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DISASTER RISK REDUCTION IN DHAKA CITY

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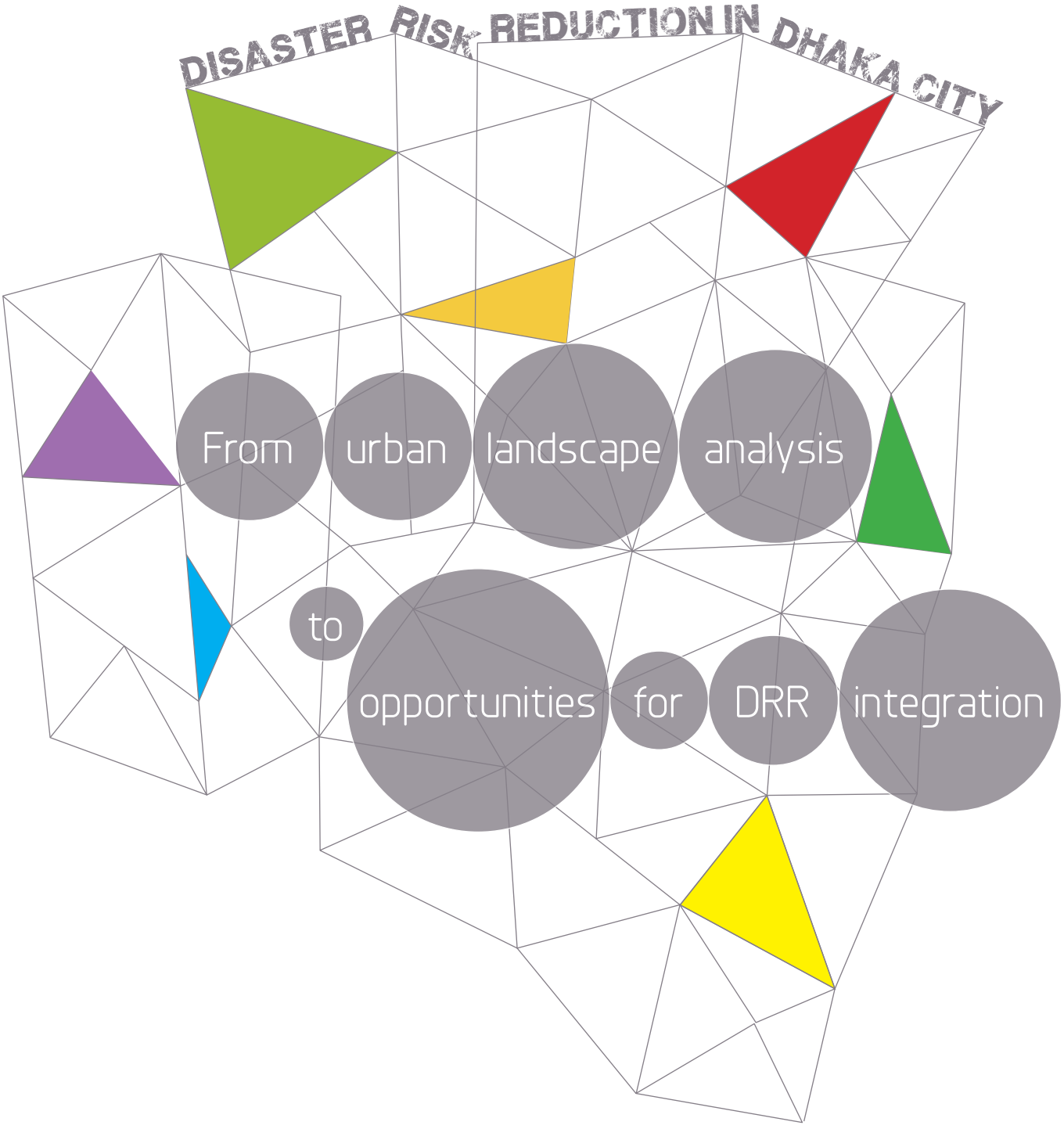

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SUMMARY

The geographical location of Bangladesh in the Bay of Bengal leaves the country susceptible to significant climate change impacts that exacerbate environmental hazards. In the urban context, disasters and hazards are posed by flood and waterlogging, earthquakes and fires. The residents of informal settlements, or slums, can be understood as most at risk due to the existing social, physical and economic vulnerabilities inherent to their environment. Increasing exposure to disaster hazards in Dhaka heightens the need for positive developments in urban Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR). The rapidly expanding rate of the city's slums as a result of both growing population and rural-urban migration, means resources are increasingly strained, and hence lives and livelihoods are ever more vulnerable to the risks posed by urban hazards.

At the institutional level, government agencies, academic institutions, UN agencies and non-governmental organizations (NGOs) aim to reduce the risks posed by disasters through conducting research, devising policy and implementing CCA and DRR initiatives. World Vision is well established in Dhaka, and has implemented a variety of initiatives aimed at reducing vulnerability among urban residents. Within their Area Development Programmes (ADPs), World Vision primarily directs their initiatives towards children residing in slum communities. Current programmes are found in education, health and awareness raising programmes. World Vision seek to incorporate DRR and CCA activities into their mainstream program focuses in order to contribute to the current landscape of urban disaster risk management.

A well informed and concrete basis of knowledge is a vital starting point in approaching the issue of urban DRR and CCA. Consolidation of such a knowledge base can begin internally, ensuring full and in-depth training and capacity building of those practitioners working with vulnerable communities and those devising programs of action. The knowledge utilized should encompass wide reaching information from a variety of experts and be alert to the complex integration of factors contributing towards hazard vulnerability. These complexities will vary from city to city, district to district, family to family

and individual to individual. Hence, it is important to address how large-scale programs can account for small-scale differences. In particular, it must be recognized that a comprehensive understanding of urban communities' context is needed to ensure successful and sustainable DRR.

Furthermore, in achieving an appropriate approach, strong collaborations are vital. These collaborations should be within the NGO community and beyond, to include government departments, academic researchers, private sector, and UN agencies. Whilst NGOs can offer crucial connections directly with local communities, government institutions can assist in ensuring appropriate policy and political cohesion and academic institutes can contribute to a concrete knowledge base to inform best approaches. Moreover, collaborations can ensure that duplications are avoided, in order that available resources for DRR are maximized. Institutions can contribute to CCA and DRR at different levels, by enhancing their own capacities, that of institutions around them and that of the communities within which they work. Resulting initiatives should be well informed, comprehensive and also flexible to advancements in policy and in the climate change knowledge base.

The research presented in this report examines the urban DRR landscape of Dhaka. It builds on the Urban DRR Assessment Framework Report, a study which assessed the resilience of WV Bangladesh's project sites in Dhaka. This report identifies the hazards faced by slum residents in Dhaka, in the context of their particular political and social economy. Further, it examines initiatives established by the government, academic and NGO community to address DRR. In assessing these two elements, results highlight not only the DRR methods currently being implemented, but, more critically, where gaps exist. Hence, opportunities for World Vision to contribute towards ensuring comprehensive DRR in Dhaka are illuminated.

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LIST OF ACRONYMS

AAB ActionAid Bangladesh

ADP Area Development Program

ARCAB Action Research for Community Adaptation in Bangladesh

BIP Bangladesh Institute of Planners

BUET Bangladesh University of Engineering and Technology

CBO Community Based Organisation

CCA Climate Change Adaptation

CCDMC City Corporation Disaster Management Committee

CDMP Comprehensive Disaster Management Programme

CPPIB Cyclone Preparedness Program Implementation Board

CSDDWS Committee for Speedy Dissemination of Disaster Related Warning/ Signals

CUS Centre for Urban Studies

CWW Concern Worldwide

DCC Dhaka City Corporation

DNCC Dhaka North City Corporation

DSCC Dhaka South City Corporation

DSK Dushtha Shasthya Kendra

DMB Disaster Management Bureau

DMTATF Disaster Management Training and Public Awareness Building Task Force

DRR Disaster Risk Reduction

ECB Emergency Capacity Building Project

EPC Earthquake Preparedness Centre

FPOCG	Focal Point Operation Coordination Group of Disaster Management
GoB	Government of Bangladesh
HfH	Home for Habitat
IMDMCC	Inter-Ministerial Disaster Management Coordination Committee
INGO	International Non-Governmental Organization
IRW	Islamic Relief Worldwide
IWM	Institute for Water Modelling
JIDPUS	Japan Institute of Disaster Prevention and Urban Safety
MoDMR	Ministry of Disaster Management and Relief
MoFDM	Ministry of Food and Disaster Management
NARRI	National Alliance for Risk Reduction Initiative
NDMC	National Disaster Management Council
NDMC	National Disaster Management Council
NGO	Non-Governmental Organization
NGOCC	NGO Coordination Committee on Disaster Management
SC	Swisscontact, the Swiss Foundation for Technical Cooperation
SOD	Standing Order on Disasters
STC	Save the Children
UDD	Urban Development Directorate
ULS	Urban Learning Site
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNWFP	United Nations World Food Program

INTRODUCTION

The frequency and intensity of natural disasters around the world are being exacerbated by climate change. However, climate change should not be perceived as a standalone hazard. Rather, it can be understood to increase the likelihood and extent of disasters brought about by natural hazards, such as flooding, cyclones, drought and earthquakes. Such events have direct and indirect consequences that cause significant damages to lives and assets.

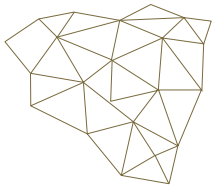
The geographical location of Bangladesh in the Bay of Bengal leaves the country susceptible to a multitude of environmental hazards. A long history of disasters has been witnessed: between 1980 and 2008 alone, Bangladesh experienced 219 severe climatic events, which caused over 16 billion USD in damages (UNDP, 2011). Within the socio-economic context of Bangladesh, such events cause severe harm both in terms of immediate effects and longer-term recovery. The low economic status of a large proportion of citizens in tandem with political instability, fractured infrastructure and a rapidly growing population dictate extreme vulnerability to ecological stresses.

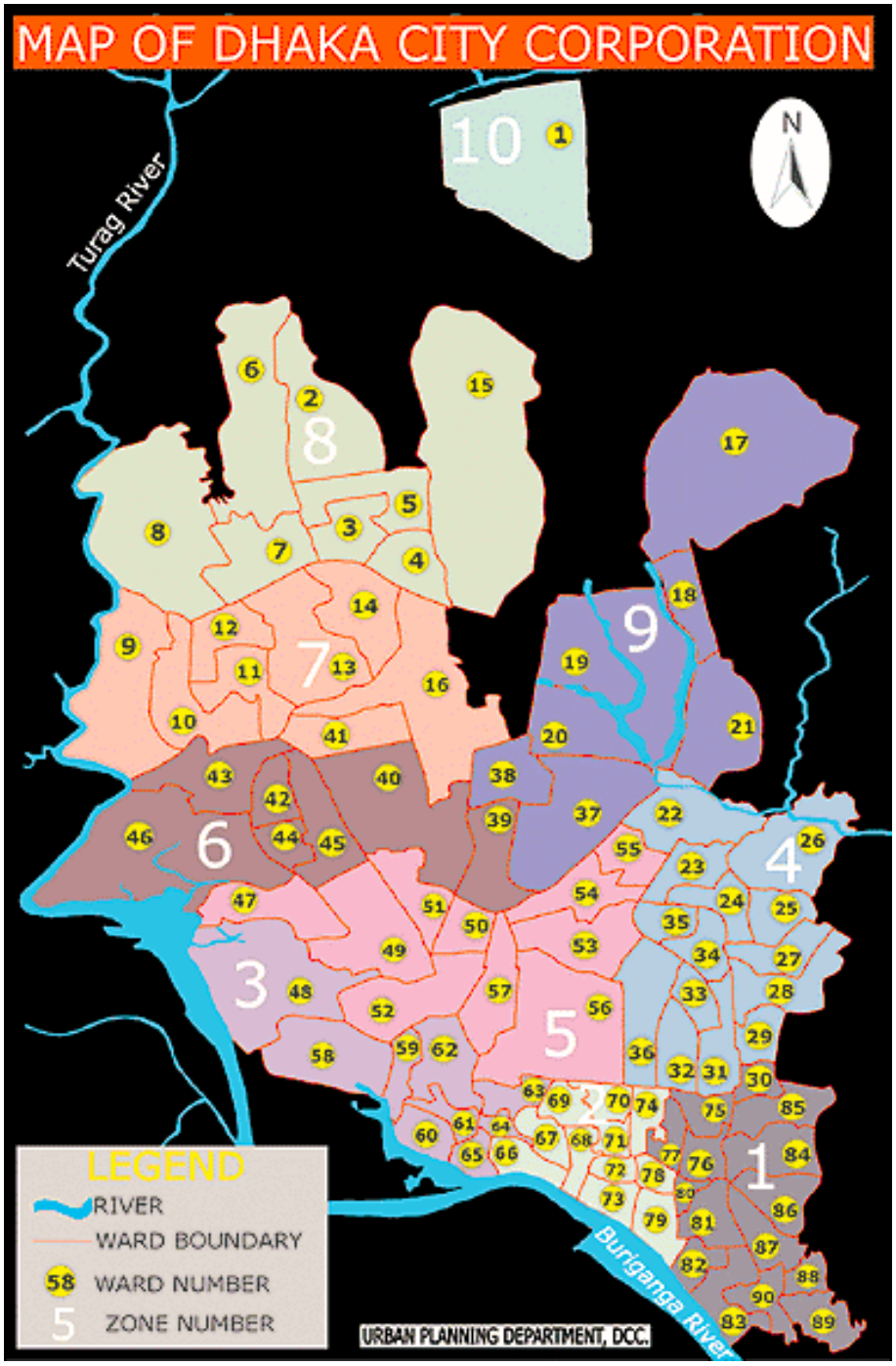
In the urban context, climatic events cause an array of effects, from hindering the city's functionality, to causing injuries and fatalities and increasing future vulnerability. With the reality of increasing the frequency of such events, then, adaptation and risk reduction are crucial. Adaptation suggests appreciation of slower onset environmental changes, such as river erosion, drought and seasonal changes. Though some slum dwellers will feel the effect of river erosion in Dhaka, disaster events will have a more wide spread impact. As such, the climate change community places much emphasis on DRR in urban areas. Urban disaster risks are found in flood and waterlogging, earthquake and high probability of subsequent liquefaction, and fire hazards.

These risks are amplified due to the physical, social and economic vulnerabilities inherent to urban areas, which themselves are intensified by a continuous process of urbanization. In Bangladesh, a high rate of urbanization is witnessed due to the internal migration of rural communities, families and individuals. This process is most pronounced in Dhaka, where the urbanization rate recorded

Figure 1

Zones and Wards of Dhaka City (3CD, 2006)





(Source: 3CD, 2006)

for 2010 was 44 per cent (Zaman and Akita, 2012). The rate of urbanization is most closely followed by Chittagong and Khulna, and is over 30 per cent for all major cities in the country. A recent urban DRR Assessment Framework report produced by World Vision-Asia Pacific examines the implications of this process, indicating that urbanization has resulted in the construction of unstable buildings in informal and unplanned settlements, alongside a critical lack of facilities and basic urban services, intensified pollution and the loss natural, open spaces such as water bodies and greeneries (Shaw, 2013). Such realities further strain the lives and livelihoods of urban dwellers, and particularly those residing within informal settlements.

Dhaka covers an area of 360 sq km and has a population of over 12 million (Ibrahim and Kamal, 2012). The city is divided into 10 zones and 90 wards (see Figure 1). Within these wards are multiple slum areas, inhabited by a huge proportion of the urban population.

The stresses presented by climate change put urban communities under pressure to adapt to changes and mitigate risks. World Vision operates alongside other non-governmental organizations (NGOs) and the local government, to help prepare slum communities for potential disasters. By raising awareness on such issues, and enhancing the ability of communities to mitigate and respond to events appropriately, World Vision aims to prevent and/or reduce the extent of harm caused. This study outlines the landscape of DRR within the urban context of Dhaka city. It strives to identify gaps and synergies in the institutional landscape in order to make recommendations for future action.

Location

World Vision operates within one Urban Learning Site (ULS) and three Area Development Programmes (ADPs) in Dhaka. The ULS is in Mirpur whilst their ADPs are in Kamalapur, Badda and Mohammadpur, within which they have long-term initiatives. World Vision work within multiple slums in some areas. For the purposes of this study, one slum for each area was identified for data collection. These are detailed in Table 1 and their locations indicated in Figure 2.

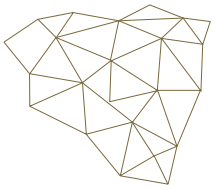
Table 1

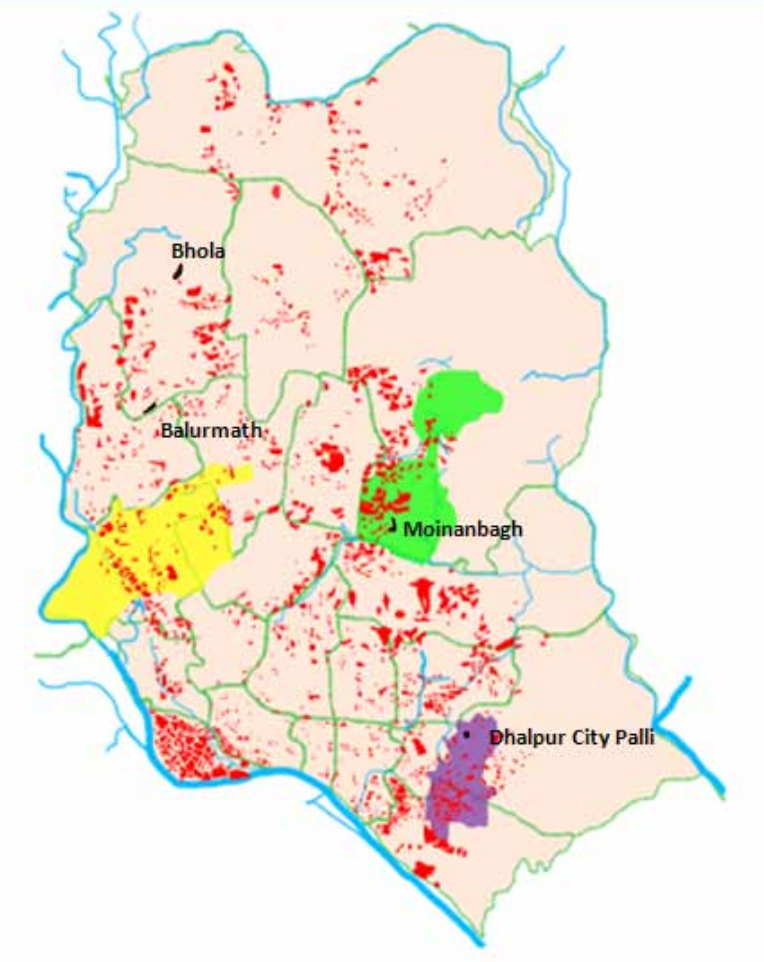
World Vision ADPs and Selected Field Sites

Area	ADP/ULS	Wards	Slum Site
Kamalapur	Kamalapur	17, 18, 19, 20	Dhalpur City Palli
Badda	Dhaka East	27, 28, 29, 30, 31, 75, 76, 81, 84, 85	Moinanbagh
Mohammadpur	Dhaka Shishu	1, 42, 43, 44, 45, 46	Balurmath
Mirpur	Mirpur	N/A	Bhola

Figure 2

Dhaka's Slums, World Vision ADPs and Study Field Sites





Key

Kamalapur ADP

Dhaka Shishu ADP

Dhaka East ADP

Slum Clusters

(Source: Adapted from CUS, 2005)

Methodology

Multi-level research was undertaken through the integration of primary and secondary data collection methods. Local-level field research was conducted within Dhaka's slums, whilst institutional-level research was collated from government, NGO and academic sources. This allowed for a rich data base to be collected in addition to triangulation of information between sources.

1. Local-Level Research

Local-level research included group discussions, household interviews and observations. These methods examined the interactions of slum residents with NGO and government interventions, in addition to their perceived risks and current knowledge on climate change issues (see Appendix 1). Two group discussions were completed, in Balurmath and in Moinanbagh. The vast majority of participants were females who had more time to commit to participating. Two household interviews were completed in Dhalpur City Palli with families involved in World Vision housing and education projects. Research data from Bhola slum was based on observations during a World Vision meeting. In addition to this, semi-structured interviews were completed with six teachers working at World Vision's schools in Moinanbagh, Bohla and Balurmath. These more closely investigated the impacts of DRR interventions for children residing in slums (see Appendix 2). First hand observations of slum life throughout the research process compliment the formal data to allow a deeper understanding of DRR in the urban slum context of Dhaka.

2. Institutional-Level Research

This level of research was completed with a broad range of professional representatives, from governmental, academic and NGO backgrounds. The institutions represented are indicated in Table 2. Methods included group discussions and key informant interviews. The group discussions were held with World Vision staff from Dhaka East ADP and Kamalapur ADP. Key informant interviews were conducted with government officials, academics and NGO representatives. The latter examined current and planned DRR and CCA initiatives and perceived gaps in the urban DRR and

CCA landscape (see Appendix 3). This level of research elicited information regarding the details of current interventions and challenges faced, future plans of action and views and opinions on the current gaps in DRR and CCA interventions in the urban context, specifically in Dhaka city.

3. Secondary Data Collection

Secondary data was gathered from a range of literary, academic and online sources to compliment the primary data collection.

Table 2

Institutions Represented in Key Informant Interviews

Government
Dhaka North City Corporation
Comprehensive Disaster Management Programme
Urban Development Directorate
Academic
The Bangladesh Institute of Planners
The Centre for Urban Studies
Earthquake Preparedness Centre
The Institute of Water Modelling
The Japan Institute of Disaster Prevention and Urban Safety
Non-Governmental Organisations
Action Aid Bangladesh
Concern Worldwide
Dushtha Shasthya Kendra
Habitat for Humanity
Islamic Relief Worldwide
Oxfam
Plan International Bangladesh
Save the Children
Swisscontact
World Vision

Analysis Approach

Two phases of analysis were employed in this research:

1. **Multiple Hazard Analysis**

   This provides a generalized understanding of Dhaka's existing and potential vulnerabilities, whilst also highlighting those areas exposed to multiple risks. Individual hazards are depicted through mapping exercises that are based on integrated research data.

2. **Landscaping of Interventions**

   This phase of analysis examines the institutional landscape, identifying the involvement of a multitude of organisations in DRR initiatives in Dhaka. It highlights potential for institutional and local collaboration as well as gaps for exploration and additional intervention.

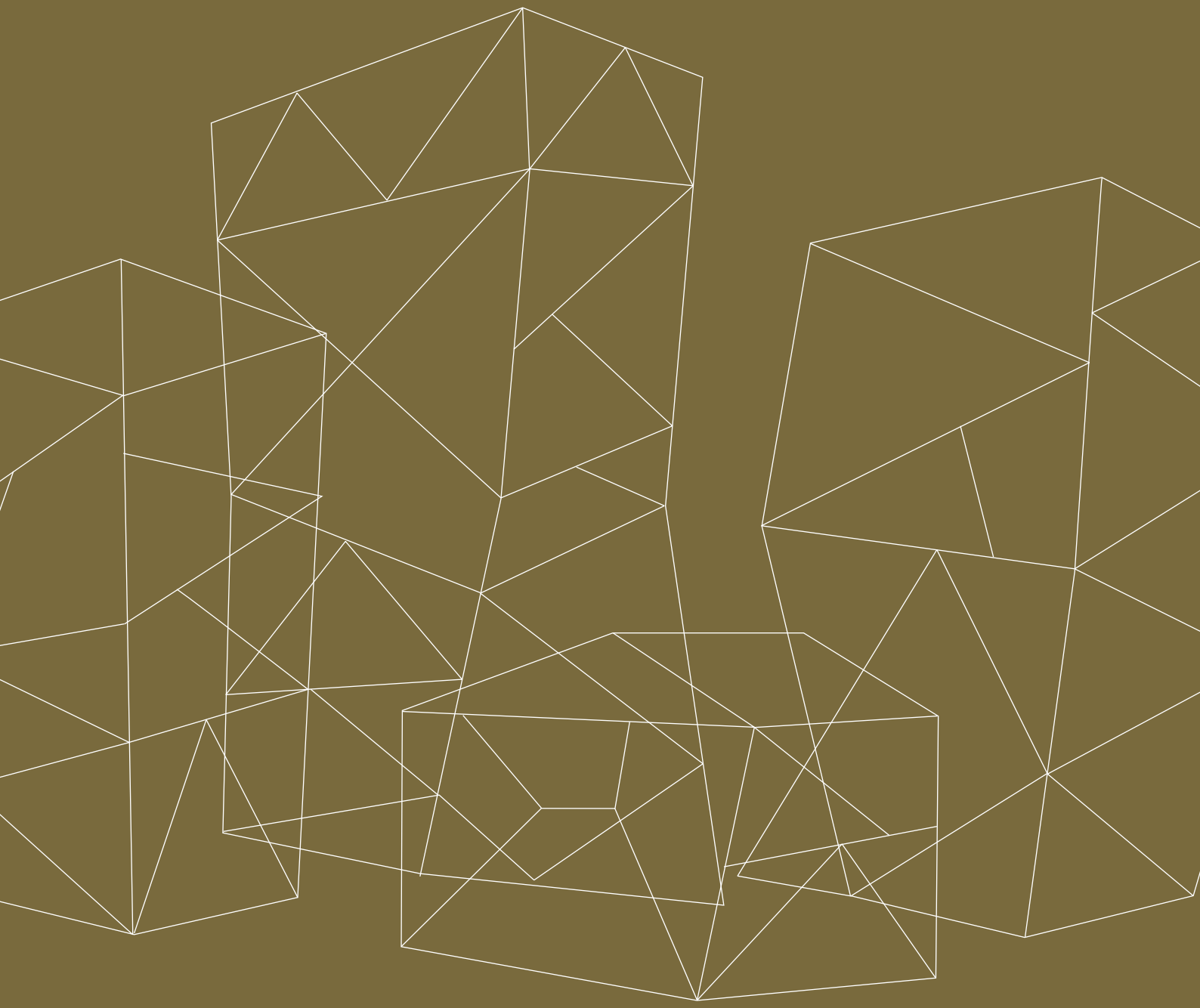
Limitations of the Study

Limitations of the research process and resulting data should be highlighted and considered throughout the report. In terms of the research process, further representation of slum residents and institutions was hindered due to time constraints and the current political climate, which limited opportunity for additional data collection. The limited representation of slum residents was counterbalanced through ongoing interaction with World Vision's staff, who have long-term experience of working within slum communities and therefore could provide a greater depth of understanding. In addition, whilst World Vision's focus is primarily with children, ethical constraints hindered direct research with younger slum residents. To address this, research with school teachers and women was favored in order to achieve a clearer understanding of child risk and involvement in the context of urban DRR and CCA. Finally, whilst all effort was made to get a wholly comprehensive picture of the DRR landscape in Dhaka, the vast multitude of NGOs in operation in Bangladesh and the increasing mainstreaming of DRR into development initiatives may mean that some actors remain unrepresented in this research.

Organization of the Study

A research team at the International Centre for Climate Change and Development conducted the primary and secondary research for this report. Cohesion was ensured through regular team meetings and liaisons, and guidance by WV Bangladesh and East Asia Office.

PART 1
NATURAL HAZARDS AND **URBAN VULNERABILITIES** IN DHAKA



In the urban context of Bangladesh, the increasing frequency of natural hazards as a result of increasing climate change poses significant risk to city dwellers. Hazards include floods, earthquakes and fires. Climate change aggravates these hazards through direct and indirect avenues. It increases the frequency and severity of floods. Moreover, with rural-urban migration increasing as a result of the climatic changes experienced throughout Bangladesh, hazards in urban areas are magnified. Increasing population pressures accompanied by poor infrastructure and a lack of public services heightens the risks posed (Cavill and Sohail, 2004; Dewan, 2013).

Within Dhaka, hazards are most extreme amongst communities inhabiting low-lying slum areas. The existing physical, economic and social vulnerabilities of slum residents heighten their poverty, marginality and disenfranchisement, making them highly susceptible to disasters and their lasting effects. Within slum communities, children, women and the elderly can be understood to be more vulnerable due to having a greater lack of autonomy. The government budget for DRR is severely limited, and there is a critical lack of insurance, development plans, emergency teams and early warning systems in some areas (Shaw, 2013). Of the four ADPs within which World Vision work, Dhaka Shishu ADP and Kamalapur ADP are considered by World Vision's staff to be most exposed to disaster risk. Their construction on weak foundations and low lying topography reinforces their climatic vulnerabilities.

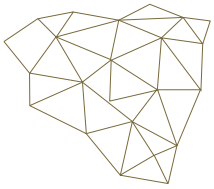
URBAN HAZARDS

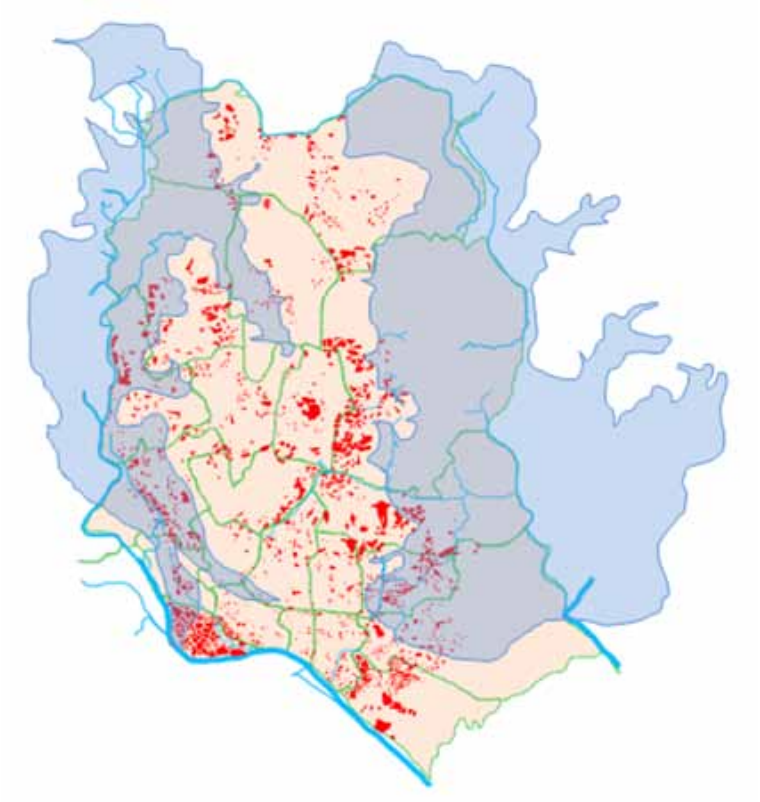
Flood and Waterlogging

Due to the location of Dhaka's slums on relatively low lying terrain, flooding and subsequent waterlogging are common experiences. Slums along the water's edge are particularly exposed, yet these are inhabited by almost 30 per cent of Dhaka's population (Shaw, 2013). In recent years, Dhaka has faced extensive waterlogging during the monsoon (May to October). Flooding is caused by both the increasing water levels of peripheral river systems, heavy rainfall and seasonal tidal affects. After a flood, parts of the city become waterlogged for several days. During normal flooding, many roads become inaccessible for as much as eight hours, whilst during heavy rainfall, this can increase to a period of twelve hours and upwards (Shaw, 2013). Flooding has become as common and regular a problem as water pollution, traffic congestion, air and noise pollution and solid waste disposal. The main causes of such waterlogging are inadequate drainage systems, natural siltation, the absence of inlets and outlets, a lack of proper maintenance of the existing drainage system, and the disposal of solid waste into the drains and drainage paths. In some of the slum areas, water lays stagnant year round, obstructing mobility and posing serious health hazards. Figure 3 indicates the flood prone areas of Dhaka, whilst projections of likely levels of flood damage are indicated in Figure 4. The latter indicates that World Visions ADP areas in Dhaka are at risk of moderate damage as a result of flooding in the city.

Figure 3

Flood Prone Areas of Dhaka





Key

Flood Prone Area

Slum Clusters

(Source: Adapted from CUS, 2005; ADPC, 2006)

Residents within World Vision's Dhaka-based ADPs have experienced extreme flood and its associated risks. Moinanbagh is regularly waterlogged during the rainy season, having been a landfill site before being inhabited. Residents are left vulnerable due a lack of mobility. High school students are unable to attend classes and community members are left confined to their home for many days. This was particularly so during severe floods in 1988, 1998 and 2004, when they were stuck at home for up to a month. Balurmath is prone to waterlogging for almost 6 to 7 months annually and even low rainfall affects slum residents due to their vulnerable geographical location. Conversely,

Dhalpur City Palli is less affected by flooding due to a community-managed drainage system that helps to curb the extent of waterlogging. Moreover, one school in Kamalapur ADP reported being comparatively safe from cyclones and water logging due to its high plinth level. As such, the specific location and infrastructural context of each slum site exposes residents to different categories of flood damage..

Figure 4

Likely Levels of Flood Damage in Dhaka

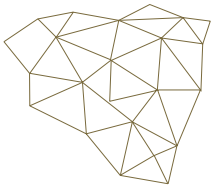
Key

No Damage
Moderate Damage
Slum Clusters
Low Damage
High Damage

(Source: Adapted from CUS, 2005; ADPC, 2006)

Figure 5

Seismic Map of Bangladesh



(Source: DMM 2012)

Earthquakes

Bangladesh has been directly affected by earthquakes in the recent and distant past, and is likely to suffer more in the near future (UNB, 2010). In 1762, a major earthquake submerged 150 square kilometers of land. Five hundred people in Dhaka, then a small town, were killed. Between 1850 and 1950, seven earthquakes with magnitude from 7.0 to 8.7 on the Richter scale struck the region. More recently, since 1997, Bangladesh has experienced several earthquakes of magnitude higher than 5 (GoB, n.d.a).

The National Building Code of Bangladesh (DMM, 2012) specifies three seismic zones, identified through a series of seismic-tectonic studies. These zones identify the level of earthquake risk faced by particular areas; Zone III being the most at risk, and Zone I the least at risk (depicted in Figure 5). Seismic zoning in Bangladesh indicates that Dhaka is under Zone II, and as such is at a real risk of an earthquake of significant magnitude.

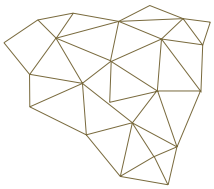
In fact, globally, Dhaka is one of the most vulnerable cities to earthquake according to the Earthquake Disaster Risk Index of Stanford University (World Bank, 2013). In the urban context, major earthquake risk is associated with the high vulnerability of buildings to collapse due to inadequate construction materials and processes. The urban DRR framework report has found that, in some areas, construction according to official building codes was followed for less than 10 per cent of buildings (Shaw, 2013). Representatives of the Comprehensive Disaster Management Programme (CDMP) have specified that 78,000 out 326,000 buildings in Dhaka are vulnerable to collapse. This vulnerability was demonstrated by the Rana Plaza building collapse in April 2013. Even those not living in large structures are at risk from falling objects, leaking gas lines and fires resulting from earthquakes.

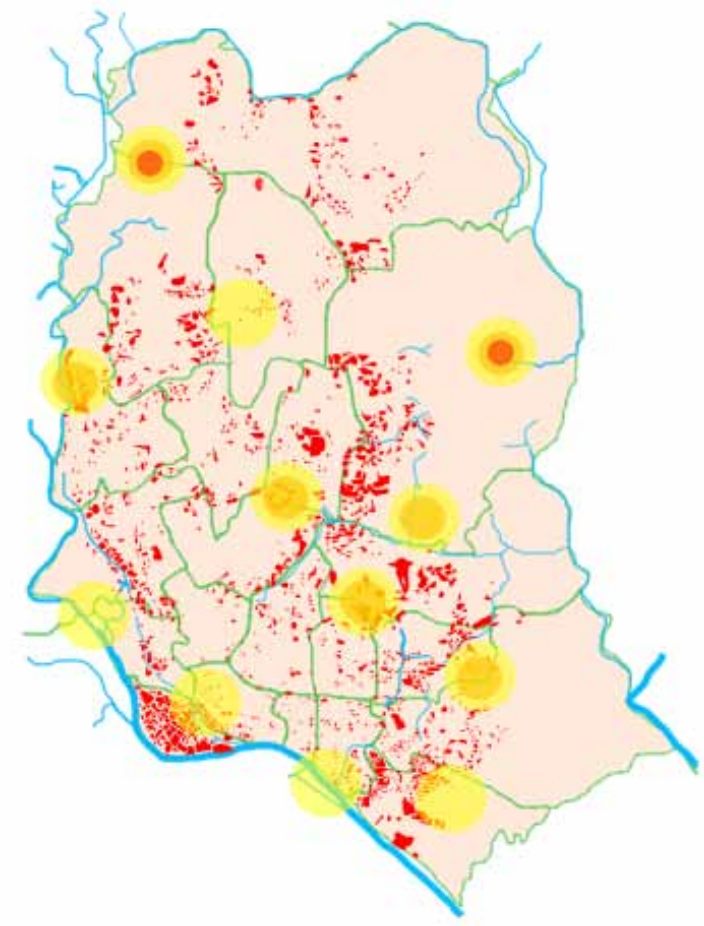
In addition to these direct impacts, earthquakes can cause liquefaction of soils, rendering built-up areas further vulnerable to structural collapse. Liquefaction is a process wherein sand and silt become more compact and force ground water upwards. The resulting fluidity at the upper level fails to support structures, causing buildings to sink and collapse (USGS, 2013). Dhaka's largely shallow water table and soft sediment terrain make it highly susceptible to this phenomenon (Stone, 2011; Ansary and Rashid, 2000).

Many slums in Dhaka are located close to the epicenter of liquefaction zones (Ansary, 2003; CUS, 2005) (See Figure 6). Whilst the simple and lightweight infrastructure of slum settlements in Dhaka withdraws them from the immediate risks of building collapses, liquefaction of surrounding buildings can cause much destruction. The projected levels of liquefaction damage likely to be caused in Dhaka in the event of an earthquake are indicated in Figure 6.

Figure 6

Liquefaction Zones in Dhaka





Key

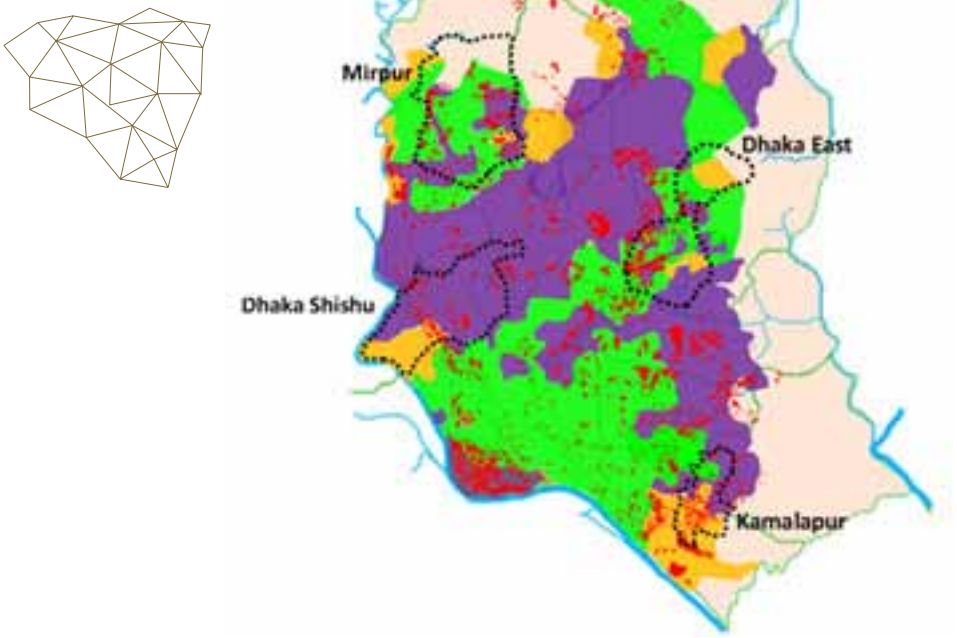
- Zone 1 (most destructive)
- Zone 2
- Zone 3 (least destructive)
- Slum Clusters

(Adapted from: Ansary 2003; CUS, 2005)

Figure 7 indicates that much of Dhaka Shishu ADP and parts of Dhaka East ADP and Kamalapur ADP, in which World Vision work, are at risk of high damage from liquefaction. The destruction of shelter results in huge population displacement and the inherent physical, social and economic vulnerabilities resulting from heightened lack of security. Such a situation was witnessed in Port au Prince, after the 2010 Haiti earthquake when 1.5 million people were left living in makeshift shelters in the streets (Gormley, 2012).

Figure 7

Likely Damage from Liquefaction in Dhaka



Key

No Damage
Moderate Damage
Slum Clusters
Low Damage
High Damage

(Adapted from: CDMP, 2009; CUS, 2005)

Fire

Fire is a frequently occurring hazard in Bangladesh's urban areas and causes huge losses in life and assets every year. Within the urban context, the slum areas are at greatest risk from fire hazards, as has been evidenced by past fire events (Huq, 1999). Rapid and unplanned urbanization in Bangladesh has forced people into slum areas that have unsafe working and living conditions, presenting greater risks of fire hazards with no increase in mitigation measures. Of the field sites examined in this research, both Dhalpur City Palli and Balurmath have recently been subject to significant fires. These have diminished the already poor living conditions within which residents live.

Rather than having natural causes, urban fires are often a result of anthropogenic activity. At the domestic level, fire outbreaks result from the use of gas cookers. However, industrial units are also a central source of fires in slum areas (DIPECHO, 2010). An example comes from the Nimtoli slum tragedy on 3rd June 2010. Here, 117 people died and at least another 150 people suffered critical burns. The main source of the fire was an unauthorized chemical warehouse on the ground floor of a residential building within the slum. The overlapping of industrial and residential zones put residents at high risk from mishandling of dangerous chemical substances. It is estimated that 80% of Old Dhaka's residential housing contains unauthorized factories or warehouses (Imam, 2010). A lack of government regulation on these units, fostered by an understaffed inspection department and the adverse interests of politicians with ownership stakes, heightens inherent fire risks (Human Rights Watch, 2013). As such, Dhaka's political economy contributes to increased risks, greater damage and heightened challenges for the future mitigation of urban fire hazards.

Crowded conditions alongside limited mechanisms for fire responses in slums exacerbate the damage caused by fires. The compact alignment of houses means that fires spread very quickly through slum neighborhoods and dense resident populations make evacuation very difficult. In Dhaka, the mean duration of fires were significantly higher in slums, with an average of 68 minutes, compared to 28 minutes in the non-slum residential areas (Maniruzzaman, Haque 2013). Fire fighters have reported delays in responding to slum fires due to the narrow streets and lack of hydrants or other sources of water to extinguish the fire (CBS News, 2010). This has been reported by teachers in

the Mirpur area. Moreover, research within Moinanbagh slum confirmed that conditions are too cramped to allow access to fire vehicles. Hence, fire risks are unavoidable until infrastructure, public services and underlying political, social and economic vulnerabilities are addressed.

Multi-Hazards

The natural hazards described here cannot be considered in isolation, particularly in the urban context. In fact, the event of one kind of disaster can itself prompt exposure to further hazards, consequently subjecting urban residents to a multitude of risks and vulnerabilities. For example, the event of an earthquake may also cause fires to start within the city due to falling objects, electrical faults and other accidents. Moreover, blockages caused by earthquakes can obstruct fire vehicles, limiting access to the source of the fire, and hence exacerbating its effects. This could leave to further and catastrophic loss of life and damage to assets. The hazard maps above indicates how Dhaka is exposed to this multitude of hazards, showing flood susceptible areas, liquefaction zones and indicating the slum areas, where fire hazards are most intense. It is clear, then, that many areas of Dhaka, and particularly the slum areas are at high risk from multiple hazards, which have the potential to occur simultaneously.

URBAN VULNERABILITIES

Physical, social and economic vulnerabilities characterize the urban context of Dhaka, and particularly the slum areas. These vulnerabilities not only exacerbate the threat of urban hazards, but are also intertwined with one another. This means that increased pressure in one area will directly affect the existing stresses felt in other areas. Moreover, the political economy of slum sites has huge relevance for access to services, land and employment. There is a huge lack of government capacity or budget to support slum residents (Shaw, 2013). As such, influential people, such as political elites and mastaans (local "musclemen") exert their power within the slums (Cavill and Sohail, 2004), creating an internal hierarchy. This means that individual and family social networks are critical to survival in these areas.

Physical Vulnerabilities

Poor infrastructure and a lack of basic services increase the vulnerabilities of Dhaka's residents. In the slum areas, inadequate electricity, water and sanitation services pose significant physical and health risks, which magnify the impact of urban hazards.

1. Electricity

Dhaka's slum sites experience an inadequate and limited electricity service. Moinanbagh slum receives better services compared to the other three slums reviewed. However, bills for services vary greatly. In Moinanbagh, the monthly electricity and water bill is as much as BDT 4500 (USD 60) per month, whilst a family living in Balurmath reported paying BDT 300 (USD 4) per month for their electricity service.

2. Water and Sanitation

Water facilities in Dhaka are far from adequate. World Vision's Urban DRR Assessment Framework report found that, in some areas, access to potable water is limited to only a few hours a day for just 50% of the population (Shaw, 2013). Safe supplies of water are severely limited in slum areas, with no accessible service in place to serve the multitudes of residents. For example, in Dhalpur City Palli slum water is supplied via a single pipeline. Drainage systems are damaged or non-existent, as can be witnessed in Dhalpur City Palli and Balurmath slums, respectively. Moreover, sanitation and solid waste disposal services are limited. Within Dhalpur City Palli slum, ten toilets are shared by over 200 families. These inadequacies pose great health hazards to slum residents, by making them especially exposed to water-borne diseases as a result of this lack of basic public services. This problem is magnified at times of flood, when drains become further congested, and mobility is restricted resulting in a complete lack of access to clean water and hygienic sanitation facilities.

Social Vulnerabilities

The urban context can expose residents to heightened social vulnerabilities. Within Dhaka's slum areas, living conditions pose a multitude of health risks in addition to limited access to educational resources. In addition to this, a lack of land tenure poses further vulnerabilities and struggles. However, the social networks created in the urban context can be of benefit to residents who secure positive reciprocal interactions (Conticini, 2005). Social capital aids collective decision making processes and can ensure access to public services, employment and land. Moreover, collective action can in some cases help to enhance social, physical and economic security. These notions of community have been found to be stronger in slum areas than in developed parts of the city.

1. Health

Health risks, such as water and air borne diseases are a common threat to slum residents, and are exacerbated by the physical vulnerabilities detailed above. Furthermore, rapidly increasing slum populations result in cramped and overcrowded conditions. For example, in Dhalpur City Palli slum, 500 families are living within an area registered for 230 families. This increases the demand for already inadequate utilities, leaving residents more prone to health risks caused by poor water and sanitation services. Waterlogging and water pollution have a significant effect on children, who are particularly vulnerable to water-borne diseases such as typhoid, jaundice and cholera. Teachers working in slum schools reported that by the age of 15, many children have already suffered 3-4 incidences of such diseases. Moreover, children suffer health problems arising from the high levels of air and noise pollution in Dhaka. World Vision's Urban DRR Assessment Framework report indicates that diseases are likely to increase in parts of the city due to the limited capacity and access to health facilities both before and during disaster (Shaw, 2013).

2. Education

There are few public education facilities accessed by or available to slum dwellers. Instead they rely on private facilities and assistance from NGOs who focus on education near the slum areas. The lack of facilities reduces the economic opportunities of slum dwellers, and hinders their education. Research within Balurmath slum revealed a high demand for education services within the slum, but a lack of access to such services prevails. In relation to DRR, World Vision's Urban DRR Assessment Framework report indicates that there is a lack of both public awareness and institutional capacity for DRR (Shaw, 2013). World Vision operates educational programs for a selection of registered children, providing education up to primary level. In lieu of awareness raising activities organized by the government, they also operate community awareness programs for DRR. However, it has been exemplified that even those with some knowledge of threats and impacts of disasters have little participation in decision-making processes (Shaw, 2013).

3. Land Tenure

Land tenure in slum areas is heavily intertwined with the political context of each slum site. For example, the government moved 230 families from Notun Rasta slum, near Kamalapur rail station, to Dhalpur City Palli. As such, these new residents of Dhalpur City Palli have a constant fear of eviction by the government despite the slum being supported by the Dhaka City Corporation. Governmental authority is intertwined with informal hierarchies as local elites create connections with local politicians. Informal connections result in land ownership by these local elites allowing them to exert their power over less influential slum residents. As such, in addition to heightening economic vulnerability, insecure tenure systems cradle feelings of exclusion, fear and mistrust among slum residents. In the Mohammadpur area, in-migration to the slums is a common scenario. Poverty causes continuous movement of people from place to place, reinforcing insecurity in land use. Conversely, in Moinanbagh, land security resulting from higher incomes has encouraged long-term plans to reside in the slum areas. Hence, slum life can be understood to offer benefits for opportunistic individuals. Unfortunately, however, these benefits reach a minority.

Economic Vulnerabilities

Perhaps the most apparent vulnerability of slum dwellers lies in their economic scope. Slum dwellers are generally amongst the poorest in the urban context, many being in-migrants from rural areas seeking better employment opportunities. Income levels are low and employment is demanding.

1. Income

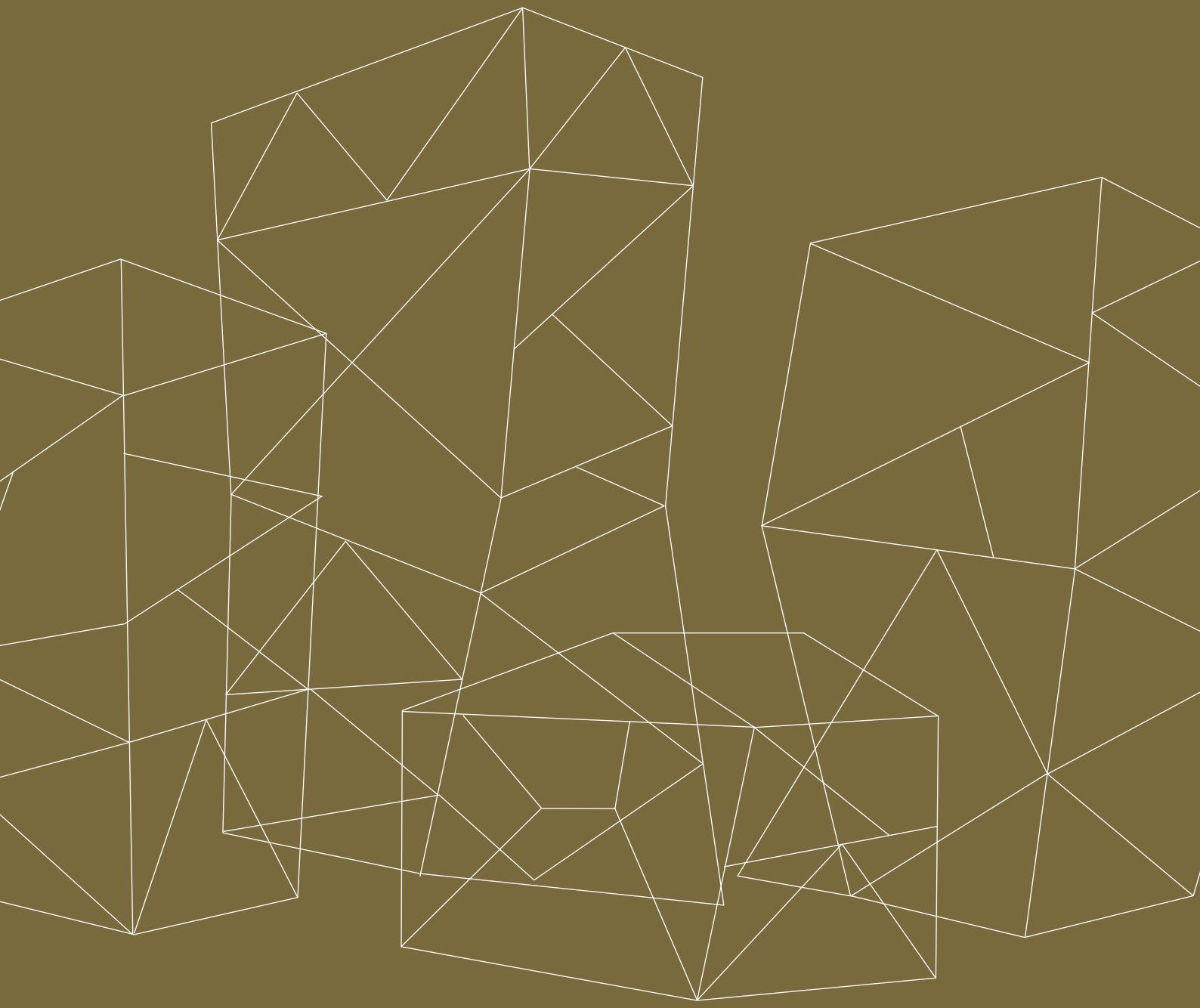
In those parts of the city reviewed in World Vision's Urban DRR Assessment Framework report, it was found that residents have a low income level and few assets (Shaw, 2013). The income pattern in Moinanbagh slum is comparatively better than the other four slums examined. Field investigation indicated that the average monthly income for males is BDT 15000 (USD 200) and for females is about BDT 7000 (USD 90). In comparison,

the monthly income in Balurmath varies between BDT 5000-6000 (USD 65-80) for men, and BDT 2000-3000 (USD 25-40) for women, and the monthly income in Dhalpur City Palli slum is BDT 2500-3000 (USD 30-40).

2. Employment

World Vision's Urban DRR Assessment Framework report found that unemployment is common in some of Dhaka's informal settlements (Shaw, 2013). Existing employment is largely in the informal sector with families relying on just one income source. There is much demand for labour in Dhaka's informal sectors, hence why slum residents often take opportunities presented here. Males are mainly employed as production and trade workers (including street vendors, retail, trade, rickshaw pullers and other transport workers). An estimated half of the female workers are employed as domestic workers or in the garment industry. Employment in Kamalapur ADP slum includes street vending, rickshaw pulling and trade in the nearby vegetable market. Many of the men are rickshaw pullers, van pullers, construction labourers, and soil excavators. In Balurmath slum, strong social networking was revealed to be pivotal to gaining employment opportunities. Here, many men are rickshaw pullers and many females are day labourers. Wages are generally low, though domestic work appears to be the lowest paid. The study revealed that residing in an urban slum area is considered to be more beneficial than living in a rural area in terms of employment opportunities for both men and women.

PART 2
INSTITUTIONAL LANDSCAPING: **WHO**'S DOING **WHAT** ON URBAN DRR AND CCA IN DHAKA



Landscaping of DRR and CCA interventions in an urban setting is a complex task due to the presence of many institutional actors and the complex dynamics among those actors. In the case of the Government of Bangladesh (GoB), many of the agencies have overlapping and, in some cases, unclear roles and responsibilities regarding DRR and CCA. For those NGOs working in urban areas, DRR and CCA are relatively new focuses and many are still trying to identify potential areas of intervention. Different actors play different roles in urban DRR issues. Our study indicates that government agencies are involved in infrastructural development planning, the production and implementation of contingency plans and interventions in emergency response, relief and recovery, through the Standing Order on Disaster (SOD). Academia focuses on knowledge generation and management for policy-level interventions. NGOs and other community based organizations (CBOs) work primarily at the local-level on a variety of development activities, which integrate climate and disaster preparedness and awareness, in addition to emergency relief and recovery interventions. In addition to this, UN agencies contribute towards urban DRR studies, projects and programs. Various collaborations between different institutes and organizations aim to achieve more comprehensive and successful DRR. This chapter explored the roles of the central institutions involved in DRR initiatives in Dhaka.

GOVERNMENT

Roles and Responsibilities of Key National GoB Agencies

The Ministry of Disaster Management and Relief (MoDMR) is the national focal point for disaster management in Bangladesh. It strives to "achieve a paradigm shift in disaster management from conventional response and relief to a more comprehensive risk reduction culture, and to promote food security as an important factor in ensuring the resilience of communities to hazards" (GoB, n.d.b). Governmental administration of disaster and food management was, until recently, grouped together under the Ministry of Food and Disaster Management (MoFDM). However, in order to strengthen government activities and increase government accountability, the MoFDM was sub-divided into two ministries according to the Business Rules of 1996 under Rule-3, in 2009 (UNPAN, 2009). As such, the Ministry of Food and the MoDMR are now separate entities, both of which remain governed under the MoFDM.

Underneath the MoDMR, the Disaster Management Bureau (DMB) introduced the Standing Order on Disaster (SOD) in 1997 (GoB, 2010) and the National Disaster Management Act in 2012 (GoB, n.d.c). These legislative documents represent the primary tools for disaster management in Bangladesh. They clarify the responsibilities and expected actions of the respective government ministries and agencies, in order to ensure accountability and transparency in government actions. As such, they seek to aid the accomplishment of appropriate targets at all levels, from national to local. Moreover, the National Plan for Disaster Management 2010-2015 seeks to mainstream disaster management into development plans, in order to reduce risks whilst also achieving sustainable development.

The governmental bodies involved in national disaster risk management combine to negotiate a comprehensive approach to hazard mitigation and response in order to reduce the risks posed by disasters in Bangladesh. The objectives within this are to improve the cyclone signaling system, secure modern and sophisticated search and rescue equipment, assess needs and

damage caused by disaster events and respond to the challenges presented by disasters (GoB, 2013). The responsibilities of the respective agencies are summarized in Table 3.

Alongside these central administrative bodies, the MoDMR is assisted by the Fire Service and the Civil Defence Department, the Disaster Emergency Centre of Armed Forces Division, the Bangladesh Meteorological Department (BMD), the Flood Forecasting and Warning Center (FFWC), the Bangladesh Police, and the Rapid Action Battalion (RAB). In addition to these collaborations, the ministry has technical and scientific partnerships with governmental bodies such as the Space Research and Remote Sensing Organization (SPARSO), the Geological Survey of Bangladesh, the Centre for Environmental and Geological Information System (CEGIS), the Water Resources Planning Organization (WARPO) and the Institute of Water Modelling (IWM), and academic bodies such as the Bangladesh University of Engineering and Technology (BUET).

Table 3

Responsibilities of GoB Bodies at National Level

Government Body	Responsibilities
National Disaster Management Council (NDMC)	Formulate and review of disaster management policies Direct other parties
Inter-Ministerial Disaster Management Coordination Committee (IMDMCC)	Implementation of policies and decisions by NDMC
National Disaster Management Advisory Committee (NDMAC)	Advise upon technical, socio-economic and financial aspects of DRR Coordinate discussions and alerts between institutions
Cyclone Preparedness Program Implementation Board (CPPIB)	Review the preparedness activities in the face of an impending cyclone
Disaster Management Training and Public Awareness Building Task Force (DMTATF)	Coordinate the disaster training and public awareness activities of the GoB, NGOs, and other organizations
Focal Point Operation Coordination Group of Disaster Management (FPOCG)	Review and coordinate the activities of various departments and agencies related to disaster management Review the contingency plan prepared by concerned departments
NGO Coordination Committee on Disaster Management (NGOCC)	Review and coordinate the activities of concerned NGOs in the country
Committee for Speedy Dissemination of Disaster Related Warning/ Signals (CSDDWS)	Examine, ensure, and determine the ways and means for the speedy dissemination of warning signals among the people

Roles and Responsibilities at Sub-National Level

Beyond the national level, the Office of the Deputy Commissioner at the district level, the Office of the Upazila Nirbahi at the Sub-district level and the Union Parishad at the most local-level of government administration, play crucial roles in disaster management. In Dhaka, it is the responsibility of the Dhaka City Corporation to implement government initiatives. The responsibilities of the organisations involved in this DRR structuring are summarized in Table 4.

Table 4

Responsibilities of GoB Bodies at Sub-National Level

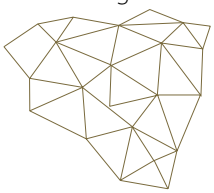
Government Body	Responsibilities
District Disaster Management Committee	Coordinate and review the disaster management activities at the district level
Upazila Disaster Management Committee	Coordinate and review the disaster management activities at the Upazila level
Union Disaster Management Committee	Coordinate, review, and implement the disaster management activities of the concerned union
Pourashava Disaster Management Committee	Coordinate, review, and implement the disaster management activities within the respective municipality
City Corporation Disaster Management Committee (CCDMC)	Coordinate, review, and implement the disaster management activities within its area of jurisdiction.

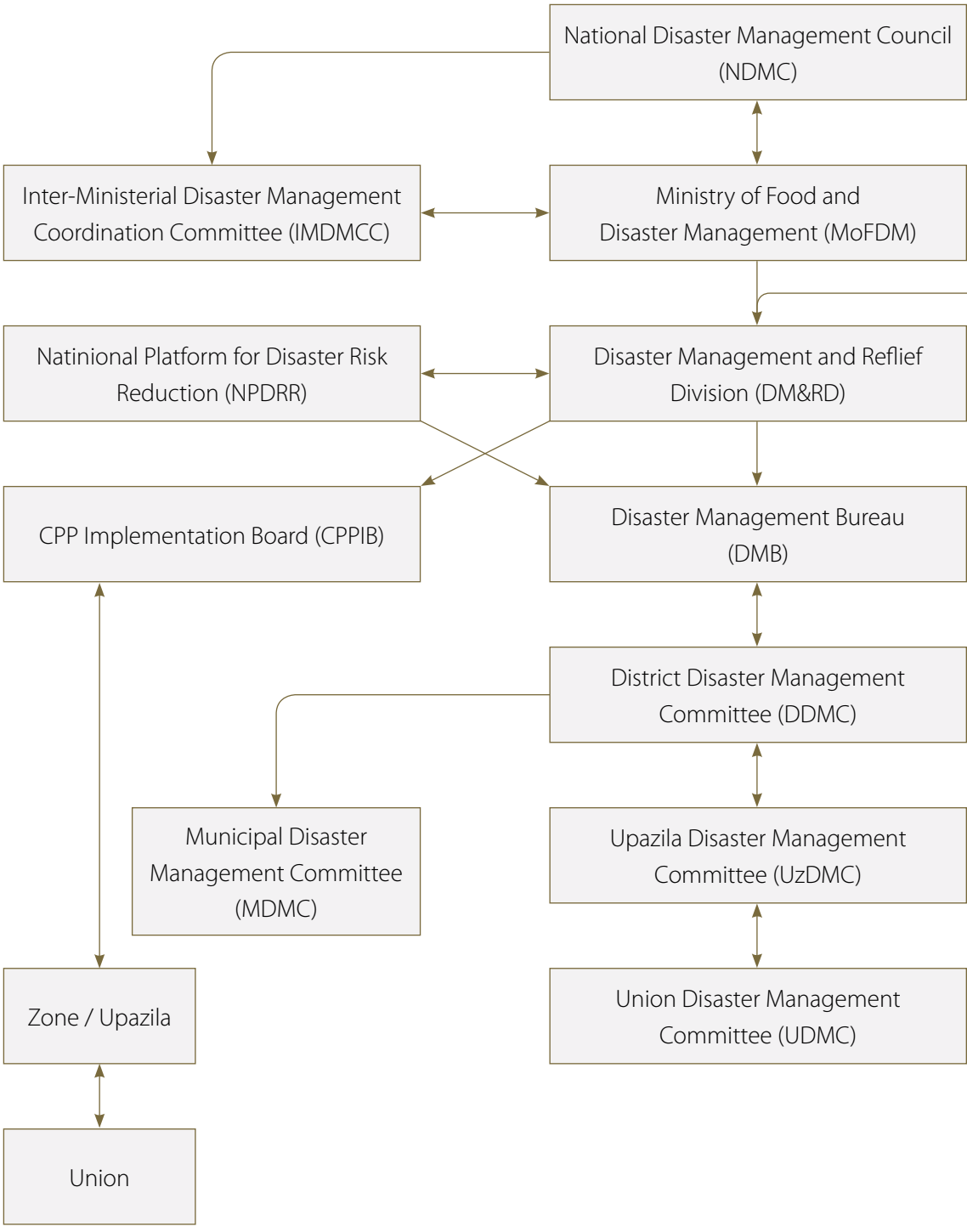
The Structure of Relevant Government Agencies

Collaboration between government institutions at national and sub-national levels aims for effective planning and coordination of disaster management and subsequent implementation of appropriate initiatives throughout Bangladesh. Figure 8 indicates the structure of the central institutions involved.

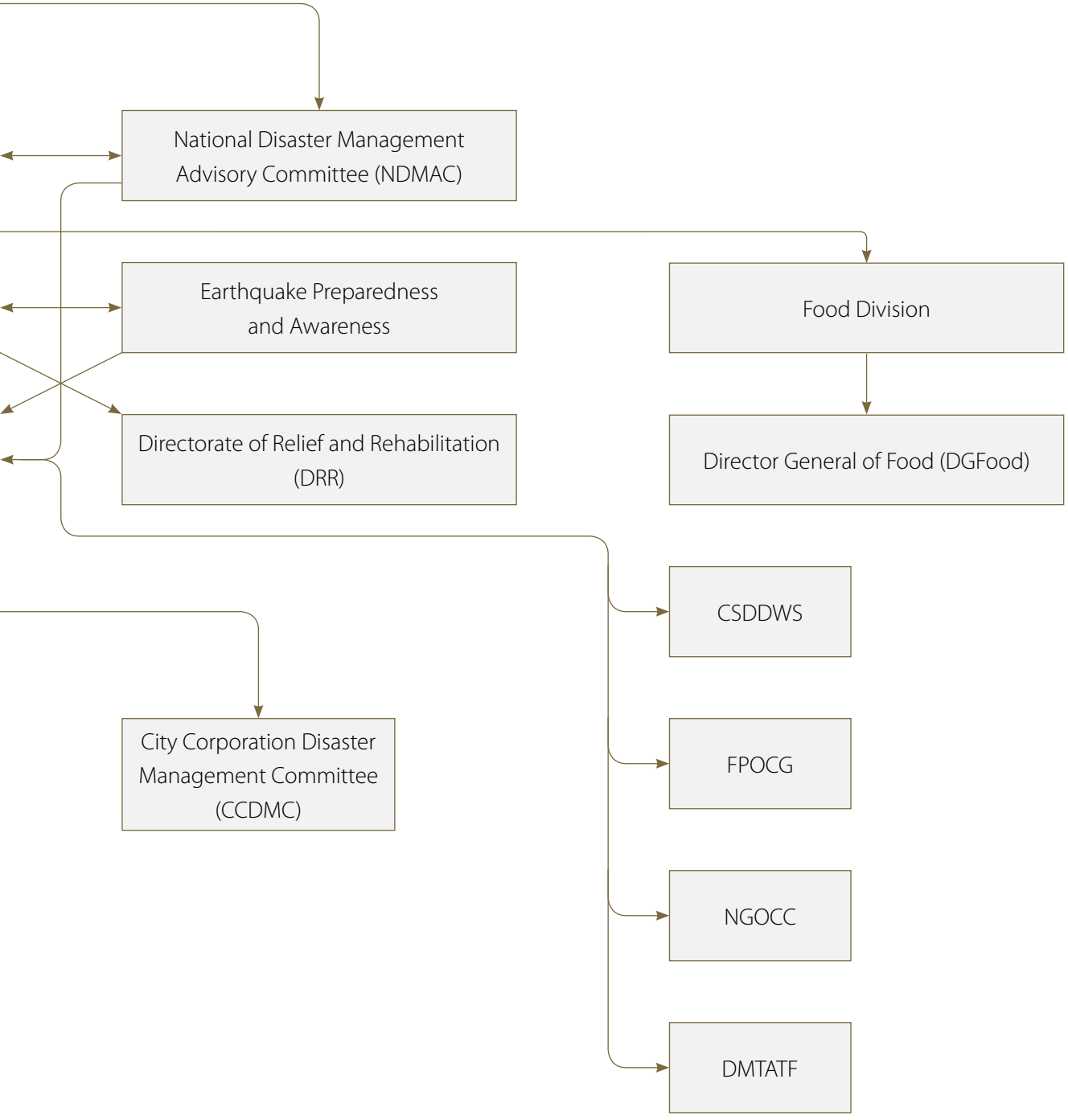
Figure 8

Institutional Structure of Disaster Management in Bangladesh





(Source: GoB, 2010)

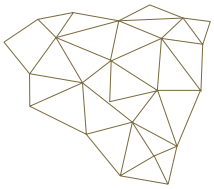

National Disaster Management Advisory Committee (NDMAC)
Earthquake Preparedness and Awareness
Food Division
Directorate of Relief and Rehabilitation (DRR)
Director General of Food (DGFood)
CSDDWS
City Corporation Disaster Management Committee (CCDMC)
FPOCG
NGOCC
DMTATF

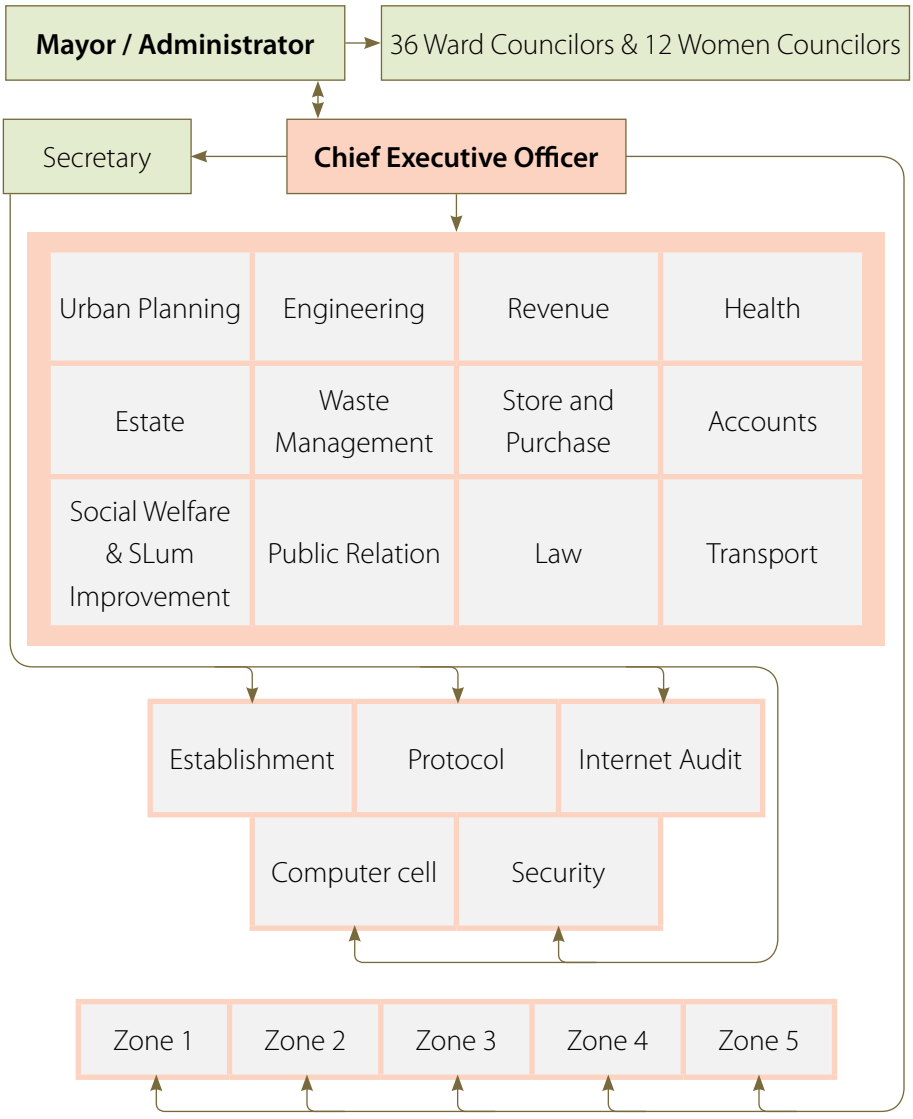
Governance in Dhaka

Dhaka City Corporation (DCC) is the central body of governmental administration in Dhaka. As of 2011, the City Corporation has been divided into two governing bodies: Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC). Each body follows a similar governing structure, as indicated in Figure 9.

Figure 9

: Structure of Dhaka City Corporation Branches





(Source: DNCC, 2013a)

In accordance with the SOD, DCC has formed a disaster committee, which is governed by the DDMC, itself under the DMB (see Figure 8). The committee is discussed further below. The various departments of the DCC can also address DRR and social vulnerabilities in Dhaka's slum areas. For example, the Urban Planning Department identify risky buildings and design contingency plans for earthquake risk reduction (DNCC, 2013b); the Estate Department manage the land belonging to DCC (DNCC, 2013c); and, the Slum Development Department provide housing, increase water supply, improve sanitary conditions, drainage systems, footpaths, street lighting and garbage disposal, and provide non-formal education, adult literacy courses and micro-credit schemes (DNCC, 2013d). Each ward has a councillor, who can provide a close link with local communities and monitor the services they have access to. They have the ability to advocate for certain inclusions in the DCC's development plan through formulating proposals based on their observations (DNCC, 2013e).

Urban DRR Initiatives of GoB

1. City Corporation Disaster Management Committee (CCDMC)

Dhaka's CCDMC, is primarily governed by DNCC and seeks to coordinate, review, and implement disaster management activities within Dhaka. In anticipation of disasters, the committee follows the contingency plans formulated within the CDMP and attends workshops and practice drills arranged by the fire service and armed forces along with other external organizations. However, DNCC highlight gaps in DRR awareness and preparedness pointing to a lack of coordination between GoB levels and departments. Contingency plans are currently incomplete, being in place only for earthquakes and not for flood or fire. Moreover, there is a lack of knowledge dissemination between researchers and other stakeholders and uncertainties about how external organizations will act in the face of disaster. Dhaka's CCDMC are currently working with Oxfam to identify evacuation procedures and available facilities within the city. In revealing the absence of basic services, this work has highlighted the need to map the responsibilities of each government department. For example, land

development is under the permission of the capital development authority of Bangladesh, Rajdhani Unnayan Kartripakkha (RAJUK). As such, CCDMC indicate that DRR training must have a wider scope, reaching beyond the grasp of the central organisations involved. This will aid the integration of existing physical, social and economic vulnerabilities of Dhaka's residents into contingency plans. CCDMC will commence further DRR work with International NGO (INGO) Concern, in Mirpur next year.

2. Comprehensive Disaster Management Programme

The CDMP is a long-term, nationwide programme, under the MoDMR, that is being implemented in collaboration with relevant government agencies, United Nations organisations and NGOs in both urban and rural contexts. The programme is currently in Phase II, wherein it aims to enhance institutional and citizen capacity to reduce Bangladesh's vulnerability to adverse natural and anthropogenic hazards and extreme events. To support this, a forum for the communication of strategies for ground level DRR has been developed. In the urban context, hazards and stresses are understood to reside in water congestion, fire, water and sanitary health hazards, lack of open space and waste management. Focussing on Dhaka, Sylhet and Chittagong, the CDMP seeks to enhance urban development, through both hard and soft interventions. As such, contingency plans that incorporate awareness of the multitude of urban and natural hazards, have been developed for City Corporations to implement. The institutional capacity of Dhaka's City Corporations to prepare and respond to disasters in the urban context is enhanced through support received via the CDMP. In addition, urban disaster volunteer programs are being developed, and the capacity of urban communities being built through training programs.

3. The Urban Development Directorate (UDD)

The UDD is under the Ministry of Housing and Public Works. It is responsible for urban advice and planning in Bangladesh and, as such, is involved in the master planning of new cities. From 1984-2004, over 400 urban areas were designed by the UDD under funding from the UNDP and the World Bank. Though not directly linked to the GoB's institutional disaster management structure, UDD collaborate with a range of stakeholders, including the CDMP, UN-Habitat and Upazila Parishads to contribute to DRR initiatives.

For example, they have teamed with CDMP to implement a pilot project in Mymensingh. Moreover, they are involved in a DRR research project with the Asian Disaster Preparedness Centre within which they are preparing enhanced land use guidelines and training modules to appropriately plan for urban disasters. As part of this, they will arrange a DRR and CCA workshop and seminar with concerned authorities. The UDD employs a participatory and bottom-up approach for DRR initiatives yet they highlighted gaps in citizen capacity building, technical support and financial decentralization. Internally, the UDD experience problems in terms of duplication of planning, limited funding, a lack of man-power and expertise and gaining project approvals.

ACADEMIA

Academia plays a key role in urban DRR interventions in terms of knowledge generation and knowledge management. Related research centres on earthquakes, floods and fires. Resulting outputs contribute to policy advocacy and publications for wider dissemination. In addition, academic institutions provide consultancy services for urban planning, development and management and collaborate with various organisations to achieve shared goals. In Dhaka, various academic institutions contribute to these aims. These include the Bangladesh Institute of Planners (BIP), the Centre for Urban Studies (CUS), and institutions within the Bangladesh University of Engineering and Technology (BUET), including the Japan Institute of Disaster Prevention and Urban Safety (JIDPUS) and the Earthquake Preparedness Centre (EPC).

1. The Bangladesh Institute of Planners

The BIP work towards ensuring quality physical planning nationwide by organizing seminars and workshops, producing publications and reports, bringing together associated stakeholders and advising policy makers. In terms of DRR, BIP have provided advice for national disaster policy, collaborating with governmental bodies to inform decision making. For example, they have made suggestions for national construction guidelines and building codes. These are authorized and implemented by RAJUK. The Bangladesh National Building Code, 2006, guides construction nationwide, whilst urban planning in Dhaka is directed by the Dhaka Mohanagar Building Construction Act of 2008. Whilst these attempt to address urban disasters, they have been described to somewhat neglect earthquake preparedness (Wahra, 2012). Members of BIP are actively involved in knowledge forums, offering a planning perspective for DRR issues. Their main focus is on earthquakes and fires. They do not contribute to flood and waterlogging in acknowledgement that other relevant bodies, such as the Institute for Water Modelling, take on this responsibility.

2. The Centre for Urban Studies

CUS is an independent research and training organization that focuses on urban planning and development issues. The organisation initiates, promotes, sponsors and organizes scientific research and disseminates the knowledge acquired through conferences, workshops and publications. In addition, CUS provides training and consultancy services for urban and regional studies, planning, and development and management. These objectives are pursued through activities, such as research, training, seminars, conferences, dialogues, advocacy, consultancy, exhibitions, field studies, urban information and data services and publications. CUS have an information and data cell that assists urban and regional researchers and other interested individuals or organizations. In relation to urban vulnerability, CUS examined demographic patterns, socio-economic conditions, and access to different services in the urban areas of Bangladesh. In addition, research has analysed rural to urban migration patterns. As such, CUS can contribute to a deeper understanding of the physical, social and economic vulnerabilities that exacerbate the risks posed by urban hazards.

3. The Earthquake Preparedness Centre

The EPC focusses largely on the technical issues of earthquake preparedness. They have worked with the World Bank on Central American Probabilistic Risk Assessment (CAPRA) tools for Multi-Hazard Risk and Vulnerability Assessment (MRVA). Within Bangladesh, they provide a knowledge base for others working towards DRR, and have developed a database that compiles relevant demographic and household level information. Collaborating across stakeholders, they share such information with CDMP and discuss earthquake preparedness strategies with NGOs such as ActionAid, Plan International Bangladesh, Save the Children and Islamic Relief. However, they note a lack of coordination between the various stakeholders with which they work, in terms of providing open access to the research generated for local-level implementation.

4. The Institute of Water Modelling

The IWM uses modelling tools to investigate water issues in Bangladesh, such as flood forecasting and control, irrigation and drainage, salinity, environmental impacts and related infrastructural requirements. The IWM seeks to improve the integrated management of water resources in Bangladesh. They work with government agencies, donor agencies, international NGOs, individual researchers, climate scientists and university professors to investigate urban and rural water management. They also contribute to planning and policy for national and regional water issues. In 2006, IWM worked in collaboration with the Water Supply and Sewerage Authority (WASA) to create a detailed drainage plan for Dhaka. Collaboration between WASA and RAJUK has seen the installation of both open drains and underground drains to carry household waste to canals (Wahra, 2012). More recently, IWM have been working on a project for the Department of Public Health Engineering (DPHE), conducting some studies and assessments for the country's water supply, drainage systems and waste management. The master plan for Dhaka's system was being produced at the time of research. The final product of this research will assist national planning in preparing for urban flooding. In addition, the team is investigating possible options for adapting to increases in urban floods.

5. The Japan Institute of Disaster Prevention and Urban Safety

The JIDPUS institute at BUET was established in July 2011 in order to fulfill the urgent need for active research and education support in the field of disaster prevention and urban safety in Bangladesh. Their research relates primarily to earthquakes, with some focus on fires. Of the 34 seismic devices in Bangladesh, installed to monitor earthquakes and the "geo-vibration" of the earth, the JIDPUS owns six. which are used to aid their research. The JIDPUS is working to strengthen the capacity of professionals in Bangladesh in the field of DRR, with a particular emphasis on seismic and urban hazards, and have advised upon national disaster policies, national building construction codes and urban planning. Through collaboration with BUET's Civil Engineering Department they are planning a project to monitor structural resilience to earthquakes in Dhaka's buildings.

NON-GOVERNMENTAL ORGANIZATIONS

NGOs can provide a valuable source of knowledge, particularly with relation to vulnerable communities. They tend to work directly with communities, and can therefore provide comprehensive assessments of their social, physical and economic vulnerabilities. As such, NGOs can assist in assessing the risk exposure of urban communities. They give a vocal representation of the communities with whom they interact and create a platform for community-level policy advocacy.

This research investigated the initiatives of three consortia: the National Alliance for Risk Reduction and Response Initiatives (NARRI), the Emergency Capacity Building (ECB) Project and Action Research for Community Adaptation in Bangladesh (ARCAB). Each consortium brings together a multiple NGOs to work together towards shared DRR and CCA interests. It is worth noting that, whilst many NGOs in Dhaka are beginning to work in collaboration with one another, each organisation also has its independent interests. This chapter first discusses the three consortiums, and then examines the DRR initiatives of individual NGOs, including those of Action Aid Bangladesh (AAB), Concern Worldwide (CWW), Dushtha Shasthya Kendra (DSK), Habitat for Humanity (HFH, Islamic Relief (IRW), Oxfam, Plan International Bangladesh, Save the Children (STC) and Swisscontact (SC).

Consortia

1. National Alliance for Risk Reduction and Response Initiatives

NARRI is a consortium formed with the support of the European Commission's Humanitarian Aid Department's Disaster Preparedness programme (DIPECHO). The consortium combines eight INGOs (Action Aid, Care, Concern Universal, Concern Worldwide, Islamic Relief Worldwide, Oxfam, Plan International Bangladesh, Solidarities International) to work together towards enhancing community resilience and encouraging

comprehensive disaster risk reduction among both communities and institutions (NARRI, 2013). NARRI forms cohesion between these INGOS and other DRR stakeholders, including local government and administration, and schools at both local and Upazila levels. The purpose of these efforts is to reduce disaster risk, enhance disaster preparedness and coordinate wider reaching emergency response, within vulnerable communities through strengthening relevant government institutions. Since the project's inception in 2010, it has contributed to enhancing community capacity to protect assets, livelihoods and lives against the increasing risks posed by climate change and disasters.

2. Emergency Capacity Building Project

The ECB Project ran for two phases and is now complete. The first phase was in operation from 2006-2008 and funded by the Bill and Melinda Gates Foundation and Microsoft Corporation. The second phase, from 2009-2013 was funded by the Bill and Melinda Gates Foundation, ECHO, DFID, USAID and several private donors. When operative, it aimed to improve the capacity of humanitarian organizations to achieve their aims (ECB, 2013). ECB brought together INGOs Care International, Catholic Relief Services, International Rescue Committee, Mercy Corps, Oxfam GB, Save the Children and World Vision International. It acknowledged that the increasing magnitude and complexity of disasters and humanitarian emergencies presents a major challenge to NGOs. As such, the project focused on three thematic areas including staff capacity, accountability and impact measurement, and DRR. In relation to DRR it encouraged members to share learning, challenges and experiences, explore models of risk reduction and build links with other relevant stakeholders. The outcomes of ECB, including the "Good and Enough" guide on accountability and the "Towards Resilience" guide on DRR and CCA integration, have aided improvement not only within this collaborative DRR project, but also within the additional projects of its members. As such, tools, resources and lesson learned are available to support future endeavors.

3. Action Research for Community Adaptation in Bangladesh

ARCAB is a long-term initiative operating in Bangladesh in order to create a comprehensive knowledge base for local action towards CCA and DRR

(ARCAB, n.d.). It began in 2010 with funding from DFID. One of their major research themes focuses on the urban context of Bangladesh. Research contributions come from a consortium of academic and research institutes, whilst local action strategies are implemented by INGOs and their local partners. The INGOs include AAB, Water Aid, Practical Action, STC, PLAN, Care, Oxfam, IRW, Concern, Christian Aid and Caritas. Though not all are involved in urban DRR projects, all contribute to the general CCA knowledge base of ARCAB.

Non-Governmental Organisations

1. Action Aid Bangladesh

AAB works towards disaster preparedness and emergency response. They collaborate with local government, municipality level public representatives, the Comprehensive Disaster Management Programme (CDMP) and the Department of Disaster Management (DDM) throughout their work in order to reduce the perceived DRR challenges presented by unplanned urban growth and governmental centralisation. They are currently implementing an eighteen month urban DRR project as part of the Disaster Preparedness programme with the European Commission's Humanitarian Aid and Civil Protection Directorate General. Within this, they employ a school-based disaster preparedness model through which they mobilize government training within Dhaka's schools twice annually. They aim to strengthen existing institutions through ward level interventions, awareness campaigns, first aid training and legal training on the Disaster Risk Management Act and Plan, and on the SOD. They work on strengthening linkages among all relevant stakeholders involved with disaster preparedness through Community Risk Assessment, Risk Reduction Action Plans, Early Warning Systems and school drills.

2. Concern Worldwide

Concern Worldwide aim to significantly reduce extreme poverty by working directly with poor communities to improve livelihoods and influence decisions made at local, national and international levels. They currently

work in four main areas in Bangladesh, which are Livelihood, Health and Nutrition, Education, and DRR and CCA. CWW are integrating CCA and DRR into their central interventions and their ultimate focus in urban contexts remains on poverty alleviation. In Dhaka, waterlogging, flood, fire, waste management, air pollution, and a lack of clean water supply were noted as the most critical hazards.

3. Dushtha Shasthya Kendra

Dushtha Shasthya Kendra (DSK) is a national development NGO based in Dhaka. It was established in response to the extensive floods of 1988. The main aim of DSK is to develop a self-sustainable health delivery system for the poor. They focus on micro-credit, health services, Water, Sanitation, and Hygiene Promotion (WASH) projects, livelihoods projects, education and training, around the country. They have worked with a range of organizations on community disaster management projects. Urban DRR is a recent focus, primarily centered on fire incidents and flood. In response to severe losses as a result of fire accidents in Dhaka's urban slums in fire incidences, DSK implement DRR awareness raising sessions for slum residents. This training focuses on eviction, fire incidences, and flood and waterlogging in urban slums. Under their Shiree project they provide emergency packages of rice, dhal, oil, and water, to those affected by disaster events. This project has 25,000 benefices in Kamrangi Chor, Shikder Medical, Korail, Beribad, Nobodoi housing units in Dhaka. They have experienced challenges in beneficiary preference for financial support over services, lack of connection with their beneficiaries and in spreading knowledge about disaster management. As such, DSK identify the need for improvement in training and services and in proper utilization and application of available knowledge.

4. Habitat for Humanity

HFH is an international housing organization who actively advocate for universal housing security in order to secure community, environmental and health benefits. Their local-level initiatives are supported through appropriate technology and resources. HFH implement programs in Disaster Mitigation and Disaster Response. Their urban programing in Dhaka's Mirpur Bihari slum has begun on a pilot basis. They have completed a hazard assessment and are mapping community development for future

project planning. They will monitor development and water and sanitation issues via community groups and strive to improve the waste disposal systems and housing conditions. In recognition of the importance of organizational collaboration, HFH Bangladesh intends to identify potential partners to address further issues of development, such as education, health and economy. As such, they aim to achieve a more comprehensive development approach, which will enhance DRR efforts.

5. Islamic Relief Worldwide

IRW seeks to empower the communities within which they work and promote sustainable economic and social development by addressing poverty, illiteracy and disease. IRW works with local communities in emergency response and development programs, addressing child rights, gender, water and sanitation, education, sustainable livelihoods and DRR. IRW is currently implementing a DRR project in Sylhet, which aims to institutionalize current community practices. They plan to implement similar initiatives in Dhaka and are adapting community risk assessment methods to tailor an urban risk assessment strategy. The main focuses of their urban DRR project are fire and earthquake, including training on earthquake resilience and landslides. Additionally, they are working with the government to organise and train 60,000 response volunteers nationwide. They work in collaboration with the Fire Service Department, Red Crescent Society, BUET and CDMP, and their technical partners include Action Research for Community Adaptation in Bangladesh (ARCAB), BCAS and BRAC University.

6. Oxfam

Oxfam facilitates interaction between a wide range of partners including civil society organizations, NGOs, media organizations, foreign and local universities, private sector companies and different levels of government. Their four areas of focus are in gender justice, education, secure livelihoods and humanitarian response. Oxfam currently conducts DRR in the urban context of Sylhet and will begin their work in Dhaka next year, as part of the NAARI initiative. In preparation for this they have constructed an institutional relationship with Dhaka North City Corporation, and plan to establish a WASH project in support of the city corporation's endeavours.

They seek to institutionalize their project efforts to ensure their wide spread use and as such have had a community-based disaster preparedness model for urban areas approved by the DDM. Oxfam is integrating this approach into in all of their projects to bridge the gap between the government and the community.

7. Plan International Bangladesh

Plan International Bangladesh supports disadvantaged children and their families so that they can become active citizens in their communities and society. They encourage democratic community organizations, advocating for positive social change and helping children to become active leaders in their communities. Plan International Bangladesh has started its urban DRR program in Dhaka city with support from ECHO under DIPECHO action plan-V & VI for South Asia starting from 2009 to 2012. Currently Plan International Bangladesh is implementing another three year (up to 2015) DRR and CCA program in five wards under Dhaka City Corporation with an aim to build safe and resilient communities in which children and young people contribute to managing and reducing the disaster risks. Major outcomes of this program are (i) increase awareness and capacity of children, youth and communities on disasters, so that they can facilitate the child-centered disaster risk reduction and climate change adaptation process (ii) develop and implement locally appropriate climate smart solutions that incorporate and demonstrate the child-centered climate change model, and (iii) advocate for the inclusion of good practices and learning from the program approach at local, national and regional processes. On the other hand, a consultant from the International Institute for Environment and Development (IIED) conducted a scoping assessment on urban DRR for Plan. Findings from this study will be used for Plan's future DRR initiatives as well as advocacy.

8. Save the Children

STC focuses on resilience in livelihood, health and nutrition interventions through capacity building with children, community and local government officials, small-scale theatre for development, workshops, and development of action plans. They work with children, communities, like-minded NGOs and local government agencies such as the departments of agriculture,

livestock and health to conduct DRR interventions around the country. In working with children, they experience challenges in convincing adult stakeholders about the potential contribution of youth in local-level risk reduction and adaptation. STC identify urban hazards of waterlogging due to poor drainage systems, population pressure and over-crowding and increased air pollution. They further identify a need for strong political commitment to DRR and CCA plans, highlighting a lack of ward-level disaster management committees, and an absence of DRR and CCA issues in educational curriculum. Moreover, they acknowledge that civil society engagement in environmental protection remains an unaddressed concern. STC address these issues by raising citizen awareness and encouraging appropriate urban governance. They initiate advocacy in order to build consensus among like-minded organizations, developing strategies to work together and to integrate DRR into the development agenda. They place emphasis on collaborating with like-minded organizations to address challenges inherent to their work.

9. Swisscontact, the Swiss Foundation for Technical Cooperation

Swisscontact (SC) is an international NGO collaborating with multiple public and private partners. They seek to address social and economic vulnerabilities by working with local NGOs and communities on market development, vocational training, financial services and resource efficiency. Whilst they do not focus directly on DRR, their projects on resources efficiency include clean air, energy-efficient production and solid waste management. SC identified solid waste dumping as a main cause of waterlogging, surface water pollution and floods, and thus as one of Dhaka's major environmental stress factors. In Dhaka SC has a waste management project which they developed on the basis of a successful solid waste management project in Bolivia. At the moment they are implementing different approaches in Gulshan (Baridhara residential area) and Mirpur (Bhashantek and Bounianbandh slum areas).

UNITED NATIONS ORGANISATIONS

The UN channel support for national regional and local level efforts of DRR and CCA through their country assistance development frameworks (UNISDR, 2013). Their various agencies assist in such ways as implementing early warning systems, building governance capacity and integrating disaster management into their other areas of focus, including health and education. This support involves collaboration with other organisations working towards urban DRR. In Dhaka various UN agencies are implementing DRR initiatives. The objectives of the United Nations Development Program, the United Nations Children's Programme and the United Nations World Food Programme are summarised here.

1. The United Nations Development Programme

In acknowledgement of the relevance of DRR to climate change, the UNDP has started to engage with this theme at different degrees in various mediums throughout Bangladesh. Many programmes focus on rural areas, though there are also urban initiatives. Most significantly, the UNDP has collaborated with the MoDMR in instigating the CDMP. Through this, the UNDP is assisting one of the most important advances for Dhaka, which is the inclusion of all ministries, government departments, planning and budgeting processes in DRR regulations. Ultimately, the UNDP aims to strengthen national capacity to risks, response and recovery efforts through ensuring efficient and appropriate governance (UNDP, 2010).

2. The United Nations Children's Fund

In recognition of children's vulnerability in Bangladesh, UNICEF addresses challenges of protection, health and education for children. In addition to the main programmes addressing these challenges, they are also starting to integrate some DRR initiatives into their work. In collaboration with government bodies, NGOs and CBOs, UNICEF has supported emergency and disaster risk reduction approaches that build the capacity of local communities to mitigate the impact of natural disasters by demanding

improved public services, such as WASH facilities (UNICEF, 2013). At the national level, they sought advice from GoB's Humanitarian Coordination Task Team to coordinate with other organisations in order to address DRR efficiently and comprehensively. Long-term agreements with twelve divisional and district level NGOs have allowed extension to sub-national levels. Their Education in Emergencies and Post-Crisis Transition programme in collaboration with STC, is a 5 year programme that provides comprehensive instruction on disaster risk reduction to teach students and teachers how to stay safe during emergencies (Niles, 2011). The lessons from this programme are detailed in 'Tuni's Rooster', published by UNICEF and STC. In Dhaka's urban context they are involved in WASH projects in slum areas (Francis, 2011) and implementing swimming lessons for children in an effort to decrease child mortality from drowning (Rashid, 2013).

3. United Nations World Food Program

The UNWFP's main focus is on food security and nutrition. As such, the policies governing the use of World Food Programme food aid must be oriented towards the objective of eradicating hunger and poverty. They have three programs, including a school feeding program, a resilience enhancement program and their Vulnerable Group Development program, in collaboration with GoB. In addition they run a program called Immunization Mothers and Child Health. Their main DRR interventions are in rural areas. However, in 2006, UNWFP also completed a survey in Bangladesh's urban slums to find out the food security status of three urban areas: Dhaka, Barishal and Sirajgong, to inform targeted interventions for those unable to produce or obtain enough food to ensure an active and healthy life.

GAPS IN URBAN DRR

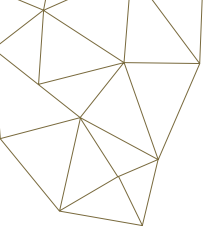
The urban DRR gaps identified by academic and NGO institutions are summarized in Table 5. In particular, gaps have been identified in the areas of hazard awareness, urban planning, knowledge and awareness, training and capacity, collaboration and coordination, policy and governance, and urban services. These issues are intertwined with one another: improvement in one area is likely to achieve improvement in another. The research conducted in this study has further illuminated these issues.

These seven central areas for attention identified by the academic and NGO community highlight the perceived barriers to achieving effective urban DRR and CCA and are themselves an indication of gaps in the institutional landscape. Hazard & Risk assessment needs to be more thorough and focused in order to appropriately prepare for disaster risks. In addition, urban planning needs to integrate DRR and CCA, and account for in-migration so as to decrease the level of unplanned development. Knowledge and awareness need to be strengthened through use of an effective knowledge platform that can be accessed by all stakeholders to ensure fully informed policy and planning and allow increased citizen awareness. Capacity building and training need to be enhanced both for institutional level personnel and for citizens. This should include practice drills for emergency response, which are currently lacking. Collaboration and coordination need to be improved both within and between institutions, including the private sector. This will help to increase capacity and decrease tension and conflict. Policy should address urban planning and seek long-term aims. Moreover, appropriate enforcement of policies in tandem with correct conduct will reduce tensions and enhance focus on DRR. Finally, urban services should be improved, with an emphasis on installation and maintenance of infrastructure and improved slum services and contingency plans to mitigate the risks. The DRR and CCA community can achieve a comprehensive approach to reducing the risk of hazards in Dhaka by addressing these barriers. However, these should not be considered in isolation. In fact, these issues are complexly intertwined. As such, they need to be addressed in unison through collaborative efforts, which are focused, yet widespread.

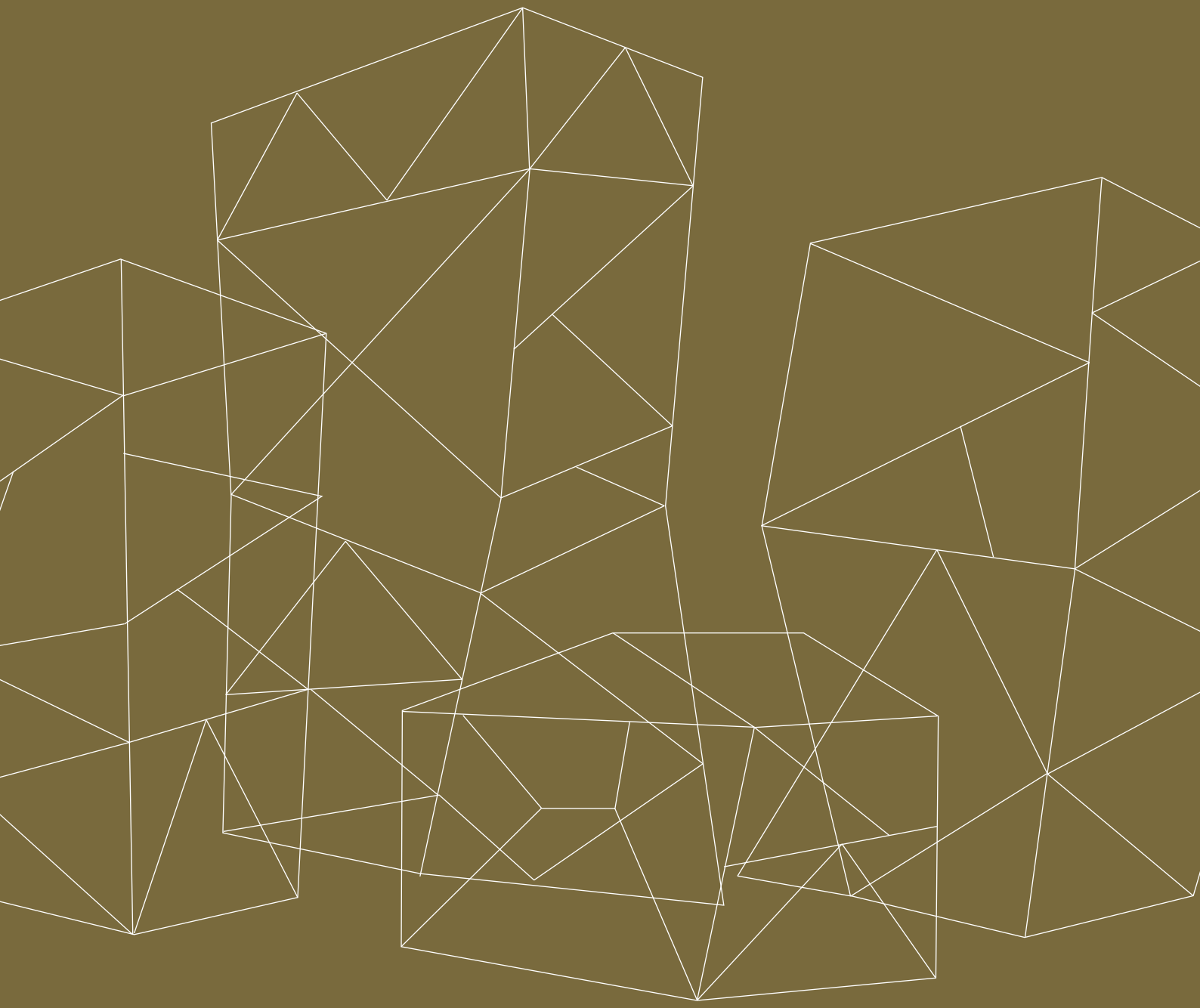
Table 5

Gaps in DRR and CCA Identified by Academic and NGO Representatives

Category	Identified Gaps by Academia	Identified Gaps by NGOs
Hazard Assessment	There is a serious gap in the identification of hazards in urban areas - hazards should be identified on a zonal basis rather than generalized.	Citizen level hazard assessment in the context of urbanization is undermined by a lack of awareness of urban hazards.
Urban Planning	DRR and CCA are not considered in urban planning and development. Urban planning needs to incorporate the risks presented by disasters.	Much urban development is unplanned leading to poor and improper use of land, exacerbated by high rates of in-migration that are not accounted for in planning.
Knowledge and Awareness	Policy decisions and urban planning are based on insufficient knowledge, hence a knowledge management and sharing platform for urban issues is needed at the organizational level, to be shared by all stakeholders. Awareness among urban citizens needs to be enhanced.	The quality of existing data needs to be improved and shared more frequently. Moreover, there is a lack of social awareness issues amongst urban citizens.
Training and Capacity Building	Training and capacity building for the implementation of the SOD is required for government officials and other relevant personnel. There is a lack of training or mock drills for emergency response during disasters.	There is a lack of capacity at multiple levels, which requires institutional capacity building and training.
Collaboration and coordination	There is a lack of collaboration among stakeholders, including little involvement from the private sector, a lack of coordination among government agencies, and disconnect between government planning and national policies.	Capacity is reduced through a lack of coordination among government agencies, and between private companies and NGOs. This lack of coordination is understood to extend to conflict among some officials and bureaucrats.
Policy and Governance	There is no policy for urban planning and no long-term visionary plan in the urban setting. Governance issues include a lack of policy, guideline and rule enforcement.	There is a poor allocation of resources at the policy level. Implementation of policies within vulnerable communities is poorly conducted and there is a lack of law enforcement, codes and regulations. Behaviors and attitudes among leaders and policy makers are problematic and include a lack of urgency and neglect of appropriate conduct. Resultant tension reinforces governance problems and complex power distributions focus attention away from DRR.
Urban Services	Infrastructure needs to be improved to prepare adequately for disasters.	Urban slum services are inadequate and contingency plans are non-existent. There is no regular operation and maintenance of existing infrastructures and drainage systems are insufficient.



PART 3
WORLD VISION'S **WORK**



World Vision is a Christian humanitarian relief and development organization, working in around 100 countries across the globe. They aim for universal child protection, care and access to opportunity for the world's children. World Vision work towards achieving this goal by strengthening the lives of children and the communities that they live in. To do this, they encourage cohesion in families, environmental preservation and security for the most vulnerable. They suggest that the happiness and wellbeing of all children can indicate the measure of society's wealth and success.

World Vision has a history of work in Bangladesh. Their initial involvement in the country began in 1970, when a tidal surge severely affected Bangladesh's coastal areas. World Vision responded to this disaster by providing relief to those affected. In 1972, they began work in greater Mymensingh district, 122km north of Dhaka, helping to rebuild the war-torn country. These initial projects concentrated mainly on relief and rehabilitation. Following this, World Vision's programs expanded into child-focused activities that endeavored to provide direct assistance to the needy children of Bangladesh.

World Vision's country strategy for 2009-2013 aims for the transformational development of communities through changing the social-economic landscape. Furthermore, it seeks to empower communities to be resilient to natural disasters through working in 73 ADPs that serve around 4 million people in 30 districts (World Vision Bangladesh, 2012).

The organization began its work in urban areas in 1989, when they initiated a Family Development Project (FDP) in Mohammadpur. The FDP was expanded and implemented within twelve communities in Dhaka. It addressed education, health, economic development, agriculture, environment and spiritual development. Today, World Vision operates in six urban ADPs, three of which are in Dhaka (see Table 6). In addition, World Vision has an ULS in Mirpur.

Table 6

Date of Establishment and Current Interventions of World Vision ADPs in Dhaka

ADP	Start Date	Interventions	Special Project
Dhaka Shishu	October 1997	Education, Health, Economic Development	Urban Value Chain
Kamlapur	October 1999	Education, Health, Economic Development	N/A
Dhaka East	April 2009	Education, Health	Pollution Mitigation

INTERVENTIONS

In their Summary of National Strategy 2013-2017, World Vision Bangladesh outline six areas of impact as a result of their interventions. These are summarized in Table 7. In implementing these objectives, World Vision Bangladesh works with households and individuals to address community issues. Children are sponsored individually. Such Registered Children (RCs) are selected based on certain criteria including income, social stability, land tenure and physical condition. World Vision supports these children through providing tuition payments, books and clothes. Moreover, this sponsorship management program helps to develop leadership qualities amongst children. Though RCs are the primary point of contact and the direct beneficiaries, World Vision's initiatives expand from the RCs to the wider community. The beneficiaries that are assisted vary dependent on the specific project being implemented. In addition to this direct work, World Vision work in advocacy to ensure that their beneficiaries are provided with appropriate government services to suit their need.

Table 7

World Vision Bangladesh Impact Areas 2013-2017

	Impact	Special Project
World Vision Initiatives	Improve the health status of mothers and children	• Improve the nutritional status of pregnant and lactating mothers and children under five • Increase access to safe, potable water and practice of proper hygiene & sanitation • Improve proper community health related practices with an emphasis on behavior change
	Improve access to, and quality in, education	• Improve cognitive and psycho-social development of pre-school age children. • Enhance access and quality of primary and secondary education (age 16) • Create education opportunities for out of school children.
	Ensure children are protected and cared for	• Uphold the rights of children to protection from physical and emotional harm. • Ensure a child's right to participation in decision making and provisions guaranteed by the State. • Improve living conditions and access to basic services for street children and other children in difficult circumstances.
	Create economic opportunities for the poor	• Increase income and economic resilience for poor households. • Increase the value of economic assets of the community and promote a viable business, entrepreneurial development. • Empower women to access markets, opportunities for employment and equal wage.
	Address urban poverty	• Enhance education and skills training opportunities for vulnerable urban children. • Enhance basic living conditions in the poorest urban areas. • Strengthen the capacity of urban poor communities to defend their basic rights and access services.
	Respond to disasters and the impact of climate change	• Engage in timely relief, recovery and rehabilitation in the event of disaster. • Improve community-based disaster management and risk reduction • Increase community and household resilience to shocks and disasters including adaptation to climate change

URBAN INTERVENTIONS IN DHAKA

Though World Vision has had programmes operating in urban areas for many years, there has been little distinction between areas of application. As such, their interventions have largely involved applying rural programmes in urban areas. They now seek to design programmes specifically for urban areas, consciously planning for the urban context. The geographical scope and associated interventions in the ULS and three ADPs within which World Vision operate in Dhaka are summarized in Table 8.

Table 8

Current Interventions of World Vision ADPs in Dhaka

ULS / ADPs	Geographical Scope	INTERVENTIONS					
		Health	Education	Child Protection	Economic Development	Urban Poverty	DRR
Kamalapur ADP	Kamalapur	Awareness and training; WASH	Formal and informal school programme	Sponsorship	IGA training; leadership training	Education; awareness and training	Awareness and training, emergency response
Dhaka East ADP	Badda	Awareness and training; WASH; pollution mitigation	Formal and informal school programme	Sponsorship	N/A	Education; awareness and training	Awareness and training
Dhaka Shishu ADP	Mohammadpur	Awareness and training; WASH	Formal and informal school programme	Sponsorship	Micro credit and saving scheme	Education; awareness and training	Awareness and training
Mirpur ULS	Mirpur	Awareness and training; WASH	Formal and informal school programme	Sponsorship	N/A	Education; awareness and training	Awareness and training

World Vision addresses the vulnerabilities of slum residents through implementing education improvement and WASH programs. World Vision actively campaign for improvements in education quality. Alongside this, they organize student and community awareness programs, science fairs, field trips and art competitions, which are hosted every couple of months in each school. In the case of Rotno-Gorva Farida Zaman School in Badda ADP, the school themselves have begun to carry out these sessions more regularly. Awareness training has much focus on WASH and waste management. A child to child approach is adopted with the aim of ensuring wider dispersal of information throughout the community. In addition, World Vision has contributed towards physical urban changes relating to these issues. For example, they have worked with the WASH and Waste Management Committee in Duaripara slum in Mirpur to construct a road over an open drain. This has helped to reduce vulnerability to water-borne diseases in the area.

The Pollution Mitigation Project being implemented in Dhaka East ADP is a specially funded project. The objective of this project is increase community awareness of environmental pollution. Workshops, seminars and meetings bring community stakeholders together in order to enhance the capacity of community and government members to tackle environmental issues. This is primarily done through training sessions conducted by World Vision. The local development committee contributes to these sessions and informs the Union Parishad about certain environmental problems, such as open drains and sewerage lines that spread diseases such as jaundice, cholera among children. Alongside these training programs, the Pollution Mitigation Project seeks to support the community by providing financial help and solving environmental problems directly. The project is planned to be sustainable in the long term. Once World Vision has initiated the work, the local community will ensure it continues.

In addition to this, World Vision have started a "green school" movement within which teachers and school management committee members are trained about environmental issues for dissemination to school pupils and parents. The movement seeks to enhance current school curriculums by incorporating environmental knowledge, safety issues and disaster education.

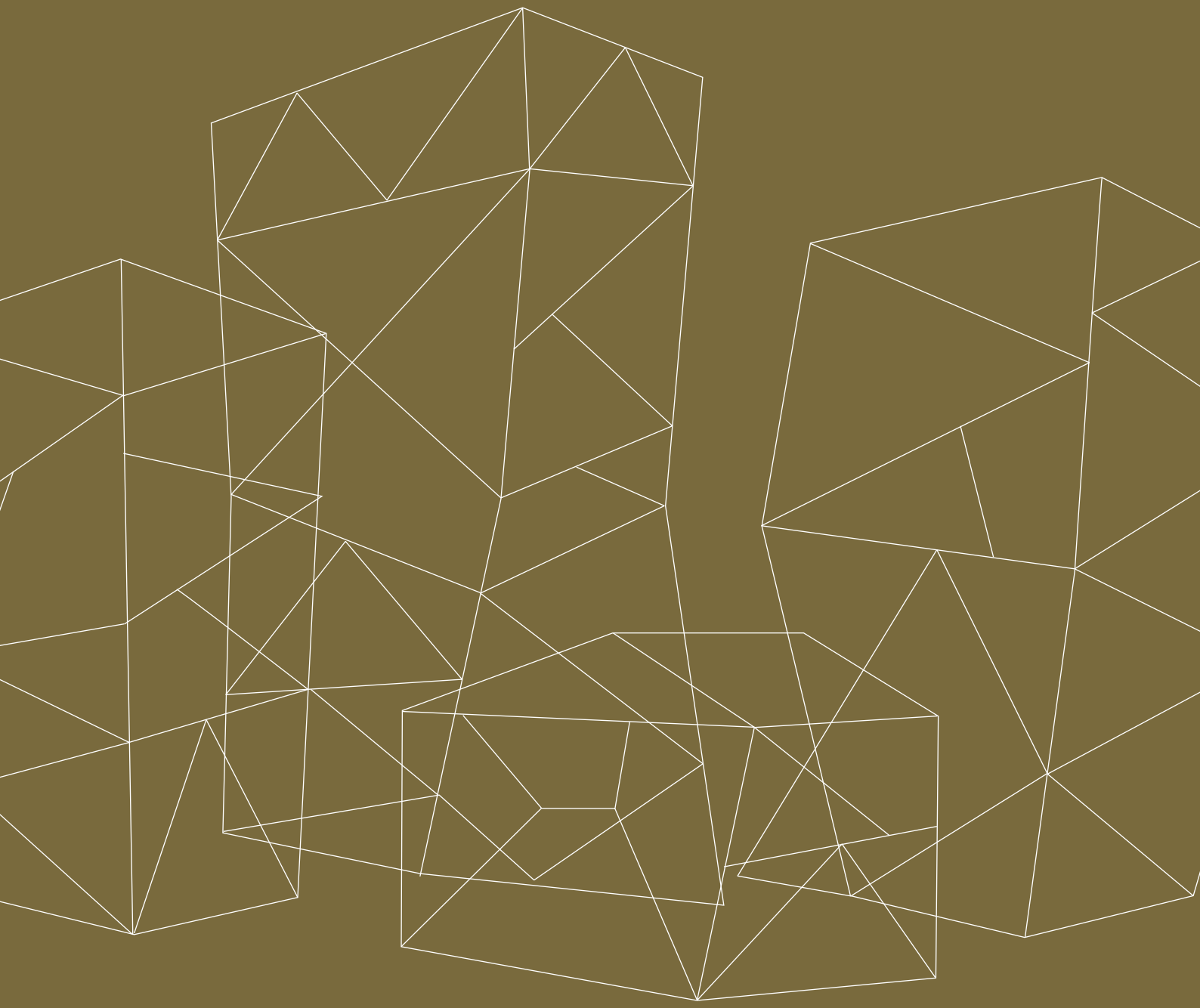
Teachers reported the formation of environmental development groups that host events led by experts in the field. These raise awareness about environmental pollution and possible disasters, and how these issues can be addressed. Students are also taught about safety in the event of an earthquake or house fire. For example, fire hazards awareness has been taught in schools in Kamalapur and Dhaka Shishu ADPs. Teachers explained that the children are interested in learning about these issues and often shocked to learn how vulnerable they are to environmental disasters. Training sessions increase the children's confidence and understanding of how to protect themselves against hazards. In order to address a lack of awareness amongst parents, children are told to share their knowledge with their families. Moreover, the teachers who attend these events disseminate the knowledge acquired with other schools in the local area.

Though initiatives have been well received, research within Dhaka's slum areas has highlighted some gaps and challenges. Teachers indicated that the environmental seminars focused on environmental pollution much more than DRR and CCA. Climate change is a hard topic to discuss with younger children and therefore is not examined in depth. In addition, teachers highlighted the need for further awareness building about earthquakes, and practice drills for applying the training given. Whilst child to child knowledge dissemination was reported to be a success, teachers highlighted the need for raising awareness amongst the student's parents. They reported that parents can be reluctant to send their children to school, preferring them to work or help at home instead. As such, World Vision's initiatives can be limited by the context of the educational environments in which they work.

This limitation has also been experienced by World Vision ADP staff, who explained difficulties in implementing educational policies and securing facilities. Whilst they endeavor to adhere to government education structures, challenges arise when working with private schools that often reject the government structures. In agreement with teachers, World Vision staff suggest future training sessions and mock drills for the children, with the aim of enhancing awareness amongst both the students and the local community. This would be aided by providing schools with the materials to conduct their own DRR seminars and mock drills, in order to make it a regular practice.

World Vision's Humanitarian and Emergency Affairs (HEA) department are the central body for addressing urban DRR and CCA. As reflected by the teachers' experience, DRR activities currently represent a very small focus within urban programmes. World Vision initiatives include some hazard awareness and preparedness training involving environmental issues. However, these are part of wider reaching awareness activities rather than being specific to DRR or CCA. As part of the National Strategy 2013-2017, they seek to incorporate DRR, disaster preparedness and early warning into urban development issues. As such, they are beginning to view urban issues through a DRR lens.

PART 4
GAPS AND **OPPORTUNITIES** FOR PARTNERSHIPS



Gaps and Synergies in Existing Interventions

Whilst it is clear that much work is occurring in the context of DRR in Dhaka, the picture is fairly complex and incomplete. It is necessary to join up the dots in order that a comprehensive DRR approach is achieved. Based on the preceding sections of this landscape study, the matrix below summarizes the various stakeholder involvements in DRR activities in Dhaka. Activities are grouped according to pre-disaster, disaster and post-disaster stages, in order to analyze who contributes where. This enables identification of gaps and opportunities in the current disaster management landscape.

The matrix exemplifies that certain groups within the DRR community have specific areas of focus. The responsibility of knowledge generation is almost entirely under the academic community. Within this, certain organizations concentrate on individual research topics. For example, JIDPUS focus on earthquake research, whilst IWM focus on flood research and BIP on urban planning. Local-level awareness raising, capacity building and training activities are central to NGO initiatives. These primarily address urban vulnerabilities, though DRR and CCA are increasingly being incorporated. The GoB is ultimately responsible for formulating DRR policy. In slum areas, such policy is implemented by relevant NGOs and UN agencies, seeking to work within government structures. Attention to urban infrastructure is also often undertaken by these agencies. For example, HfH have a large focus on securing adequate housing, whilst Oxfam advocates for effective WASH facilities. However, both gaps and overlaps exist, highlighting opportunities for intervention and partnerships for World Vision and other urban DDR and CCA stakeholders.

Table 9

Matrix of Interventions (For interventions specific to particular hazards, E = Earthquake; Fi = Fire; Fl = Flood)

Stakeholder Category	Stakeholder	Specific Interventions			
		Pre-Disaster Stage		Disaster Stage	Post-Disaster Stage
		Prevention and Mitigation	Preparedness	Emergency Response	Recovery
Government	Dhaka City Corporation/ City Corporation Disaster Management Committee		Formulate action plan for disaster management Fi/E: Identify evacuation procedure and available facilities	Coordinate and implement disaster management activities undertaken by DCC departments	Coordinate and implement disaster management activities undertaken by DCC departments
	Institute of Water Modelling	Fl: Plan for water supply and drainage system, and for waste water management			
	Comprehensive Disaster Management Programme	E: Incorporate the internal fault line into urban planning	Develop contingency plans; develop urban disaster volunteer programs; build civil defense capacity E: Assess seismic risk plan		
Academia	The Japan Institute of Disaster Prevention and Urban Safety	Support research and education			
	Earthquake Preparedness Centre	E: Provide research knowledge for DRR stakeholders			

Table 9

Continuation

Stakeholder Category	Stakeholder	Specific Interventions			
		Pre-Disaster Stage		Disaster Stage	Post-Disaster Stage
		Prevention and Mitigation	Preparedness	Emergency Response	Recovery
Consortia	NAARI	Aid government, educational and NGO stakeholder collaboration			
	ECB	Aid NGO stakeholder collaboration			
	ARCAB	Aid academic and NGO stakeholder collaboration			
Non-Governmental Organizations	Action Aid Bangladesh		Mobilize government training; strengthen stakeholder linkages; strengthen existing institutions		
	Concern Worldwide	Mainstream DRR and CCA in livelihood, health, nutrition, and education			
	Dushtha Shasthya Kendra	Fi: Training on fire incidences	Fi: Training on fire incidences Fl: Training on flood and waterlogging		
	Home for Habitat	Fl: Improve community waste disposal systems	Fl/Fi: Upgrade housing conditions		
	Oxfam		Fl/Fi: Develop disaster-preparedness model Fl: Establish WASH programme		
	Save the Children	Raise citizen awareness	Raise citizen awareness		

Table 9

Continuation

Stakeholder Category	Stakeholder	Specific Interventions			
		Pre-Disaster Stage		Disaster Stage	Post-Disaster Stage
		Prevention and Mitigation	Preparedness	Emergency Response	Recovery
	Swisscontact	FI: Manage projects on resource efficiency and encourage improved solid waste management practices at individual and neighborhood level			
	World Vision	FI: Implement pollution mitigation project	FI: Implement a child led WASH+ program Train teachers on environmental issues; organize school programs		
UN Agencies	UNICEF	Build capacity to mitigate disaster impact through demanding public services FI: Implement WASH projects	Instruct children and teachers on DRR FI: Provide swimming lessons for children		

By grouping activities according to stage of disaster, these matrices illuminate clusters of focus on particular activities. The pre-disaster stage is currently the central area of operation, and there are no specific interventions for the disaster and post-disaster stages, perhaps due to the absence of a recent large-scale disaster brought about by natural hazards. Within the pre-disaster stage, disaster preparedness, particularly in the form of awareness raising, capacity building and disaster training appears to take precedence. There is also focus on the prevention and mitigation of disasters. This is primarily approached

through knowledge generation for planning and policy, and action towards reducing physical, social and economic vulnerabilities.

Many preparedness activities focus directly on increasing the capacity of institutions and communities to respond themselves. As such, emergency response activities will result from preparedness activities. In the event of a disaster, it is likely that many organizations will also contribute directly to emergency response. Long-term rehabilitation of communities after disaster events is crucial, yet was not indicated as a priority throughout this research. Slum residents are likely to suffer a multitude of adverse physical, social and economic impacts in the event of a disaster, which will have long-term consequences. Alongside these impacts, rehabilitation should address the psychological effects people suffer as a result of injuries, loss of family and friends, and damage and losses to assets and property. Hence, rehabilitation activities require planning in alignment with post-disaster assessments. As such, this is also something that will be reactive to the event of a disaster.

In the very long term, rehabilitation efforts feed back into development goals that seek to provide a stable environment for recipients. As such, the phases of intervention can be understood to be cyclical. Hence, it is apparent that the entire spectrum of disaster stages needs to be addressed in order to ensure a comprehensive DRR approach.

Opportunities for World Vision

It follows that there is huge scope for World Vision to work in multiple phases of the disaster management cycle. At the micro-scale there is much opportunity to work towards preparedness, mitigation, emergency response and recovery through institutional capacity building, community capacity building, regulatory enforcement, and relief and resource provision. At the macro-scale, these aspects of disaster management can be approached through knowledge generation, sharing and management, urban planning, government capacity building, policy and advocacy.

In addressing urban DRR and CCA issues, approaches can begin from the inside out. Firstly, internal institutional capacity can be addressed. This research has revealed that lack of knowledge on CCA and DRR is one of the major features affecting institutional capacity. The knowledge generated by academic institutions should be employed in order to ensure a deep comprehension of DRR and CCA. Simultaneously, the knowledge and experience of INGOs and their local-level counterparts, should be utilized to ensure thorough understanding of contextually specific risks, hazards and vulnerabilities. Second, World Vision can enhance their current initiatives through mainstreaming DDR and CCA into their six focus areas, integrating these focuses, rather than addressing them in isolation. Most obviously, World Vision's initiatives that address the vulnerabilities of urban slum dwellers can contribute to the pre-disaster phase, enhancing preparedness and mitigation of urban hazards within recipient communities. Moreover, existing preparedness operations for emergency response can be enhanced through more comprehensive mainstreaming of DRR and CCA into awareness and training sessions. By enhancing internal capacity and mainstreaming climate change issues, World Vision can utilize their existing field-level framework to initiate this new DRR focus. At the community level, World Vision's CBOs have the potential to act as a legacy after the project life cycle, contributing to sustainable prevention, mitigation, response and recovery in the long-term.

In order to address the gaps in urban DRR and CCA, it becomes clear that collaboration between organizations is another logical early step. There are a multitude of organizations working on DRR in Dhaka. The huge benefit of this is that there is a vast amount of information available to inform best approaches, identify the most vulnerable, and assist with policy and decision making. In addition to maximizing the expertise and resources available, collaboration can ensure widespread effectiveness of DRR initiatives through limiting repetition and overlaps, and avoiding gaps. These collaborations should be within the NGO community and beyond, with government departments and academic researchers. They could operate through regular discussions, meetings and reporting, enabling a flexible process in which projects and research guide each other, and reach out to government bodies for practical and political support.

Potential for Collaboration

The discussion that follows highlights potential partners for collaboration. Table 10 clarifies where there is potential for partnerships within World Vision's existing focus areas. By effectively leveraging and utilizing existing expertise and institutional structures, World Vision's existing work in Dhaka can be much more effective.

Table 10

Potential Collaborations within World Vision Impact Areas

WVB Focus Areas	Potential Partners		
	NGO		Other Institutions
Improve health status of mothers and children	Concern Worldwide Dushtha Shasthya Kendra Habitat for Humanity	Islamic Relief Worldwide Plan International Bangladesh Save the Children	UNICEF UNWFP
Improve access to, and quality in, education	Concern Worldwide Dushtha Shasthya Kendra Habitat for Humanity Islamic Relief Worldwide	Oxfam Plan International Bangladesh Save the Children	Ministry of Education UNICEF
Ensure children are protected and cared for	Islamic Relief Worldwide Plan International Bangladesh	Save the Children	UNICEF
Create economic opportunities for the poor	Concern Worldwide Dushtha Shasthya Kendra Habitat for Humanity Islamic Relief Worldwide	Oxfam Save the Children Swisscontact	n/a
Address urban poverty	Action Aid Concern Worldwide Dushtha Shasthya Kendra Habitat for Humanity	Islamic Relief Worldwide Oxfam Swisscontact	n/a
Respond to disasters and the impacts of	Action Aid Concern Worldwide		UNDP UNICEF
climate change	Dushtha Shasthya Kendra Habitat for Humanity Islamic Relief Worldwide Oxfam Save the Children		ARCAB NARRI CDMP CCDMC MoDMR

Table 11

Potential Collaborations to Strengthen World Vision Interventions on DRR

	Potential Partners	
	NGO	Other Institutions
Urban Hazards		
All Hazards	Action Aid Oxfam Save the Children	UNDP UNICEF CUS UDD CCDMC
Flood	Concern Worldwide Dushtha Shasthya Kendra Save the Children Swisscontact	IWM CDMP
Earthquakes	Islamic Relief Worldwide	JIDPUS EPC BIP
Fire	Concern Worldwide Dushtha Shasthya Kendra Habitat for Humanity	JIDPUS BIP CDMP
Urban Vulnerabilities		
Physical - Electricity	n/a	DCC
Physical - Water and Sanitation	Habitat for Humanity Oxfam Swisscontact	UNICEF IWM DCC
Social - Land Tenure	Habitat for Humanity	DCC
Institutional Capacity		
Government Capacity	Action Aid Islamic Relief Worldwide Oxfam Save the Children	UNDP UNICEF ARCAB NARRI IWM EPC UDD CDMP
Advocacy	Concern Worldwide Islamic Relief Worldwide Oxfam Plan International Bangladesh	UNWFP ARCAB NARRI IWM

Table 11 highlights those vulnerabilities identified in the report that are not directly addressed through World Vision's work. These include specific urban hazards, some physical and social vulnerabilities of slum residents and institutional weaknesses in governance and policy. The organizations that address these urban vulnerabilities in Dhaka are also indicated, providing guidance for initiating partnerships.

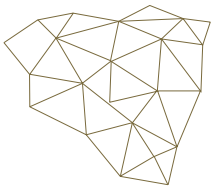
Table 12

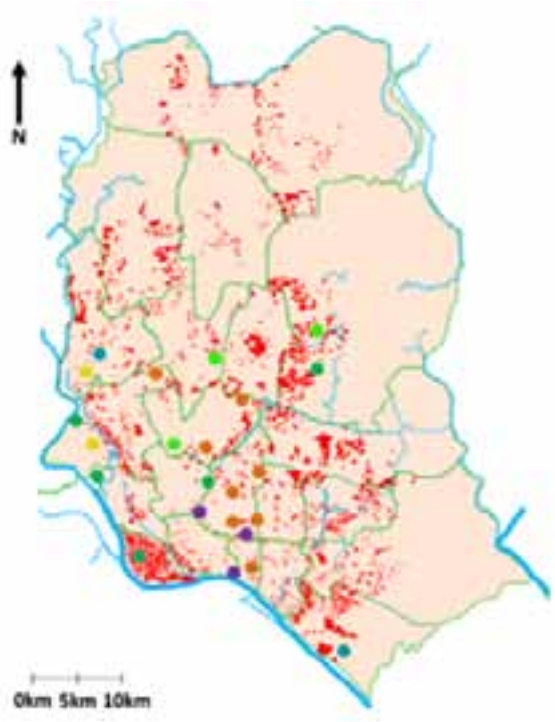
Dhaka Field Site Location of Featured NGOs

NGO	Field Site Locations
Action Aid Bangladesh	Kotwali, Ramna, Sutrapur
Concern Worldwide	Ananda Bazar, Green Road, Karwan Bazar, Kamalapur, Mirpur, Mouchak, Paltan, Sadarghat
Dushtha Shasthya Kendra	Beribad, Karail, Kamrangirchar, Nobodoi, Shabagh, Shikder
Habitat for Humanity	Mirpur Bihari
Islamic Relief Worldwide	No project sites in Dhaka but some collaboration with DNCC
Oxfam	Projects still to be implemented
Plan International Bangladesh	Ward # 45, 46, 47, 49 and 54 under Dhaka South City Corporation
Save the Children	Mirpur, Mohammadpur
Swisscontact	Baridhara, Bhashantek, Bounibandh

Figure 10

Dhaka Field Site Location of Featured NGOs





Key

Action Aid bangladesh
Dushtha Shasthya Kendra
Save the Children
Concern Worldwide
Habitat for Humanity
Swisscontact

Collaborations could include a range of activities from combined local-level interventions and projects, to knowledge sharing between organizations,

to policy and advocacy at the national level. The most obvious potential for collaboration lies with other NGOs operating in Dhaka. Table 12 indicates the specific field sites of the NGOs featured in this report, clearly illuminating geographical overlaps with World Vision at the local-level.

Current collaborations, for example those consolidated through the consortia discussed in this report, indicate an institutional willingness to form partnerships. In Dhaka, there is much potential for World Vision to form partnerships with organizations that have shared aims and work in the same locations of the city.

World Vision's child-centered approach is matched by the work of some other organizations examined here. Save the Children's work with children in DRR focuses on raising disaster and climate awareness. UNICEF also prioritizes children in its work. They integrate DRR into the child protection, health, education and capacity building projects that they are coordinating. Plan is currently involved in a scoping assessment to inform its child-focused DRR and CCA work in Dhaka. In working together, the challenges faced in taking a child-focused approach to DRR can be better addressed. These include the dissemination of critical knowledge from recipient children to the wider community, and in convincing the wider community of youth potential. In taking a school-based approach, difficulties have also been highlighted in the specific educational context within which initiatives are being implemented and in the challenge of incorporating DRR into school curriculums. As organizations that already have experience of working with children in the field of disaster management, the institutions highlighted here can provide learning experiences that could be pivotal to an effective project approach.

Collaboration with such organizations can also serve to address the urban vulnerabilities that exacerbate exposure to disaster risk. Reducing physical, social and economic vulnerabilities through securing improved housing conditions, access to better services, social security, good health and secure livelihoods, can help to mitigate and prevent disaster. A partnership with Habitat for Humanity could assist in addressing the physical vulnerability of housing, whilst a joint venture with Swisscontact in World Vision's project intervention areas could help to improve the solid waste management, waterlogging and surface water pollution issues of communities, as well as the incomes of community members who are employed in recycling activities.

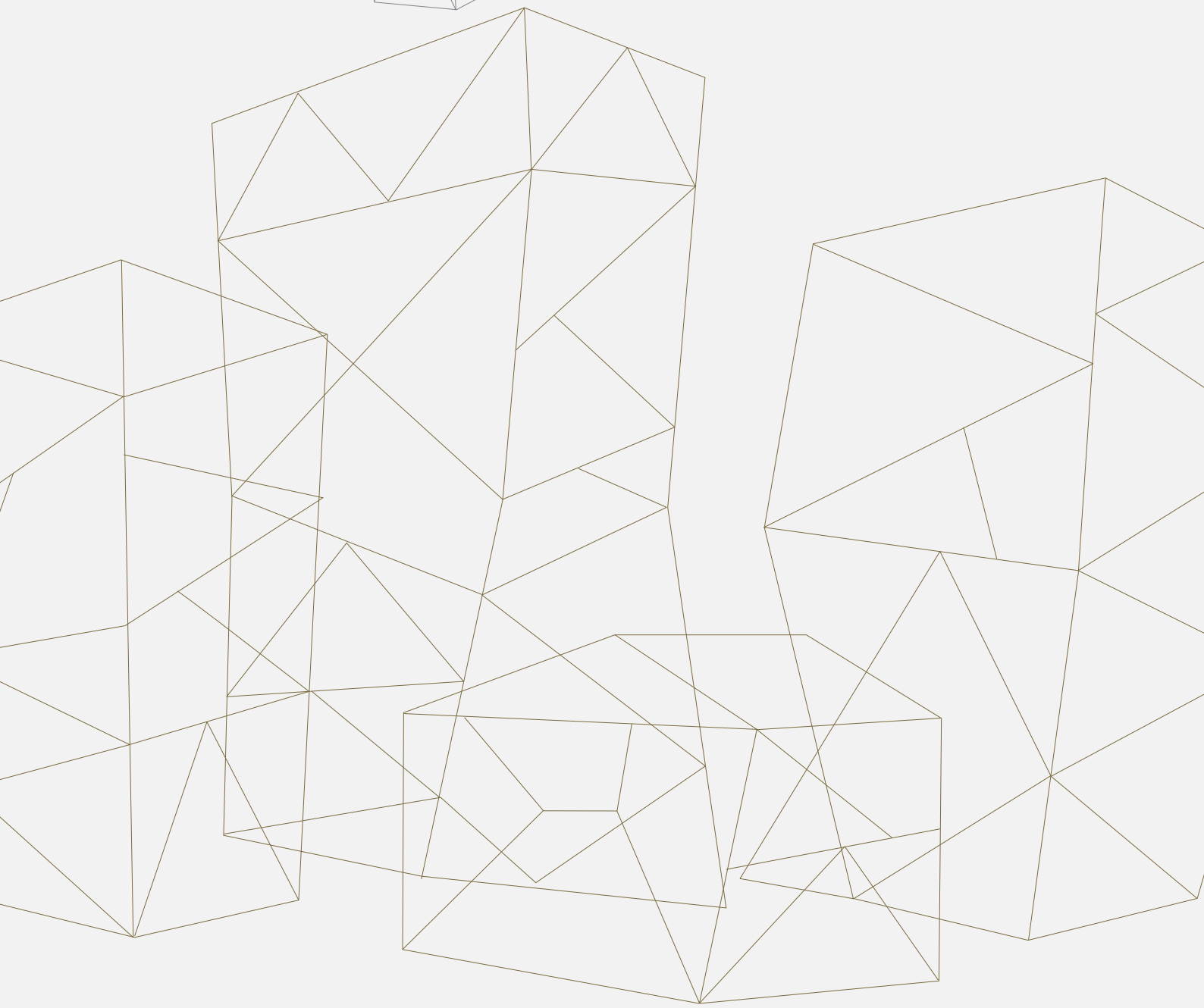
As a potential starting point for such collaborations, the NGOCC, headed by the director general of the DMB, can be approached. This government department

helps to coordinate NGOs seeking to address DRR within Bangladesh. Widespread collaborations could bridge gaps, avoid unnecessary overlaps and, hence, ensure a comprehensive city-wide development impact that is consciously tuned to the climate and disaster hazards faced in Dhaka today.

The GoB's institutional structure for disaster management can be widely utilized to assist with DRR and CCA endeavors. Whilst policy formation must lie in the hands of the government, other organizations can help to ensure that policies are well informed through making their specialized knowledge available and advocating from within their local contexts. Resulting government policy has the ability to ensure necessary changes for effective DRR. However, this research indicated a serious gap in regulatory enforcement of policies, rules and regulations. The gap between policy formulation and implementation is increasing, as government ministries commit to DRR and CCA, but relevant officials fail to initiate activities on the ground. This failure in policy impact is not only due to government shortcomings, but also to the complex political economy resulting from informal and fluid settlement in slums. NGOs can leverage their relationships with communities, local government officials and influential actors to contribute to measurable policy impact. World Vision's history of experience within slum sites is again beneficial here. The opportunity exists to work simultaneously with the local government and community to ensure transparency in actions and to empower the community to secure their civil rights. As such, World Vision can maximize the resources available to their recipient communities by collaborating with government institutions.

This research has summarized the roles and responsibilities of relevant institutions at the macro-scale of Dhaka city. In devising a DRR and CCA approach, a complete understanding of roles and responsibilities at the micro-scale for each study site can help to reduce gaps and overlaps. The process of comprehension, partnering and sharing at this end of the scale should be reciprocal and ongoing. It must include not only other NGOs but community groups, individuals and government, in addition to other emerging stakeholders not reflected in this report, such as private sector organizations. Collaboration throughout flexible development programmes will allow initiatives to be adjusted according to new knowledge generated, incoming support and resources of interested organizations and the capacity development of all stakeholders.

CONCLUSION



The complex interactions between the urban hazards and vulnerabilities explored in this report indicate that risks cannot be reduced by addressing elements in isolation. It is not only the presence of multiple and intertwined disasters that pose a hazard, but the intricate contexts within which urban residents live. These complexities will vary from city to city, district to district, family to family and individual to individual. As such, it must be recognized that a comprehensive understanding of recipient context is needed to ensure successful and sustainable DRR. This understanding should be based on both details from the micro-scale, or individual level, in tandem with consideration of the macro-scale, or city level.

Moreover, an intricate institutional map, to match the intricacy of overlapping hazards and vulnerabilities could allow these complex interactions to be addressed. In this way, the specific expertise of each institution can be utilized, and vulnerabilities be comprehensively addressed throughout the city. Those with experience in responding to, for example, housing, water or health issues, can work together to address problems, combining their expertise. Simultaneously, those working with children, the poor or the elderly, for example, can be involved to ensure a wider scope of society is approached. Experts in earthquake, flood and fire can coordinate and share knowledge at all levels. Alongside this, government accountability must be made transparent and policies formulated and reviewed to ensure they are appropriate and specific to context.

The private sector has a role to play, which is becoming ever more apparent. They can engage both as providers and as recipients of DRR efforts, many industries themselves being vulnerable to the effects of climate change and urban disaster. However, there is much concern amongst the NGO community about how they can contribute, and what their purposes may be. As such, the approach in which the private sector is incorporated must be treated with caution.

Within this complex landscape of committed organizations, much action towards DRR is already occurring. This is despite DRR and CCA being fairly new additions to the development discourse. The gaps, barriers and overlaps both within and between stakeholder groups need to be addressed in order to move forward. As such, it is important to assess not only what is being done, but how it is being done, and how effective it is. Moreover, it is important to examine how large-scale programs can account for small-scale differences. By viewing development initiatives through a climate change lens, World Vision can play a leading role in ensuring effective support for vulnerable communities exposed to climate and disaster related hazards in Dhaka.

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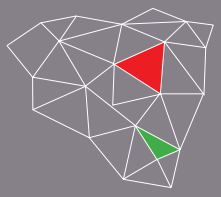

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