup> to the safety of cyclone shelters, none further than 2.5 kilometers from their homes<sup>2</sup>. When the storm passed, 11 million people had been affected, crops and homes had been destroyed, but only 21 people had lost their lives.

This improvement over the region's experience in 1999 is due to the construction of cyclone shelters, combined with implementing Doppler radar to accurately predict and warn of incoming storms. The shelters, which can withstand 300 km/hour winds and moderate earthquakes, were built under the National Disaster Management Authority's (NDMA) National Cyclone Risk Mitigation Project, assisted by the World Bank<sup>3</sup>.

"Credit is due to those who have been involved in efforts to reduce the scale of vulnerability to disasters across India. The low loss of life, fol-



NASA EOSDIS Worldview

lowing the strongest storm ever measured in the Bay of Bengal, would almost certainly not have been possible without learning lessons from previous cyclones and tsunamis that have hit this coastline," Tom Mitchell, Head of Climate Change for the Overseas Development Institute (ODI) told The Wall Street Journal<sup>4</sup>.

He continued to explain that despite the reduction in loss of life, more preparation is necessary. "Over the next two decades many parts of India – including Andhra Pradesh – will be increasingly exposed to disasters. The focus on how deadly disasters can be should not obscure the facts that many homes, hospitals, shops and schools will have been badly impacted in ways which will drive people into poverty."

1 Maude Froberg (International Federation of the Red Cross and Red Crescent Societies; Oct. 17, 2013). "Preparedness Saves thousands of lives during Cyclone Phailin; now the recovery begins." <https://www.ifrc.org/en/news-and-media/news-stories/asia-pacific/india/recovering-from-cyclone-phailin-survivors-face-massive-hardships--63582/>  
2 Bharti Jain (The Times of India; Oct. 13, 2013). "Cyclone Phailin: Superior preparedness could reduce casualties." <http://timesofindia.indiatimes.com/india/Cyclone-Phailin-Superior-preparedness-could-reduce-casualties/articleshow/24059498.cms>  
3 *ibid.*

4 Nikita Mehta, Yogendra Kalavalapalli, & Prashant K. Nanda (The Wall Street Journal; Oct. 13, 2013). "Cyclone Phailin: Recovery challenge looms in Odisha, Andhra Pradesh." <http://www.livemint.com/Politics/zqBu8p6YrcpRXHkWuWtQI/Cyclone-Phailin-hits-Odisha-rescue-workers-start-to-assess.html>

## ADAPTATION

### *Adaptation & Government*

The national institutional structure for disaster management is the National Disaster Management Authority (NDMA). The State Disaster Management Authorities (SDMA) is responsible for the coordination at the state level. The NDMA is responsible for drafting policies and guidelines on disaster management, to be enacted by different ministries. It published a set of guidelines for each specific disaster including regulatory and non-regulatory frameworks, policies and programs. The National Institute of Disaster Management (NIDM) was established in 2003 to undertake research, develop training modules, and organize conferences and lectures to raise awareness on disaster management.

For a long time, the government has been heavily focused on emergency response and few initiatives were taken on disaster preparedness. However, more recently, the government passed the Disaster Management Act 2005 to mainstream disaster risk reduction into development plans and projects to decrease vulnerability. Under the provisions of the Act, the NDMA is responsible for the use of the National Disaster Mitigation Fund on risk reduction projects. The government also launched a number of national mitigation projects to strengthen disaster readiness in hazard-prone areas by establishing building codes for earthquakes, managing land-use, fostering collaboration, and raising public awareness.

Since India is constantly affected by floods, the government created the Flood Management Programme, investing approximately \$1.81 billion between 2007 and 2012 in improving river management, flood control and drainage systems. The Ministry of Agriculture is responsible for drought mitigation through educating communities about water management, using water conservation

technologies, and constructing watersheds to store water. The state governments are responsible for providing employment, food security, and support for livestock when drought is declared<sup>24</sup>.

NDMA has carried out emergency drills at different schools based on the disasters they are exposed to, and tried to assess the resources and response systems. In flood-prone areas like Bihar, Uttar Pradesh and a few other states, villagers are raising their houses and gardens above flood level by using earthen mounds to reduce flood risks<sup>25</sup>. In the city of Pune in the state of Maharashtra - a flood-prone area, the government developed a new drainage map, widened streams, expanded bridges, and applied natural soil infiltration supplement. Furthermore, the municipal government provided tax incentives for households who recycle wastewater and use rainwater. These tactics have been extremely beneficial to the communities to mitigate risks and promote water management<sup>26</sup>.

The government of India is also promoting the use of watersheds to deal with water resource deficiency in drought-prone areas. The Participatory Watershed Development (PWD) program, led by the Watershed Organization Trust (WOTR), includes the building of rainwater harvesting structures, soil erosion control activities (planting trees), capacity building, education, and community empowerment. WOTR is also leading the climate change adaptation project by working in 53 villages in three states on water management techniques, weather report installations, crop diversification and environmental conservation<sup>27</sup>.

Some challenges to disaster related programs are poor communication systems and a lack of awareness among community members. Additionally, there appears to be a wide gap of knowledge and expertise

<sup>24</sup> Ministry of Home Affairs (2011).

<sup>25</sup> *ibid*.

<sup>26</sup> UNISDR (Briefing Note 02, 2009). "Adaptation to Climate Change by Reducing Disaster Risks: Country Practices and Lessons." [http://www.unisdr.org/files/11775\\_UNISDRBriefing-AdaptationtoClimateCh.pdf](http://www.unisdr.org/files/11775_UNISDRBriefing-AdaptationtoClimateCh.pdf)

<sup>27</sup> Erin Gray (World Resources Institute, Jan. 24, 2013). "Climate Change Adaptation in Rural India: A Green Infrastructure Approach." <http://www.wri.org/blog/2013/01/climate-change-adaptation-rural-india-green-infrastructure-approach>



among government officials, NGOs, and civil society. Therefore, the success of disaster management efforts are contingent upon the capacity of actors at the state and local level<sup>28</sup>.

## INVESTMENT

The budgetary portion of disaster management is under the provisions of the Ministry of Finance. NDMA budgeted about \$65 million for disaster mitigation projects (earthquake, landslide, cyclone, and flood), disaster management communication network, and other disaster management projects<sup>29</sup>. As part of the Disaster Response Fund, the government has allocated a total of approximately \$1.3 billion each year until 2015. The total budget is then redistributed to different states depending on their expenditure on relief operations within the last 10 years, their economic status, and vulnerability to disasters. The government of India partnered with UNDP to address the disaster risk reduction component in all 29 states with an international grant of \$20 million from the UN for 2009-2012<sup>30</sup>.

## OPPORTUNITIES FOR INTERNATIONAL DONORS

India faces a wide range of threats, and international donors have many options to support community resilience efforts. Certainly all efforts at poverty reduction, anti-corruption, and environmental sustainability will play a part in disaster risk reduction. However, donors also have more direct ways to help communities adapt, including:

- Raising homes and gardens above flood level in vulnerable areas.
- Rainwater harvesting, water recycling systems, and other drought mitigation techniques.
- Environmental protection and restoration in key locations, such as mangrove forests and flash flood-prone areas.
- Investing in grain banks and other food security

reserve systems

- Leverage technology to improve communication systems to build community awareness and knowledge.
- Advocacy and capacity building of local actors
- Disseminating knowledge of evacuation centers and warning systems to local communities.
- Supporting hospital and health service planning for continuity of services following disasters.

<sup>28</sup> Ministry of Home Affairs (2011).

<sup>29</sup> National Disaster Management Authority (2013). "Plan Budget 2013-14). <http://ndma.gov.in/en/about-ndma/budget/plan-budget/plan-budget.html>

<sup>30</sup> Ibid.



## Indonesia

**Population:** 246,900,000

**Major Threats:** Floods, Earthquakes, Volcanic Eruption, Tsunamis

**Populations Affected:** Urban & Rural Poor, Farmers and Fishermen, Coastal Communities

**Locations Affected:** Sumatra and Java most at risk

**Industries Affected:** Agriculture, Fishing, Manufacturing

**Compounding Issues:** Urban Migration, Poor Land-Use Planning, Environmental Degradation, Climate Change

**World Risk Index Ranking:** 33/173

**Global Climate Risk Index:** 72/178

With 17,000 islands and over 80,000 kilometers of coast, Indonesia is vulnerable to sea-level rise and myriad natural disasters. Floods are the most common hazard, but the unpredictability and wide-spread devastation caused by earthquakes, tsunamis and volcanic eruptions make geological disasters much more threatening. The World Bank has estimated that 40 percent of the country's population, or around 90 million people, are vulnerable to disasters<sup>31</sup>.

The national government has created a de-centralized structure to prepare and respond to disasters and climate change. However, these structures are often lacking and funding is frequently diverted from preparation and mitigation to emergency response.

Despite the national government's allocation of one percent of its budget to disaster and climate change mitigation and a number of active donor agencies and INGOs, local NGOs find it difficult to access funding, and many lack the organizational capability necessary to mitigate disasters. Partly, this is because it is government policy to direct aid agency and INGO funding to strengthening government preparation and response at all levels, rather than directing it to civil society.

International donors and grantmakers have the opportunity to support these small local organizations doing community-based disaster preparedness. From climate change adaptation in the agricultural sector, to awareness raising and evacuation planning in vulnerable areas, Indonesia will need wide-ranging support from the international donor community to overcome the threats posed by climate change and disasters.

31 The World Bank (Oct. 2011). "Indonesia: Advancing a National Disaster, Risk Financing Strategy – Options for Consideration."

## MAJOR THREATS & THE ECONOMY

The southern and western islands, specifically Sumatra and Java, are the most vulnerable areas and are exposed to a number of hazards including earthquakes, floods, landslides, and volcanoes. Topography and unstable soil conditions put these islands at especially high-risk for landslides. High populations coupled with poor infrastructure and land-use planning lead to higher risk for large-scale disasters. This is exacerbated by urbanization and poorly enforced zoning, which leads to households settling in hazard prone areas. The Ministry of Public Works reports that close to 25 million people are living in informal settlements exposed to disasters<sup>32</sup>.

Though the national government has put forth great effort to reduce the number of deaths due to disaster, the economic losses still remain high for Indonesia, at 0.3 percent of GDP, or approximately \$1.5 billion annually<sup>33</sup>. Major earthquakes can cost as much as three percent of GDP in damage, while earthquakes, tsunamis, floods and droughts all put food security and agricultural livelihoods at risk.

To mitigate crop loss caused by natural disasters, investment is needed to implement drought resistant seeds, crop diversification, and early warning systems. Flood management and agricultural infrastructure are also necessary to reduce risks from inundation and soil erosion<sup>34</sup>.

Environmental degradation, such as deforestation and destruction of protective reefs, mangroves, and wetlands, is also an issue leading to landslides, floods, and intensified storm surges. Deforestation

32 Global Facility for Disaster Reduction and Recovery (2009). "Disaster Risk Management Programs for Priority Countries: East Asia and the Pacific; Indonesia."

33 CRED. "EM-DAT."

34 Jonatan A. Lassa (IRGSC Policy Brief, Feb. 2013) "Indonesia can achieve food security through crop loss mitigation and risk reduction: anticipating the second wave of Indonesian agricultural involution due to impact of natural hazards and climate extremes." <http://irgsc.org/pubs/pb/IRGSCbrief-002.pdf>

removes organic materials that absorb rainfall, resulting in large surface water runoff. With a large portion of the population residing in low-land areas, the environmental loss heightens their vulnerability<sup>35</sup>.

The National Agency for Disaster Management (BNBP) reported that the capital city, Jakarta, is sinking 3.5 centimeter a year, and approximately 40 percent of the city lies below sea level making it highly susceptible to flooding<sup>36</sup>. A contributing factor to the increase in floods is land subsidence. Informal well

drilling for groundwater extraction leads to lowered ground surface, and consequently, flood. The city plans to widen the rivers that flow through Jakarta to prevent the possibility of water overflow; however, many residents along the river banks are resistant to resettling due to their dependency on the natural environment<sup>37</sup>.

## CLIMATE CHANGE

Like much of Southeast Asia, climate change dramatically increases the risk of natural disasters for Indonesia. It intensifies storms and extreme weather, causing floods and droughts. These changes have an impact on food production and natural resources. The International Rice Research Institute (IRRI) predicts that for every one degree centigrade rise in temperature, Indonesia's rice yield will decrease by 10 percent<sup>38</sup>. Indonesia is also known to contribute significantly to carbon dioxide emissions by burning forest to clear land. Deforestation can lead to increased or more severe landslides and flooding. These man-made forest fires cause up to 300,000 deaths a year and also negatively affect the air quality in neighboring

35 Jakarta Globe (Oct. 12, 2012). "Indonesia Falls to 33rd in World Risk Index on Disaster Vulnerability." [http://www.thejakartaglobe.com/archive/indonesia-falls-to-33rd-in-world-risk-index-on-disaster-vulnerability/?doing\\_wp\\_cron=1393610101.3005321025848388671875](http://www.thejakartaglobe.com/archive/indonesia-falls-to-33rd-in-world-risk-index-on-disaster-vulnerability/?doing_wp_cron=1393610101.3005321025848388671875)

36 IRIN Humanitarian News and Analysis (Jan. 17, 2013). "Indonesia's natural disaster risks, costs rise." <http://www.irinnews.org/fr/report/97861/indonesia-s-natural-disaster-risks-costs-rise>

37 *ibid*.

38 Lassa (IRGSC, 2013).



Children in rural Java practice evacuation drills using IDEP's DRR education materials following the eruption of Mount Merapi in Oct. 2010. (IDEP)

**YAYASAN INDONESIA DEVELOPMENT & PERMACULTURE (IDEP)** has been working in Indonesian communities since 1999. In Oct. 2010, IDEP was in a unique position to respond to two nearly simultaneous disasters - the eruption of Mount Merapi on the island of Java and a 7.7 magnitude earthquake that hit the Mentawi Islands off the coast of Western Sumatra. On Java, two members of IDEP even led a midnight evacuation from a mountainous village as Merapi erupted.

Following these events, Give2Asia supported IDEPs efforts to help affected communities, while also preparing them for future disasters. This type of integrated approach is only effective with NGOs like IDEP, who share a long-term commitment to affected areas.

In both locations, IDEP delivered food aid and disaster risk reduction (DRR) education materials

to 2,200 people from four villages. These materials were aimed at helping existing local Emergency Response Teams run their camps for internally displaced people (IDPs). Materials included information on supply logistics, capacity building, communication and networking.

IDEP also instituted three National Emergency Teams, which consist of doctors, volunteers and camp managers to be dispatched to affected areas following emergency scenarios across Indonesia. Once dispatched, the teams implement emergency evacuation procedures, establish camps for IDPs, network, fundraise and provide water, sanitation systems and health services. These teams now cover three areas - one in Sumatra, which covers events in Sumatra; one in Jogja that covers events in Java, Kalimantan and Sulawesi; and one in Bali that covers events in Bali, East Nusa Tenggara, West Nusa Tenggara, Maluku and Papua.



countries<sup>39</sup>.

Indonesia has the fourth largest amount of coastline in the world and as a result is greatly affected by rising sea levels and changes in rainy seasons. However, policy and legislation directly relating to Climate Change Adaptation (CCA) is at an early stage of development.

A number of CCA programs and initiatives have been introduced by national and international NGOs in recent years, focusing mainly on the following areas:

- Awareness raising
- Adaptation to and mitigation of effects of flooding, drought, deforestation and sea level rising
- CCA risk assessment
- Green jobs such as green entrepreneurship, sustainable tourism
- Organic farming technique
- Livelihood, food and water security

“For every one degree centigrade temperature rise, Indonesia’s rice yield will decrease by 10 percent.”

## GEOPHYSICAL VULNERABILITY

### *Earthquakes, Tsunamis & Volcanic Eruptions*

Located on the Pacific Ring of Fire with 129 active volcanoes, Indonesia is vulnerable to both earthquakes and volcanic eruptions<sup>40</sup>. Due to their unpredictability and widespread effect, earthquakes, tsunamis and volcanic eruptions are the most threatening hazard faced by Indonesia. Earthquakes and tsunamis alone account for 28 percent of all disasters in the country, second only to flooding<sup>41</sup>.

The 2004 earthquake and tsunami in the province of Aceh killed over 165,000 people in Indonesia and

39 Greenpeace Southeast Asia (May 28, 2014). “Sumatra: Going up in smoke.” [http://www.greenpeace.org/international/Global/international/briefings/forests/2013/Peat-Forest%20Fires\\_Briefer\\_May28-2014.pdf](http://www.greenpeace.org/international/Global/international/briefings/forests/2013/Peat-Forest%20Fires_Briefer_May28-2014.pdf)

40 The World Bank (Oct. 2011).

41 CRED. “EM-DAT.”

cost the country \$4.5 billion in GDP. This disaster also sent a tsunami across the Indian Ocean, bringing the death toll to over 230,000 in 14 countries. Two years later, another earthquake shook the provinces of Yogyakarta and Java, affecting 3.2 million people.

Volcanic eruptions also take and disrupt lives. In 2010, Mount Merapi, literally translated as Fire Mountain, erupted and displaced over 300,000 people. More recently, Mount Sinabung in Northern Sumatra and Mount Kelud in East Java erupted in February 2014, killing 34 and displacing over 130,000 people combined<sup>42</sup>.

The Ministry of Finance established Maipark, the Indonesia Earthquake Reinsurance Pool, to provide affordable insurance premiums based on the government’s hazard zone. The coverage is provided to houses, offices, malls, factories, communication

towers and schools, and it includes earthquakes, volcanic eruptions, fire, and tsunamis. Yogyakarta, one of the most vulnerable regions in Indonesia, insured public assets of \$90 billion in 2010 but drastically dropped to \$20 billion in 2011 due to a decrease in budget<sup>43</sup>.

## HYDROMETEOROLOGICAL VULNERABILITY

### *Floods*

At 39 percent of all disasters<sup>44</sup>, flooding has the largest impact on people’s livelihoods and can cause significant damage to urban centers, including Jakarta, Medan and Bandung. Heavy rainfall occurring in the western provinces can inundate these densely populated areas. In 2007, the Bengawan Solo river basin flooded Central and East Java, causing around

42 IRIN Humanitarian News and Analysis (Feb. 21, 2014). “Indonesia’s lagging volcano preparedness.” <http://www.irinnews.org/report/99681/indonesia-s-lagging-volcano-preparedness>

43 The World Bank (Oct. 2011).

44 CRED. “EM-DAT.”

\$170 million economic damage.

Due to its naturally low-lying topography, the capital of Jakarta and its 10 million inhabitants are extremely vulnerable to flooding. With 40 percent of the city already below sea level, and an average sinking rate of 3.5 centimeters each year, its vulnerability will only get worse. Major flooding has already occurred in 1996, 2002, 2007, and 2013.

## ADAPTATION & THE NATIONAL GOVERNMENT

The Government of Indonesia has put in place structures and processes to play a leading role in disaster management. Since 1999, the Indonesian government has followed a policy of decentralization with both decision-making and funding being transferred to more than 30 provincial and over 400 district levels. This was reflected in the Disaster Management Law, passed in 2007, which requires the government to establish Disaster Management Agencies at national, provincial and district level. The National Disaster Management Agency – Badan Nasional Penanggulangan Bencana (BNPB) – was established in 2008. As a part of the decentralization effort, local disaster management agencies—BPBDs—have begun to be established in provinces and districts throughout the country. These provincial BPBDs are in a position to promote best practices among their respective districts and provide technical and operational support before, during, and after disasters occur within the province. However, often these local agencies do not have the technical knowledge or skills necessary to provide such support. Many government staffs struggle to develop disaster mitigation plans because, despite receiving training, they are still unclear about what disaster risk reduction means in practice and how to

“With 40 percent of [Jakarta] below sea level and a sinking rate of 3.5 cm each year, its vulnerability will only get worse.”

translate a policy framework into concrete programs. For 2010-2012, the BNPB created the National Action Plan for Disaster Risk Reduction (NAP-DRR), to allocate a budget for disaster management, establish a risk financing and insurance scheme, raise awareness and implement safety standards<sup>45</sup>.

When disasters do occur, loss to public infrastructure puts a strain on the government’s budget to restore and rebuild public facilities. The Disaster Management Authority (DMA) is the primary institution for disaster mitigation, emergency response, and recovery. The DMA works with other ministries to carry out disaster management projects. Coordination with other national agencies still remains a challenge because differences in priorities and lack of information<sup>46</sup>.

Due to the disconnect between the national and local government, only 18 out of 33 provinces have established municipal disaster management agencies to deal with disaster relief, recovery, and readiness. Local governments rely on the national disaster fund and are reluctant to use their provincial budgets for disaster management. The DMA reported that many local disaster management agencies have limited human and financial resources, inadequate equipment, and lack disaster preparedness plans<sup>47</sup>.

## ADAPTATION

### *Adaptation & The United Nations*

UNDP has been working with local communities to educate them on earthquake emergency response to help them identify early warning signs

<sup>45</sup> The World Bank (Oct. 2011).

<sup>46</sup> Simon Butt (Springer, 2014). “Disaster Management Law in Indonesia: From Response to Preparedness?” [http://link.springer.com/chapter/10.1007%2F978-3-642-39768-4\\_9#page-1](http://link.springer.com/chapter/10.1007%2F978-3-642-39768-4_9#page-1)

<sup>47</sup> *ibid*.

and to better prepare them for disasters. UNDP is working with provincial governments to raise awareness on disaster management and integrate risk reduction education to school curriculum. The local government officials are taking an active part in disseminating disaster preparedness information through local TV and radio programs<sup>48</sup>.

### *Adaptation at the Local Level*

Due to the nature of agreement between government of Indonesia and donor agencies, support from donor agencies are mainly government to government in nature. This essentially means that almost all donor activities are aimed at strengthening government agencies rather than local NGO capacity. When there are opportunities for NGOs to access donor agencies' funding, it is mainly for INGOs as there is limited capacity for local NGOs to access the funding directly. As a result, local NGOs focusing on disaster resiliency are short of both funding and management capacity. Plan International conducted an assessment for local partners in 2012 and found 40 NGOs across Indonesia that have sufficient technical capacity. The United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), through funding from the Swedish International Development Cooperation Agency (SIDA), worked directly with five local NGOs for emergency response after earthquake in Sumatra in 2012. Similarly, the Office of US Foreign Disaster Assistance (OFDA) has worked directly with a few local NGOs for disaster preparedness since 2010. These local NGOs are usually active in a network facilitated by donors or INGOs.

### **INVESTMENT**

Indonesia is the top recipient, after Pakistan, of overseas development assistance for disaster risk reduction at \$558.4 million from 2006-2010, with Japan funding 80 percent of the total<sup>49</sup>. Japan focuses most of its contribution on flood prevention and control. In 20 years, from 1991-2010, Japan funded a total of \$846.3 million in flood mitigation measures and \$227.9 million for disaster risk reduction.

According to a report by the UN, the government allocated roughly one percent of national GDP to disaster risk reduction investments in 2012 -a significant increase from less than 0.6 percent in 2006<sup>50</sup>. However, the World Bank claims that the budget reserved for disaster response reduced significantly from 2.1 percent to 0.8 percent from 2006 to 2010.

INGOs and donor agencies also play a role in preparing Indonesia for disasters, including UNOCHA, UNDP, USAID, Australian Department of Foreign Affairs and Trade, New Zealand Aid, and other initiatives such as Multi Donor Trust Fund. INGOs such as Plan International, Save the Children, Mercy Corps, Oxfam, and HOPE Worldwide are also active in Indonesia.

### **OPPORTUNITIES FOR INTERNATIONAL DONORS**

Though Indonesia is working to mitigate disasters and address climate change at many levels, local NGOs and CBOs still have trouble accessing funds. Give2Asia recommends that international donors work through these local organizations to address needs in their target communities, thus building

48 UNDP (Jan. 2012). "Earthquake preparedness works, Indonesians show." <http://www.undp.org/content/undp/en/home/presscenter/articles/2012/01/26/earthquake-preparedness-works-indonesians-show/>

49 Dan Sparks (Global Humanitarian Assistance, Oct. 2012). "Aid Investment in Disaster Risk Reduction: rhetoric to action." <http://www.globalhumanitarianassistance.org/wp-content/uploads/2012/10/Aid-investments-in-disaster-risk-reduction-rhetoric-to-action-Dan-Sparks1.pdf>

50 IRIN (Jan. 17, 2013).

organizational capacity as well as implementing projects. Opportunities for donors include:

- Implementing early warning systems
- Training and education on evacuation plans and shelters
- Climate change adaptation for agricultural workers through drought resistant seeds and crop diversification.
- Jakarta-based flood prevention programs
- Training volunteers as first responders in disaster prone areas.
- Providing expertise and funding for local governments to develop disaster mitigation plans.



# Myanmar

**Population:** 61,120,000

**Major Threats:** Floods, Droughts, Earthquakes, Storms, Fires

**Populations Affected:** Urban & Rural Poor, Farmers and Fishermen, Coastal Communities

**Locations Affected:** Rakhine State & Irrawaddy Delta (Cyclones, Storm Surges, Tsunami) Irrawaddy Delta and Major Rivers (Flooding)

**Industries Affected:** Agriculture, Fishing,

**Compounding Issues:** Urban Migration, Poor Land-Use Planning, Environmental Degradation, Climate Change

**World Risk Index Ranking:** 42/173

**Global Climate Risk Index:** 2/178

Myanmar is exposed to a number of natural hazards, some of which have caused devastating damage in the recent past. According to the UN Risk Model, Myanmar ranks as the 'most at risk' country for natural disasters. Coastal regions, particularly Rakhine State and the Irrawaddy Delta Region, are at high risk for cyclones, storm surges and tsunamis. Much of the country is also exposed to flooding and landslides during rainy season in addition to drought and fire during dry season. As Myanmar falls on one of the two main earthquake belts in the world, much of the country is prone to earthquake.

Though fires make up 73 percent of reported disaster events<sup>51</sup>, storms and cyclones have caused the greatest damage and loss of life. Within the last 10 years Myanmar has been impacted by two earthquakes, three cyclones, one tsunami and other small scale hazards.

With 138,373 people missing or dead, Cyclone Nargis of 2008 was the worst natural disaster in the living memory of Myanmar. Since 2012 cyclones have affected over 2.6 million people, floods over



500,000 people and earthquakes over 20,000<sup>52</sup>. With climate change increasing the severity and frequency of some extreme weather events, the impact of future disasters is likely to be more intense, particularly for vulnerable populations.

## Community Partners International

*This report was compiled by Give2Asia's partner in Myanmar, Community Partners International (CPI). CPI is dedicated to serving the most vulnerable people in Myanmar's remote villages and underserved townships where there is little to no access to health care or public health education. Its global network partners with 26 local organizations, collaborating on community-based health projects and providing health skills training, resources and technical support. Give2Asia began working with CPI following Cyclone Nargis in 2008.*

<sup>51</sup> CRED. "EM-DAT."

<sup>52</sup> *ibid.*

With its long-awaited political changes and a civil society in need of access to funding, capacity building and technical training, now is the opportune moment for international donors to invest in disaster preparedness and climate change adaptation in Myanmar.

## MAJOR THREATS & THE ECONOMY

An estimated 70 percent of the population resides in rural areas, most engaging in agricultural activities. Poverty is both the cause and result of natural disasters. Villagers engage in deforestation, over-cultivation and poor resource management, leading to flood, drought or landslides. On the other hand, natural disasters continually destroy people's livelihood, push them into poverty and prevent them from rising above the poverty line<sup>53</sup>. Weak infrastructure and poor housing conditions contribute to Myanmar's susceptibility. High casualties and economic loss are often related to the fall of poorly engineered structures.

## CLIMATE CHANGE

Myanmar is highly vulnerable to climate change, which will cause drought and water shortages in the central region. The changing sea level will lead to a rise in water level in the delta region, increasing the risk of flooding. Drastic changes in weather conditions can have a huge effect on Myanmar and wipe out any humanitarian, political and economic progress. Therefore, Myanmar is in dire need of long-term international support and flexible funding to respond adequately to natural hazards<sup>54</sup>.

## HYDROMETEOROLOGICAL THREATS

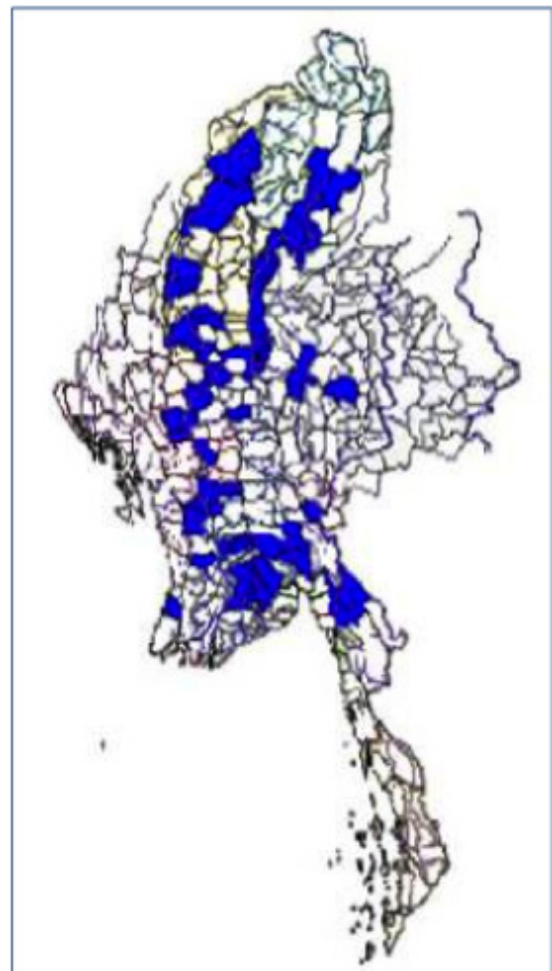
### *Cyclones*

Cyclones have historically caused the most destruction in Myanmar. 36 cyclones have made

landfall on the Myanmar coast since 1947. Strong winds and storm surges associated with the cyclones have caused the most damage. Of the cyclones that caused the greatest disaster, 11 of them made landfall in Rakhine State and two in the Irrawaddy Delta Region. The most devastating cyclone by far was Cyclone Nargis of 2008.

Cyclone risk is highest during the month of May; though, during the last 100 years cyclones also have occurred during April, October, November and December.

*Map of flood-prone areas of Myanmar. Courtesy of Hazard*



*Profile of Myanmar 2009.*

53 Oxfam International (2014). "Riding the Wave of Reform: fast-tracking Myanmar's future with good quality aid." <http://www.preventionweb.net/english/professional/publications/v.php?id=36236>

54 Ibid.

## ***Floods***

Flooding has always been one of the major hazards in Myanmar and account for 11 percent of all disasters, second only to fire. Myanmar has in intricate system of rivers contributing greatly to local economies and transportation of goods. Many cities and towns are located alongside these rivers, particularly the largest of these: the Irrawaddy, Chindwin, Sittaung and Thanlwin.

The Irrawaddy River basin alone, the largest in the country, covering 404,200 square kilometers, exposes over 2 million people to flood. Between 1910 and 2000, there were 12 major floods. Risk is typically highest during the monsoon season, which runs from mid-May to October every year. Peak flood periods occur during June, August and late September to October.

Floods that occur in Myanmar are classified into four categories:

- Flash floods occur in mountainous regions in the upper reaches of river systems in Karen, Kachin, Shan, Mon and Chin States
- Riverine floods occur along major rivers. These are seen in Northern and Central areas as well as South river delta areas.
- Flooding from storm surges during cyclones occur in Rakhine State and the Delta Region.
- Localized floods occur in urban areas due to heavy rainfall and poor infrastructure. Localized floods also occur in rural areas due to breakage or failure of dams, dykes and levees.

Flood prone areas are shown in the map on page 26, taken from the Hazard Profile of Myanmar report of 2009.

For mitigation of damage caused by floods, flood forecasting and warning systems are recommended as responsibility of the central government. In addition public awareness campaigns and

community disaster preparedness training in flood prone areas can help communities strengthen their resilience to floods.

The impacts of climate change and global warming can reduce the water level in the central dry zone, while the water level in the delta region may rise due to the change of sea level. Climate change related flood issues would need to be addressed at the national level, but further research into the climate change influences of flooding in Myanmar would be required.

## ***Drought***

Dry zone and drought related hazards are a risk in Magwe, Mandalay and Sagaing Regions. The dry zone includes 53 townships and covers about 10 percent of the country. Farmers in this zone are mainly commercial, cultivating a variety of crops in a double cropping and rotational system.

Natural resources in this area have been depleted due to soil erosion and deforestation. Agricultural production is unstable as a result. The natural resources of the dry zone are being depleted more rapidly than they can be renewed.

## **GEOPHYSICAL VULNERABILITY**

### ***Earthquakes, Tsunamis & Landslides***

Earthquakes pose a hazard for many locations throughout the country as Myanmar is located on one of the two main earthquake belts in the world. During the 20th Century, at least 18 earthquakes occurred along Sagaing Fault in the Central Lowland.

Areas most vulnerable to earthquake are Bago-Phyu, Mandalay-Sagaing-Tagaung, Putao-Tanaing, and Kale-Homalin. Important cities that lie in these areas are Taungoo, Taungdwingyi, Bagan-Nyaung-U, Kyaukse, Pyin Oo Lwin, Shwebo, Wuntho, Hkamti, Haka, Myitkyina, Taunggyi, and Kunglong.

## CMDRR TRAINING IN MYANMAR

In Feb. 2014, the International Institute of Rural Reconstruction (IIRR) conducted a 10-day intensive training course on Community-Managed Disaster Risk Reduction (CMDRR) in Myanmar, supported by DanChurchAid. The training brought together 25 leaders from local DanChurchAid partners to learn CMDRR best practices and how to incorporate disaster risk reduction and climate change adaptation into other development programs, including for livelihoods<sup>1</sup>.

“Chin State has not been prone to disasters so far, but because of the rapid deforestation we might see climate change. As a result, natural disasters may occur in the very near future. We will need to prepare ourselves for that,” wrote Law Sheing Mang, who attended the training on behalf of DanChurchAid partner Lutheran World Federation.

She continued, “it is important that we integrate the disaster risk reduction methodology in the already existing development projects - if not, it will not be efficient. And even more important is that we build the capacity of the local communities since it is the communities themselves that should be prepared and manage the situation in case of a disaster.”

CMDRR training presents an opportunity for donors to spread knowledge among many different stakeholders within a country, while giving them the tools to adapt what they’ve learned to their own local context. IIRR developed the CMDRR methodology and has conducted similar trainings in Bangladesh, Cambodia, India, Indonesia, the Philippines, and Vietnam.

Tsunami vulnerable areas of Myanmar include Rakhine State, the Irrawaddy Delta and Tanintharyi in the South. Much of these areas are covered with mangrove forests which provide partial protection. Some tourist areas of Southern Rakhine State situated on the coastline have higher vulnerability than other mangrove covered areas.

The tsunami of 2004 killed 31 in the Delta Region, 22 in Rakhine State and 8 in Tanintharyi. The affected population was recorded as 2,592, much lower than in many surrounding countries. Coastal regions of Myanmar are at moderate risk of tsunami.

Landslides in Myanmar occur predominantly as a result of earthquake or heavy rainfall predominantly in mountainous regions in the Western, Southern and Eastern regions, but also include collapse of river banks on major rivers. Often occurring in sparsely populated areas, landslides more often damage infrastructure rather than human settlement.

Recommendations for reducing the impact of landslides are improving watershed management and drainage systems, strengthening infrastructure in rural and mountainous areas and building the capacity of landslide warning systems.

## DOMESTIC FIRES

Fire is the most frequently reported natural disaster in Myanmar with approximately 900 cases per year<sup>55</sup>. Rates of fire are higher in the Yangon, Bago, Delta, Sagaing and Mandalay Divisions.

Risk of fire is highest during the hot season from mid-February to mid-May. The high incidences of fire in Myanmar result from climatic conditions including temperature, use of flammable construction materials, unplanned development and other social factors. The main causes of fire are reported as kitchen related and general negligence.

<sup>1</sup> DanChurchAid (ReliefWeb; Feb. 27, 2014). “Preparing for the next disaster.”

<sup>55</sup> CRED. “EM-DAT.”



## ADAPTATION & LOCAL CONTEXT

In addition to local NGOs, other local actors are involved in DRR and response efforts. Many interviewees described immediate local responses to natural disasters coming predominantly from family members and faith groups. As coordinated response to major disasters has been weak in the past, these groups have played a significant role in filtering immediate aid to affected populations.

Faith groups often have the facilities and networks to distribute aid in a timely manner. Interviewees also cited that although these groups have been quick on first response relief efforts in the past, they lack the technical capacity and knowledge of DRR to engage in activities beyond first response. Faith groups have played an important role in filling the gaps of the system and working to meet the needs of their communities. They are often seen supporting community led livelihoods, education, health and other activities projects.

Many local NGOs also operate focused activities in fields such as livelihoods, health, environment or social work that contribute to the efforts of DRR, but they themselves do not use the term DRR. Communities around the country will be home to locally developed projects covering a broad range of fields. Many national NGOs tap into these networks when they conduct DRR work in local communities.

## OPPORTUNITIES FOR INTERNATIONAL DONORS

Donors have the opportunity to support activities that engage communities in mitigating the impact of cyclones.

- Identification or construction of safe shelters (religious buildings and monuments in communities often can serve this purpose)
- Tree plantation around the village to reduce impact of wind
- Mangrove planting in waterfront and rivers

- Community education for storm resistant housing
- Ensuring residential areas are situated a safe distance from the water front
- Community cyclone awareness trainings
- Volunteers should be trained on disaster management

Other opportunities for donors include:

- Flood forecasting and warning systems
- Supporting research that identifies climate change influences on flooding and appropriate responses.
- Improving watershed drainage systems and management
- Strengthening infrastructure in rural and mountainous areas,
- Building the capacity of landslide warning systems.
- Training faith groups and other first responders in disaster response best practices and implementation.

# Philippines

**Population:** 99,275,100

**Major Threats:** Typhoons, Floods, Landslides, Earthquakes, Volcanic Eruption, Droughts

**Populations Affected:** Urban & Rural Poor, Farmers, Coastal Communities

**Locations Affected:** All

**Industries Affected:** Agriculture, Fishing, Manufacturing

**Compounding Issues:** Urban Migration, Poor Land-Use Planning, Environmental Degradation, Climate Change

**World Risk Index Ranking:** 3/173

**Global Climate Risk Index:** 7/178



The Philippines is one of the most vulnerable countries in the world to disaster and climate change. With over 7,000 islands, and over 36,000 kilometers of coastline, nearly everyone - 74 percent of the population<sup>56</sup> - and everywhere - 80 percent of the land area<sup>57</sup> - are vulnerable to disaster, with the capital of Manila considered at “extreme risk.”

Typhoons and storms, which make up 58 percent of all disasters in the country, related flooding (25 percent) and landslides (six percent) pose the greatest threats to the country. Storms surpass all other disasters in terms of number of fatalities, people affected and economic damage. Though less regular than hydrometeorological disasters, earthquakes (five percent), volcanic eruptions (five percent) and drought (< one percent) can also have devastating effects. Cumulatively, these disasters cause an average of over 1,000 deaths per year<sup>58</sup>.

The Philippines Government, INGOs and local NGOs are all making attempts to address climate change

and disasters at various levels. However, many of the resources put aside for this purpose are re-directed to emergency response when disasters strike, such as Typhoon Yolanda (known as Haiyan internationally) in Nov. 2013, and the flash floods caused by Typhoon Sendong (Washi internationally) in Mindanao in Dec. 2011.

Attempts to defend the nation against disasters are complicated by social forces, such as high poverty, urbanization in coastal regions, and environmental destruction, including illegal mining and logging.

However, spurred on by the nearly existential threat to the country from disasters, many expert groups have been successful implementing various disaster preparedness and risk reduction programs in the Philippines at the community level, including the International Institute of Rural Reconstruction, based in Silang, Cavite.

<sup>56</sup> Global Facility for Disaster Reduction and Recovery & The World Bank (April 2011). “Vulnerability, Risk Reduction and Adaptation to Climate Change: Philippines.” [http://sdwebx.worldbank.org/climateportal/doc/GFDRRCountryProfiles/wb\\_gfdr\\_climate\\_change\\_country\\_profile\\_for\\_PHL.pdf](http://sdwebx.worldbank.org/climateportal/doc/GFDRRCountryProfiles/wb_gfdr_climate_change_country_profile_for_PHL.pdf)

<sup>57</sup> IRIN Humanitarian News and Analysis (Nov. 4, 2010). “Philippines: Landslide risk increasing.” <http://www.irinnews.org/fr/report/90967/philippines-landslide-risk-increasing>

<sup>58</sup> CRED. “EM-DAT.”

## MAJOR THREATS & THE ECONOMY

The Filipino population and economy are growing rapidly, especially in urban centers, where over 65 percent of the country lives, 45 percent of it in poverty. While the urbanization policy has been good for economic growth, it has also increased the vulnerability of its 25 largest cities, most of them on riverbanks and coastlines. Urban vulnerability is made worse by poor housing conditions, and the low adaptive capability of the urban poor.

As stated by Antonia Loyzaga of the Manila Observatory, “the Philippines is an archipelagic country with a declared government policy that supports the urbanization of coastal cities in order to spur economic growth. Hyper-concentrating people and economic resources in coastal areas – without investing in the institutional capacity to build a shared understanding of the science of integrated risks from climate change and geological hazards – is a recipe for disaster.”

Outside of the cities, the farmers and fishermen are most affected by natural disasters. With one-third of the population working in agriculture, natural disasters also threaten food security and major sources of livelihood.

Droughts, floods and cyclones all affect the agricultural sector and the livelihoods of farmers and fishermen. Frequent storms increase the salinity level of irrigated land, leaving it unfit for agriculture, while warmer ocean water damages coral reefs, the feeding grounds for many species relied upon by

local fishermen.

Environmental degradation, including logging, mining, also exposes communities to higher risks. Specifically, these factors contributed directly to devastating flash floods that struck Mindanao in 2011 (See page 32).

## CLIMATE CHANGE

The Philippines is one of the most vulnerable countries in the world to climate change. Rising sea

levels are a direct threat to approximately 70 percent of the 1,500 municipalities in the Philippines<sup>59</sup>, many of which may need to relocate as a result. Climate change has also increased the frequency and severity of natural disasters.

Studies and climate change simulations show that rainfall will increase in intensity during the wet season in the Central Visayas and Southern Tagalog provinces. The country is also expected to experience longer dry seasons, exacerbated by El Nino Southern Oscillation in

“Attempts to defend the nation against disasters are complicated by social forces, such as high poverty, urbanization, and environmental degradation.”

Mindanao.

## HYDROMETEOROLOGICAL VULNERABILITY

For the last five years, 2008-2012, the Philippines was in the top three countries for the number of natural disasters, with the most frequent being storms and floods. Storms surpass all disasters in the country in terms of highest number of fatalities, people affected and economic damage<sup>60</sup>. Furthermore, the

59 Global Facility for Disaster Reduction and Recovery (April 2011).  
60 CRED. “EM-DAT.”

## TROPICAL STORM SENDONG: A CLOSER LOOK

In December 2011, Tropical Storm Sendong (known internationally as Washi) made landfall over the southernmost island the Philippines, Mindanao. Because illegal logging and pineapple farming had cleared the natural landscape in the area, the soil in the mountainous surroundings could not contain the massive amounts of rain. Water, logs and land slid down the mountainsides, swelling riverbanks and slamming into Cagayan de Oro and Iligan cities with flash floods reaching 10 meters in height<sup>1</sup>. Urbanization in these cities had also pushed housing onto the sandbar, where many people ultimately lost their lives. Over 1,200 people were killed and over 10,000 homes destroyed.

The fact that Mindanao is not historically prone to storms highlights the ways in which increasingly unpredictable weather patterns can combine with human factors to create unanticipated and often unprecedented disasters.

In the aftermath of the disaster, Give2Asia worked with its local partners in the Philippines to support local recovery efforts. As with other disaster response efforts, Give2Asia sought opportunities to incorporate disaster preparedness and resiliency into recovery projects. In Mindanao this was especially important as the island faces an increase in unpredictable storms which it has not faced historically.

Working with the Partnership of Philippine Support Service Agencies (PHILSSA), Give2Asia supported Give2Asia partnered with the Partnership of Philippine Support Service Agencies (PHILSSA) to build disaster risk reduction and management in five high-risk villages in Mindanao affected by Tropical Storm Sendong.

<sup>1</sup> Susan R. Espinueva, Esperanza O. Cayanan and Nivagine C. Nievaes (Tropical Cyclone Research and Review; 2012). "A Retrospective on the Devastating Impacts of Tropical Storm Washi." <http://tcrr.typhoon.gov.cn/EN/abstract/abstract27.shtml>



The programs aimed to address basic community needs while building disaster preparedness and resiliency in the long-term. Together, PHILSSA and Give2Asia provided basic educational needs and psycho-social support for 400 students in affected communities. In addition, 250 local leaders from community organizations and local governments were trained in disaster risk reduction and management (DRRM). Together, they formulated DRRM plans and DRRM councils for each of the five villages. Affected community organizations were also organized into an alliance to encourage community wide participation in DRRM activities. The \$30,000 grant is just one example of how disaster preparedness and resiliency can be incorporated into the recovery process to the benefit of affected communities and local NGOs while remaining cost-effective to the donor.



strong winds and heavy rainfall which accompany typhoons often lead to flooding or landslides.

Most typhoons originate from the southeast and travel north, increasing in speed and intensity as they approach the Philippines. Luzon, Samar, Leyte, Eastern Quezon Province and the Batanese Islands are most prone to typhoons.

From 1983 to 2012, 24,281 people were killed by storms, with another 99.6 million people affected. Economic losses for the country have totaled \$5.9 billion. Typhoon Yolanda in late 2013 increased these totals by between 15 and 25 percent<sup>61</sup>.

Floods and landslides commonly occur as secondary hazards induced by typhoons and monsoons. The Philippines has mountainous terrain with a sharp drop to coastal areas, exposing communities in low-lying areas to high risk.

### *Drought*

Instances of drought are infrequent, typically happening as a result of El Nino. However, when they do occur, they can cause extensive damage to the population and its agriculture. Lack of water resources has a trickle down effect to the manufacturing sector as well, leading to lower economic production.

### **GEOPHYSICAL VULNERABILITY**

Located on the Pacific Ring of Fire, the location of 90 percent of the world's earthquakes, the Philippines has experienced numerous high magnitude seismic events. The country also has 22 active volcanoes. Both events are rare, but extremely destructive.

In 2004, the Philippine government, combine with the Japan International Cooperation Agency, studied the Valley fault, which runs through Metro Manila and its environs in order to identify vulnerable areas, according to flammability, evacuation difficulty and

<sup>61</sup> Ibid.

building collapse.

### **INVESTMENT**

From 1991 to 2010, the Philippines was one of the top five recipients of disaster risk reduction grants from the international community with a total of \$834.6 million in grants<sup>62</sup>, primarily from Japan. It is estimated that of that funding, over \$500 million was spent on emergency response, and not on preparation or resiliency programs.

The World Bank reported that a lack of coordination and insufficient scope of roles and responsibilities have hindered disasters management across agencies and sectors in the Philippines. One example is in building codes and land-use management. While the government has passed laws and policies for these purposes, the regulations are not heavily enforced. Much private development and many informal settlements continue to violate building standards to save on costs.

### **ADAPTATION**

#### *Adaptation & the Government*

Among many of its efforts to mainstream risk reduction, the government of the Philippines launched the "Science for Safe Communities" to increase local knowledge of risk, strengthen local government units, maintain early warning systems and develop an emergency plan. Beyond this effort, many branches of the Philippine government are tasked with addressing some aspect of disaster preparation and climate change adaptation.

#### *The National Disaster Risk Reduction Management Council*

The National Disaster Risk Reduction Management Council, created in 2010, is responsible for disaster risk reduction, including good governance, risk

<sup>62</sup> Alexis Romero (Sept. 25, 2013). "Disaster risk reduction low priority in int'l development aid." <http://www.philstar.com/headlines/2013/09/25/1238035/disaster-risk-reduction-low-priority-intl-development-aid>

assessment, early warning, raising public awareness, reducing risk factors, and preparedness for effective response and early recovery. This agency also formulated the National Disaster Risk Reduction and Management framework, as a principal guide for all efforts in the country.

#### ***The National Disaster Coordinating Council***

The National Disaster Coordinating Council was established in 1978 to create a comprehensive disaster management framework including mitigation, preparedness, response and rehabilitation. It is mandated to draft policies and coordinate activities among government agencies. The municipal government agencies are responsible for carrying out the recommended disaster-related activities.

#### ***The Department of Science and Technology***

The Department of Science and Technology (DOST) of the Philippines developed an early warning system that can inform the population of severe storms and flood events up to 48 hours in advance. The department also proposed to re-evaluate zoning in order to identify landslide and flood-prone areas. The DOST has several subsidiaries involved, including the Philippine Atmospheric Geophysical and Astronomical Services Administration, whose mission is to better protect populations and economic activity from natural calamities using science and technology. Project NOAH (Nationwide Operational Assessment of Hazards), led by the DOST, partners with academics and other stakeholders to develop systems, tools and other technologies to prevent and mitigate disasters. The Philippine Institute for Volcanology and Seismology, also falling under the DOST, is principally mandated to mitigate disasters that may arise from volcanic eruptions, earthquakes, tsunamis and other related geotectonic phenomena.

#### ***The Manila Observatory***

The Manila Observatory is a private non-stock non-profit research institution that works at the nexus of global concerns for environment and development. The Observatory collaborates on climate and disaster risk reduction with the International Council for Science, the International Development Research Center, Japan Aerospace Exploration Agency, Asian Disaster Preparedness Center, and other agencies. Recently, it headed a logistics coordination and situational awareness support team for the Armed Forces of the Philippines Humanitarian Assistance and Disaster Response efforts following Typhoon Yolanda.

### **OPPORTUNITIES FOR INTERNATIONAL DONORS**

With thousands of separate islands and a political system that focuses on the community - or barangay - as its basic unit, DRR in the Philippines is best addressed from the ground up. Due to the wide range of vulnerabilities and cultural contexts, these efforts are best supported with flexible and adaptable approaches implemented with knowledgeable partners. Opportunities for donors include:

- Implementing community-based early warning systems
- Adapting agriculture to climate change
- Constructing disaster resilient schools and community buildings
- Training community leaders in disaster management and response
- Integrating preparedness and resiliency elements into recovery efforts.

# Vietnam

**Population:** 88,780,000

**Major Threats:** Typhoons, Floods, Landslides, Earthquakes, Volcanic Eruption, Droughts

**Populations Affected:** Urban & Rural Poor, Farmers, Coastal Communities

**Locations Affected:** All

**Industries Affected:** Agriculture, Fishing, Manufacturing

**Compounding Issues:** Urban Migration, Poor Land-Use Planning, Environmental Degradation, Climate Change

**World Risk Index Ranking:** 18/173

**Global Climate Risk Index:** 6/178

With a coastline of 3,440 kilometers, Vietnam is prone to a wide range of disasters including floods, typhoons, landslides and drought. Approximately 71 percent of the population and 59 percent of the land area are vulnerable to disasters, with floods and storms as the most destructive occurrences with the highest number of fatalities and economic damage<sup>63</sup>.

According to the World Bank, Vietnam loses 1-1.5 percent of GDP annually due to natural disasters, which hinders the social and economic development of the country<sup>64</sup>. Since Vietnam is situated in a high risk location, there is a constant need to adapt to climate change in order to mitigate the effects on its development progress.

Vietnam lies within the Southeast Asian *typhoon belt* that brings frequent rain and heavy wind. Vietnam experiences an average of 6-10 storms a year with a chance of maturing into typhoons<sup>65</sup>. Floods and storms are recurring disasters that heavily impact the north central and delta region. Floods occur



primarily in the central plain, along the Red River basin and Mekong delta, and account for more fatalities, whereas storms, along the coastal region, account for more physical damage. The north central region is often hit by storms and typhoons that are accompanied by heavy rain, coastal flooding, and landslides. The disaster-prone provinces with the highest frequencies of both storms and floods are Quang Binh, Thanh Hoa, Quang Tri, Thua Thein Hue, Quang Ngai, and Binh Dinh<sup>66</sup>.

Most investment in disaster preparedness from the international community and government currently focuses on flooding, and specifically infrastructure projects aimed at mitigation. For international donors, there are opportunities to support trainings in community-based preparedness and resiliency

63 Oanh Luong Nhu, Nguyen Thi Thu Thuy, Ian Wilderspin & Miguel Coulier (UNDP Vietnam, March 2011). "Global Assessment Report on Disaster Risk Reduction. "A preliminary analysis of flood and storm disaster data in Viet Nam." [http://www.preventionweb.net/files/26598\\_26598apreliminaryanalysisoffloodand.pdf](http://www.preventionweb.net/files/26598_26598apreliminaryanalysisoffloodand.pdf)

64 The World Bank (April, 2013). "Vietnam: Disaster Risk Management Project." <http://www.worldbank.org/en/results/2013/04/09/vietnam-disaster-risk-management-project>

65 Bam H. N. Razafindrabe, Ryohei Kada, Makoto Arima & Shoji Inoue (Springer, May 2012). "Analyzing flood risk and related impacts to urban communities in central Vietnam."

66 Nhu, Thuy, et al (UNDP, 2011).

strategies. Specifically, helping small and medium-sized enterprises (SMEs) form resiliency and recovery plans prior to disaster can mitigate much of the uncertainty in supply and food chains and economic loss that typically accompany disasters.

## MAJOR THREATS & THE ECONOMY

Poverty contributes to the population's vulnerability in disaster-prone areas. Rural households often live in poorly constructed homes and have low quality schools, irrigation system and infrastructure making them susceptible to hazards. Approximately 70 percent of the population is concentrated in the floodplains and coastal areas relying on natural resources to maintain subsistence; most engaging in fisheries and agriculture. The destruction of mangrove forests for aquaculture and other environmental degradation caused by industries and manufacturers are contributing factors to Vietnam's vulnerability<sup>67</sup>.

Similarly, the urban population, which is engaged in the industrial and manufacturing sector, is also threatened by natural disasters because of its proximity to coastal areas and floodplains. Due to the surge in economic growth, urban migration increases stress on land-use planning, infrastructure and housing. High population density and large economic assets increases the risk from disaster adversities in major cities like Da Nang, Ho Chi Minh City, Can Tho, Hai Phong, and Hanoi. According to a report by the Ministry of Construction, 50 percent of houses in urban centers and 20 percent of rural houses

are capable of withstanding severe weather. As the intensity of disasters increases with climate variability, the magnitude of impact on urban areas and the possibility of wiping out any progress Vietnam has made remains high<sup>68</sup>.

SMEs compose of 90 percent of Vietnamese businesses, employ nearly 80 percent of the population, and produce over 40 percent of the national GDP. According to a report by The Asia Foundation, these businesses are often family-run and have limited coping capacity. Although SMEs contribute significantly to the national economy, 46 percent of SMEs have not yet developed a plan for disaster risk management. As a result, many SMEs still remain at high risk to natural hazards<sup>69</sup>.

## CLIMATE CHANGE

The World Bank and the Asian Development Bank both rank Vietnam as one of the most vulnerable countries to climate change according to land area impacted, population affected, and economic loss. Studies have shown a steady rise in sea level and an increase in temperature will lead to a loss of land mass and hotter summers. Based on historical data, the trajectory of natural hazard cases has been on the rise and is expected to increase over time. Reports have documented the change in intensity of tropical storms and fluctuations of rainfall, which can worsen the impact<sup>70</sup>.

“The destruction of mangrove forests and other environmental degradation caused by industries and manufacturers are contributing factors to Vietnam’s vulnerability.”

67 Ole Brunn & Thorkil Casse (Springer, 2013). “On the Frontiers of Climate and Environmental Change: Vulnerabilities and Adaptations in Central Vietnam.”

68 Vinh Hung Hoang (Springer, 2011). “Housing and Climate Change: Adaptation Strategies in Vietnam.”

69 Nguyen Tri Thanh (The Asia Foundation, Dec. 2011) “To Reduce Impact of Natural Disasters, Vietnam Must Engage Small Businesses.” <http://asiafoundation.org/in-asia/2012/04/18/to-reduce-impact-of-natural-disasters-vietnam-must-engage-small-businesses/>

70 Brunn & Casse (Springer, 2013).



## HYDROMETEOROLOGICAL VULNERABILITY

### *Typhoons*

According to historical data from 1989-2010, storms and typhoons accounted for 49 percent of all natural disasters<sup>71</sup>.

Vietnam has seen increasing numbers and intensity of storms and typhoons, especially in the last three decades. Over a 50 year period (1954-2006) there were 380 storms and tropical depressions affecting Vietnam, almost equally divided between the north, central, and southern regions. Storms are often accompanied by long heavy rain, and a storm surge causing flooding. Up to 80-90 percent of Vietnam's population is vulnerable to storms.

In 2009, Typhoon Ketsana swept through central Vietnam killing 163 people and causing a total economic loss of \$785 million. In 2006, Typhoon Xangsane hit 15 provinces in the central region and caused \$624 million in damage, approximately 2.9 percent of total GDP<sup>72</sup>. A flood in 2008 caused a similar impact damaging \$479 million in assets<sup>73</sup>.

### *Floods*

Floods are also one of the major and most dangerous types of natural disaster in Vietnam, constituting 37 percent of all disasters<sup>74</sup>. The flood season in each region varies according the rainfall pattern. The flood season in the Red River and Thai Binh River system normally occurs from May to September, earlier than in other regions. The flood season on the rivers from Thanh Hoa to Ha Tinh is from June to October every year. On the rivers from Quang Binh to Binh Thuan, the flood season is from September to December.

Flash floods and mudflow often occur in mountainous areas where steep slopes and high rainfall combine

with inadequate drainage systems. Flash floods can also occur due to rupture of small reservoirs. Flash flood has occurred and is likely to occur across 33 mountainous provinces in the country in four regions: the northern mountains, central, central highlands and southeast. Flash floods are also more likely to occur as climate change continues.

More efforts are made by civil society and the government to mitigate floods across Vietnam than any other disaster.

### *Drought*

Drought causes the third greatest losses in Vietnam despite only representing two percent of disaster events<sup>75</sup>. In some particular years, drought reduces food productivity by 20-30 percent, thus severely threatening people's livelihoods and food security. In recent years, droughts have occurred in all regions of the country successively. Fight against drought typically meets difficulties due to lack of water and depletion of the upstream reservoirs. A prolonged drought will lead to the risk of desertification in some regions, especially the South Central region, coastal sandy areas and slopes of the midland and mountainous area.

### *Landslides*

Due to the geophysical landscape consisting of large mountainous areas and lowland areas by the deltas, Vietnam is vulnerable to landslides, especially in the northern and central highlands. However, total landslides account for a mere three percent of all natural disasters<sup>76</sup>.

## ADAPTATION

From the government to local NGOs, there are great efforts across Vietnam to prevent disasters and adapt to climate change.

71 CRED. "EM-DAT."

72 The World Bank (April, 2013).

73 CRED. "EM-DAT."

74 Ibid.

75 Ibid.

76 Ibid.

The Government of Vietnam has launched the National Strategy For Natural Disaster Prevention, Response and Mitigation to 2020 to focus on improving adaptive capabilities. However, there are challenges including corruption in Vietnam, which divert funds away from the programs and their potential beneficiaries, and the lack of coordination among ministries to implement disaster reduction strategies<sup>77</sup>.

Currently, 17 international organizations (e.g. Asian Disaster Reduction Center, Asian Disaster Preparedness Center, ASEAN, United Nations International Strategy for Disaster Reduction) funded and implemented disaster risk reduction projects in 23 provinces by cooperating with local nonprofits and government agencies<sup>78</sup>. The World Bank led a community-based disaster risk management project in 12 provinces across Vietnam to build 11 flood and storm mitigation infrastructure projects, including river dykes, evacuation routes, and drainage systems. The project mobilized the government to fund a \$450 million national disaster risk management program that serves 6,000 communities across the country<sup>79</sup>. However, these developments are constantly being destroyed due to limited know-how and use of low quality materials<sup>80</sup>.

Communities recognize the need to improve their housing structure to prevent floods and resist storms by raising the floors and using storm-resistant materials. However, many communities lack the financial resources and the knowledge to carry out risk reduction efforts. In rural areas, local communities hold public meetings at neighborhood centers and disseminate early disaster warnings through loudspeakers. Despite the efforts, some rural villages are located outside the audible range and far from the centers<sup>81</sup>.

Approximately 40-50 NGOs have been working in Vietnam to educate local communities about climate change adaptation and implement disaster risk reduction projects, especially flood-related disasters. Many NGOs are using the bottom-up approach by empowering community members to encourage cooperation between sectors and strengthen local institutions. However, there are some limitations in the implementation due to a disconnect between government agencies and NGOs and insufficient materials and funds. Furthermore, the ministries possess a limited staff capacity to readily assess the needs and undertake the implementation process. Lastly, most attention is given to floods and not enough efforts are made to mitigate risks from other disasters<sup>82</sup>.

## INVESTMENT

In a twenty-year time span from 1991-2010, Vietnam received a total of \$303.81 million in disaster risk reduction funding from the international community<sup>83</sup>. The amount in international aid has been escalating especially from 2006-2010 when Vietnam received a total of \$82 million in overseas development assistance (ODA) funds for disaster risk reduction. The top donors have been Japan, Australia and the Netherlands<sup>84</sup>. As the economic growth in Vietnam continues to rise, there is a greater need both internationally and nationally to improve its resilience and reduce interruptions in economic activities.

The government has also shifted its attention to funding infrastructure and urban development in the coastal zone, allotting 11.4 percent of national budget to infrastructure investments, in order to prepare for hazards. There has not been a budget for climate change adaptation specifically, but a number of ministries including the Ministry of Natural Resources and the Environment, Ministry

77 Brunn & Casse (Springer, 2013).

78 Tong Thi My Thi, Huy Nguyen, Rajib Shaw & Phong Tran (Emerald Books, 2012). "Chapter 13: Community-based Disaster Risk Reduction in Vietnam."

79 The World Bank (April 2013).

80 Brunn & Casse (Springer, 2013).

81 Roger Few & Pham Gia Tran (Global Environmental Change, Volume 20, Issue 3, August 2012). "Climatic hazards, health risk and response in Vietnam: Case studies on social dimensions of vulnerability." <http://www.sciencedirect.com/science/article/pii/S0959378010000105>

82 Hoang (Springer, 2011).

83 Jan Kellet & Alice Caravani (Overseas Development Institute, Sept. 2013). "Financing Disaster Risk Reduction: A 20 year story of international aid."

84 Jan Kellet & Dan Sparks (Global Humanitarian Assistance, March 2012). "Disaster Risk Reduction: Spending where it should count." <http://www.globalhumanitarianassistance.org/wp-content/uploads/2012/03/GHA-Disaster-Risk-Report.pdf>

of Agriculture and Rural Development, Ministry of Planning and Investment, Ministry of Labour, Invalids and Social Affairs, and Ministry of Construction have disaster reduction policies incorporated into their development plans<sup>85</sup>. The state law requires an allocation of 2-5 percent of the central and local budgets “to meet contingent spending on preventing, combating, and overcoming consequences of God and fires.” A high proportion of the budget is used on disaster risk mitigation, leaving less than two percent for disaster relief operations. Due to insufficient funding and scarce resources, the recovery period takes 4-5 years.

### **OPPORTUNITIES FOR INTERNATIONAL DONORS**

Vietnam is vulnerable to a number of hazards across the country. The north, central and southern coasts are almost equally hit by cyclones, while low-lying inland areas are all vulnerable to flood. Donors have opportunities to help warn the public about these events, mitigate their effects, and prepare communities to respond, including:

- Community-based disaster risk management trainings, or Community-managed disaster risk reduction trainings.
- Improving drainage systems in flood prone areas.
- Supporting small to medium size enterprises with preparedness and resiliency planning.

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<sup>85</sup> Hoang (Springer, 2011).

## PREPARING SMALL TO MEDIUM-SIZED ENTERPRISES IN VIETNAM

*Most local programs focus on the local communities and the people living in high risk areas. Though they are an integral part of these communities, SMEs are not typically considered for these programs. An initial study in 2011 from The Asia Foundation found that of the numerous disaster related initiatives currently being developed or implemented at the national and local levels in Vietnam, none have a focus on the business community.*

*Given that community resilience depends greatly on the ability of the private sector to bounce back, re-establish production and continue to provide employment to local workers in the aftermath of disasters, the lack of preparedness on the part of the business community is glaring. This is particularly problematic for SMEs, which significantly contribute to national income and employment generation but often do not have disaster management or response plans as part of their operations. According to the Vietnamese Chamber of Commerce and Industry (VCCI), most businesses in Vietnam do not have adequate information or contingency plans for risks associated with natural disasters, the knowledge and capacity to estimate for losses incurred by natural disasters, nor insurance schemes to mitigate such losses. As such, business planning and disaster preparedness remain at a very basic level for a country that is pushing beyond its low-middle income status.*

*Additionally, The Asia Foundation's study on philanthropic giving in Vietnam in 2009 indicates that businesses, particularly large scale Vietnamese businesses, give regularly and consider their donations a part of giving back to the community. This is often done on a case-by-case basis rather than as strategic component of*

*a broader Corporate Social Responsibility (CSR) effort. For companies that do give and want to give meaningfully to those in need, much can be done to help support their philanthropic efforts in effective ways that will help the lives of many but also contribute to the sustainability of Vietnam's long-term disaster risk management efforts.*

*In Vietnam, The Asia Foundation (TAF) is the first INGO working on disaster preparedness for SMEs. Specifically, it has been working on supporting SMEs in disaster risk management (DRM) since 2011. TAF has created a network of businesses, experts, and authorities regarding the topic through three main focused activities:*

- *Training for SMEs - building DRM action plan to prepare for disasters: since 2011, there were about 1,200 people from more than 800 SMEs trained under our program. The training includes Training-of-Trainers (ToT) training which help created a network of core trainers throughout the country who are experts and business trainers from different organizations and training institutions.*
- *Policy dialogue for Disaster Risk Management (DRM) in SMEs: TAF has organized a number of policy dialogues to improve public private cooperation on disaster, engaging on policy development and practical cooperation.*
- *CSR: DRM-related CSR remains rare in Vietnam despite the evident need for it. Few businesses contribute to community preparedness, restricting their engagement to philanthropic giving. The Asia Foundation has been working to pilot community engagement with business by working with the VCCI regional offices in several provinces. The planning process is participatory and includes support for practical activities.*



# Donor Guidelines:

The predecessor to this paper was Give2Asia's *Disaster Giving in Asia: Lessons, Guidelines and Opportunities (2011)*. That paper began by saying we are fortunate to live in a world where people and organizations have both the desire and the ability to help each other in times of disaster, "to reach across the globe to lend a hand." While the ability comes from the growth of international organizations like Give2Asia, the desire stems from the visceral reaction to horrific disasters and human empathy for those who are left to suffer. In short, disaster response philanthropy is giving from the heart.

Disaster preparedness, however, requires giving of the mind. We know what the effects of climate change will be and how they will continue to destroy lives. We know where, if not when, a disaster is most likely to strike and who will be in its path. We must be forward-thinking enough to address these issues before horrific images and death tolls hit the news cycle.

Just as a single person needs both the mind and the heart to survive, so do many communities. They require both disaster resilience and disaster response giving to survive the crises they face.

Here are Give2Asia's guidelines for individual, foundation and corporate donors who wish to support disaster preparedness and resilience in Asian communities.

## 1. Preparedness Saves Money and Lives

The exponential growth in disaster philanthropy during this century is undoubtedly a good thing. Motivated by the heartbreaking news of a disaster, donors of all kinds have given generously. While immediate relief and long-term recovery investment is critical, the need for it would be greatly reduced with an increase in preparedness and risk reduction.

It's worth mentioning once more that despite the fact that \$1 in preparedness and resiliency saves \$7 in recovery, \$160,000 is invested in the latter for every \$1 in the former. India's success in mitigating the damage of Cyclone Phailin (see page 15) in October 2013 shows just how important and effective these investments can be.

Exacerbating the investment shortfall is the fact that much of the funding allocated to disaster preparedness ends up going directly to relief. National governments, such as the Philippines and Indonesia, are legally obligated to set aside funding for disaster preparedness. Yet, when a disaster strikes and resources are low, as with Typhoon Yolanda (known as Haiyan internationally) in the Philippines, this funding is often re-directed to response.

## 2. Start Close to Home

Disaster preparedness and resiliency can be integrated into almost any philanthropic strategy, and should not only be thought of in tandem with disaster response. For donors of all kinds, disasters pose a threat to normalcy and long-term interests. To figure out where your disaster preparedness investment is best used, it's necessary to examine where your interests and investments lie.

For corporations, disasters disrupt "business as usual" in a number of ways. Both employees and customers can have their worlds turned upside down, while supply chains and markets can be completely shut off. The Thailand Floods of 2011, for example, disrupted the worldwide supply chain of hard drives<sup>86</sup>, eventually dropping supply and driving global prices up by 15 percent. Similarly, following the Tohoku Earthquake and Tsunami of 2011 production in the Tohoku region dropped significantly overnight. As a result, 644 businesses had been forced into bankruptcy by March 2012, leaving over 11,000 people unemployed<sup>87</sup>. In

<sup>86</sup> Thomas Fuller (NY Times; Nov. 6, 2011); "Thailand Flooding Cripples Hard-Drive Suppliers." <http://www.nytimes.com/2011/11/07/business/global/07iht-floods07.html?pagewanted=all>

<sup>87</sup> Japan Times (March 11, 2012). "March disasters caused 644 firms in 40 prefectures to go bankrupt."

both these cases, corporations with an invested interest tried to mitigate the damage to business afterward, but as we've discussed previously, this is much more costly and less effective than investing in preparedness. For corporations, Give2Asia recommends implementing preparedness and resiliency programs in communities near employees, infrastructure and resources that are vital to your organization. In addition, discussing response plans with local corporate offices and employees prior to disasters can help organizations to mobilize quickly when disaster does strike.

For foundations and individual donors, the focus should be on protecting other philanthropic investments. A donor funding rural health should be extremely concerned about how the hospitals, medical professionals and medical equipment he or she supports will be affected by disasters, as that is when medical services will be most needed. An organization funding work in education should be equally concerned about the safety of schools and the continuity of education following disasters. Both organizations should prepare accordingly, either by building preparedness elements into programs they support, or by supporting separate disaster preparedness programs within those communities.

### ***3. Build, not Bombard***

Every country and community has a different capacity for disaster preparedness and faces a unique set of challenges and circumstances. Importing new programs or organizations wholesale can leave communities feeling without ownership, or worse, without understanding of their critical role in preparedness and response. Instead, work with local groups to build on existing efforts within a community and implement a measured consensus-driven approach to introducing new ideas and next steps.

### ***4. Support Programs that Involve the Local Communities & Strengthen Local Capacity***

As with disaster response, the community knows its circumstances and challenges best, and therefore is in the best place to assess needs and generate ongoing support. Whenever and where ever possible it is best to use local NGOs, CBOs and leaders to implement programs. This helps ensure community ownership of a program and increases the likelihood that it will continue beyond the initial funding and implementation period, while reducing the risk that resources will be misused. Furthermore, locals are in the best position to determine the appropriateness of specific programs, especially when they involve contentious issues such as resource management or re-location. Inclusion has the added benefit of building the capacity and knowledge of local NGOs and CBOs, which will put them in a better position to respond when disaster strikes, or to address other issues within their communities.

### ***5. Incorporate Disaster Resilience into Recovery***

Among Give2Asia's keys to disaster response has been to build back better – to ensure that communities are safer than before the disaster. A part of this philosophy involves incorporating preparedness into recovery projects.

Donors who support reconstruction projects, whether schools, houses, or public spaces should be sure to include funding to make these structures resistant to disasters common to the area. Opportunities also exist in the aftermath of disaster to re-design infrastructure to better meet community needs. This could be as simple as relocating residential spaces away from hazards, or creating mixed use space that benefits the community and protects against disasters, such as designing community spaces that double as evacuation centers.

Donors must push for these opportunities with local

partners. Local partners may understandably be in a hurry to provide roofs, food and normalcy to communities, but taking a little extra time to include preparedness in recovery activities can be worth the trouble if it saves lives the next time around.

## ***6. Donors: Prepare to Respond***

While most of this paper has focused on how local communities, NGOs and CBOs can prepare for disasters, they are not the only ones scrambling when a disaster strikes. For many donors, contributing to disaster relief efforts is an important part of their philanthropic strategy; yet, they are caught unprepared when disaster actually strikes. Donors wrestle with many questions as they determine their response, including:

- Can we send volunteers and in-kind donations?
- Should we make immediate gifts to INGOs?
- Is there a way to give locally?
- How much should we give?
- How can we involve our local employees?
- Can we find trustworthy local partners in time to meet our communication goals?
- How can we protect against corruption and graft in the disaster zone?

By establishing priorities and partners ahead of time, a disaster relief contribution can be put into action immediately. Though we cannot predict exactly where or when a disaster will strike, we do know where they are most likely to occur. Many organizations have both the local presence and regional reach to respond to disasters immediately across a wide geographic area.

Some Give2Asia donors elect to set aside a contribution every year for disaster relief. These funds are automatically directed toward Give2Asia's local partners when a disaster strikes in an area of their interest. With Give2Asia's due diligence process and network of field advisors across Asia, this ensures a quick response while eliminating

concerns about corruption, capacity and cultural insensitivity. Some of these arrangements also involve the establishment of employee giving funds and incorporate matching gift programs.

These approaches ease the burden on donors while directing funds to affected communities as quickly as possible. Give2Asia and other similar groups such as The Resource Foundation and King Baudouin Foundation US can help donors find a strategy that will meet their disaster relief goals quickly - but it is much easier and more effective to begin making those arrangements before a disaster strikes.

It is important to note that because each disaster is a unique event, short and long-term recovery needs can be difficult to predict, whereas relief needs tend to be universal. Give2Asia does not recommend this approach for recovery programs, where local input, assessment and context is critical. Rather, this approach is ideal for relief, where quick action can save lives.

## Action Plan:

This section aims to give donors concrete actions that they can take to begin addressing disaster preparedness and climate change through philanthropy.

### *Step 1: Assess Disaster Vulnerable Assets and Investments*

Donors should take a close look at their assets and philanthropic investments in regions vulnerable to disasters and climate change to better understand how they are affected when hazard events such as storms, earthquakes and floods strike. Give2Asia's recent white paper Disaster Vulnerability and Donor Opportunity can be a useful resource in evaluating investments in South and Southeast Asia. Understanding where and why your investments are vulnerable is the first step to effective interventions.

### *Step 2: Identify Priorities for Preparedness*

Once donors understand the vulnerability of their assets and investments, they can begin to prioritize. For a corporation, communities near factories and other infrastructure, or with large populations of employees and customers may be the highest priority. For foundations or individuals, the priority may be supporting preparedness and risk reduction efforts within other philanthropic investments such as education or healthcare. Each donor must weigh vulnerability with potential impact on their partners, assets and investments to determine priorities for themselves.

### *Step 3: Research Interventions That Meet Your Needs*

With priorities in place, donors can begin to consider the most effective interventions and solutions to meet their needs and address disaster and climate change related threats. To ensure that local context

is considered and that target communities are included, it may be wise to contract with issue experts and organizations with local presence to advise on a philanthropic strategy and effective interventions.

This is where community-based approaches are most effective. Large international bodies have called for investments in insurance schemes, infrastructure projects and national government initiatives. While this may be the way to build disaster resilience for an entire nation, donors with a limited geographic or programmatic focus will find much more effective solutions at the grassroots. It is local NGOs and CBOs that have long been working within the context of their own community to build disaster resilience. The challenges for these groups has been a lack of funding and limited capacity. Philanthropy can address those issues, bringing effective solutions to larger populations with far less investment and far greater geographic and programmatic flexibility that could be found in top-down approaches.

### *Step 4: Identify Local Partners to Implement Interventions*

In addition to constructing an effective intervention strategy, donors will need to identify local NGOs and CBOs capable of implementing the plan. Organizations like Give2Asia provide due diligence evaluations on local groups to ensure they are transparent, reputable, and capable, as well as advisory services that accurately map the current landscape of actors. Donors should not expect to simply hand down a plan to local implementing groups, but rather should work with groups to refine the proposed interventions. These local NGOs and CBOs will bring a different and valuable perspective and help ensure the target community is included and its needs are heard. By increasing community participation and ownership, chances of making gains in preparedness and risk reduction are increased greatly.



### *Step 5: Assess Disaster Response Process & Goals*

Finally, donors should assess their recent disaster response philanthropy to identify trends or ad hoc processes that have arisen, and ensure that their philanthropic goals are still being met. During this analysis, identify parts of the strategy that can be implemented ahead of disasters. If an organization routinely gives to immediate relief in certain areas, partnering with relief organizations or with intermediaries such as Give2Asia ahead of time could help your contributions reach beneficiaries more quickly and ease the decision making burden when a disaster does strike.

Similarly, corporations can make arrangements to automatically establish employee giving funds that include matching programs when a disaster strikes in an area of interest. Knowing what kind of support to expect can help local NGOs and CBOs focus resources on responding to the needs of affected communities, rather than seeking funding at a crucial time.

Grantmaking for community-based disaster preparedness and risk reduction offers more than the opportunity to save lives and money in important communities. By investing regularly in disaster preparedness and risk reduction, and by establishing protocols and systems for disaster response grantmaking, donors can smooth the budgeting, decision-making and strategy process while equipping themselves with the information necessary to answer stakeholder questions before they are even asked.

## About Give2Asia

Give2Asia makes international grant making safe, effective, and impactful. Since its founding in 2001, Give2Asia has raised \$237 million in gifts and donations from corporate, foundation, and individual donors for community partners in Asia. Give2Asia has demonstrated its effectiveness in serving the needs of international philanthropy with its on-the-ground presence, knowledge of diverse social and economic conditions, and the expert matching of donor interests with innovative and effective grantees.

## About IIRR

The International Institute of Rural Reconstruction (IIRR) is a community development and hands-on training organization with more than 50 years of experience. IIRR has implemented people-centered, sustainable development programs in Africa, Latin America and Asia; today, maintains a strong presence in East Africa and Southeast Asia. Strategically located in the Global South, IIRR runs its programs from the field. While it is registered as a 501 (c)(3) non-profit organization in the U.S. and has its headquarters in the Philippines, all senior decision-makers are located in the field. It is important that IIRR staff hail from the region where they work, allowing its programs to be locally-relevant, tailored, and community-driven.

## NGO Disaster Preparedness Program

Launched in 2014, the Give2Asia & IIRR NGO Disaster Preparedness Program aims to connect individual, foundation and corporate philanthropists with the most innovative and effective disaster preparedness and resiliency building programs in Asia's most vulnerable countries. The program is supported by a three-year \$1.5 million grant from the Margaret A. Cargill Foundation. The joint program publishes disaster preparedness research, performs online crowd funding for local projects, and presents the most effective programs to the philanthropic sector for support. Local non-governmental organizations (NGOs) identified through the program have the opportunity to apply for \$300,000 in grants, promote their programs online, and receive Community-Managed Disaster Risk Reduction training from IIRR at its headquarters in the Philippines. Learn more about the program or get involved at [give2asia.org/disasterprep](http://give2asia.org/disasterprep).



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