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Factors in building resilience in urban slums of Dhaka, Bangladesh

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Abstract

This paper examines the hazards that affect slum communities in Dhaka, Bangladesh, and explores the challenges and opportunities for building their resilience. Dhaka is a rapidly urbanising megacity in one of the world's most densely populated and poorest countries. Almost 30% of its more than 14 million population lives in slums characterised by tenure insecurity and evictions, and controlled by ganglords who charge exorbitant rates for basic services. Such a situation deters investments for improving living conditions. Poor quality housing is typical and basic public are non-existent or very limited. A combination of human and natural factors results in various urban hazards with serious impacts on the poor. Flooding and water-logging due to poor drainage are widespread; windstorms and urban fires cause havoc in slums because of the weak construction of houses; unplanned urbanisation and sub-standard building practices pose great risk in the event of a major earthquake; Bangladesh is severely threatened by climate change and erratic weather, increased flooding and temperature rise are evident. Bangladesh has a large number of development agencies, but most do not engage in cities. The Urban Partnerships for Poverty Reduction (UPPR) program is unique and is a very large program targeted for 3 million slum dwellers in 30 cities including Dhaka; WaterAid Bangladesh addresses water, sanitation and hygiene (WaSH) in slums; the Coalition for the Urban Poor (CUP) is a network of more than 40 NGOs and advocates for the rights of slum dwellers, and supports community-based organisations in slum settlements. The challenges of building resilience in slums are many, but there are also opportunities. Particularly recent government policies on urban development and climate change, as well as an emerging interest among agencies to address urban issues, offer potential for advocacy for building resilience in urban slums.

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1. Urbanisation in Dhaka and implications for the poor

Given the high prevalence of poverty in Dhaka, the capital city of Bangladesh, this paper examines the range of hazards that affect the urban poor with a view to exploring the constraints to and the potential for building resilience of the urban poor who reside in the widespread slums of the city. Bangladesh is the 7th most populous country in the world with a population of more than 150 million people inhabiting an area of 147,570 square kilometres (BBS 2011; UNFPA 2011), that is, an average population density of more than 1,000 persons per square kilometre – among the highest in the world. It is also one of the world's poorest nations with nearly one-third of its population living in extreme poverty (UNDP 2011; UNFPA 2011) and almost half the population below the national poverty line, the highest among all the South Asian countries (Mahbub ul Haq Human Development Centre 2011). While still predominantly rural with 28% of its population living in urban areas, Bangladesh is urbanising rapidly and is expected to have more than 50% urban population by 2050 (UN 2012).

The great bulk of the urban population is concentrated in Dhaka, comprising more than one-third the urban population of the whole country; it is among the fastest growing megacities in the world with a population of nearly 14 million and projected to become the sixth largest megacity in the Asia-Pacific region by 2020 with a population approaching 20 million (World Bank 2012; UN-Habitat 2010). It is estimated that density exceeds 18,000 persons per square kilometre within Dhaka's municipal boundary (SDNP 2005), among the highest in the world. 300,000-400,000 mostly poor rural migrants arrive in cities annually (WSUP 2007) due to various 'push' factors including frequent natural disasters, increasing pressure on land, rural unemployment and underemployment and rural-urban income disparity, as well as 'pull' factors such as employment opportunities and better living standards in the city (UN-Habitat 2008; World Bank 2007). The bulk of urban growth, however, is from natural increase of the already large existing population and conversion of agricultural land and wetlands in rural areas on the fringes (Shafi and Payne 2007; UN-Habitat 2009).

In absolute terms the average income in Dhaka is higher than the rest of the country, a reason that attracts migrants, but the cost of living is also higher. Inequality is higher in Dhaka than anywhere else in the country, and well over 90% of Dhaka's urban poor lack secure tenure (DIG 2008). Therefore, despite having better economic opportunities, the poor in Dhaka tend to face greater exclusion and marginalisation. In Bangladesh there has been significant economic growth, indicated by a GDP growth of 53% from the mid-1990s to the mid-2000s (Deb et al 2008). However at the same time income inequality in urban areas had increased by 10% (Mahbub ul Haq Human Development Centre 2008); for the bottom 20% of the urban population, their share of income had slipped by 0.3% (Deb et al 2008). As observed, "the full potential of the poverty reducing effects of the accelerated growth of the period was not translated into reality" (Mahbub ul Haq Human Development Centre 2008). Other than income, inequality is reflected in other aspects – one-third of Dhaka's population occupy less than 1% of the total land area and the rest is distributed among wealthy groups (Afsar 2000). Quantitative measurement aside, income inequality in Dhaka is glaringly evident to the eye – while new up-market shopping malls, restaurants and apartments continue to spring up in the city, the increasing number of people who are homeless and live on the streets or in slum settlements is also highly visible.



Fig. 1. Income inequality is highly evident in Dhaka.

According to an earlier estimate (Islam 2005), in Dhaka about 35% of the people lived below the poverty line, out of which about 20% were classified as “hardcore poor”, living in more than 4,000 slums or informal settlements (BURT 2005). Recent estimates indicate that about 4 million people, that is, nearly 30% of the city’s population continues to live in such conditions (UN-Habitat 2010).

Rapid urban growth and consequent densification are exerting unprecedented pressure on Dhaka’s infrastructure and public services, and is negatively affecting habitability for the entire urban population. For the urban poor the consequences are severe. Highly restricted availability of land, increased commuting time and costs, reduced access and increased cost of basic services, insecurity from crime and violence, competition for resources and employment, degraded environment and increased vulnerability to hazards are some of the key outcomes of urbanisation that confront the urban poor and adversely affect their opportunities for building resilience.

2. Characteristics of urban poor settlements in Dhaka

More than 4 million people in Dhaka live in slums and squatter settlements without secure tenure and under frequent threat of eviction. Almost 80% of the households in these settlements pay rent (Islam et al 2006). Additionally several hundred thousand are homeless, or ‘floating’ - dwelling on the streets, railway and bus stations, under bridges, etc.

Given the minimal efforts by the government to provide even the most basic infrastructure and services, let alone enforce policies to protect basic rights of residents, these settlements are managed by local ‘mafia’ thugs (*mastaans*). These *mastaans* act as informal landlords – collecting rents and exorbitant fees for basic services. Even though the land belongs to the government or private owners, they receive very little if any of this substantial ‘informal revenue’ since the *mastaans* rely on political patronage and camaraderie with police, often through bribes, to protect their ‘business’ of exacting ‘rents’ and ‘fees’ for basic services and pocketing the proceeds. This informal structure of extortion and crime is widespread and maintains the status quo in Dhaka’s slums. The *mastaans* also maintain close relationships with political and party leaders and help them to extort votes from the urban poor.

Government interventions in Dhaka’s slums have focused on evictions to clear government or private land for ‘development’ purposes, offering little if any recourse to those evicted. For example, in April 2012, a major slum eviction was carried out in Korail, one of the largest slums in Dhaka, where more than 2,000 houses were demolished (Subramanian and May 2012). This highly politicised and conflict-laden manipulation of Dhaka’s slum population, combined with the overall absence of secure tenure, not only deters investments by the slum dwellers to improve their housing and living conditions, but also limits NGO investments in slum upgrading, since such investments run a risk of being destroyed in slum ‘clearance’ drives. The result is that the urban poor live under a constant threat of eviction, left to fend for themselves in an environment of crime, violence and anarchy controlled by the *mastaans*. Even in the few areas where poor households have legal landownership, since their rights are seldom protected and they are increasingly under pressure from real estate developers, they fear loss of property because of complications in land administration and hence do not feel motivated to invest in housing improvements (Shafi and Payne 2007).

As a result the housing in Dhaka’s slums consist of poor quality structures and are densely crowded with more than 95% of the houses (one room dwellings) less than 14 square metres. In some slums there are more than 250,000 persons per square kilometre (Islam et al 2006). Even the most basic public infrastructure is often non-existent (see Fig. 2), lacking clean water, sanitation and drainage, and subject to frequent flooding and water-logging. These factors, combined with high densities and inadequate healthcare, create serious health risks for slum dwellers, often impacting on their livelihoods, as well as posing risks for the wider urban community.

Water and sanitation are key issues in informal settlements. The main provider is the governmental Dhaka Water Supply and Sanitation Authority (DWASA), but it does not supply water directly to slum settlements because of ‘illegal’ tenure. Nonetheless the dwellers of these settlements often rely on



Fig. 2. Poor housing and infrastructure is common in Dhaka’s slums.

DWASA's piped water supply from remote public standpipes, where mainly women queue from very early in the morning to collect water for household use. There are also some private hand-pumps charging high rates. A large proportion of the urban poor obtain water from illegal connections to DWASA supply, often controlled by *mastaans* who charge extortionate amounts. Electricity connections in most slum settlements similarly consist of illegal pirate hook-ups from the main grid of the governmental Dhaka Electric Supply Authority (DESA). Most of the urban poor tend to use unhygienic latrines or shared sanitary latrines, resulting in a public health hazard. Dhaka City Corporation (DCC) is responsible for surface drainage, non-sewered sanitation and solid waste disposal throughout the city, but its role in slums is minimal. It is common to find garbage heaps on the periphery of slums, ignored by DCC, and posing a health hazard.

3. Urban hazards and impacts on slums

Bangladesh is a riverine country with low-lying floodplains and annual monsoonal floods; other main natural hazards include cyclones and earthquakes. In Dhaka, rapid and unplanned urban growth, and a range of human actions combine with the natural hazards to exacerbate vulnerability, with compounded impacts on the urban poor. Factors such as poor waste management and public health amplify the effects of hazards and trigger a set of cascading secondary impacts. Some of the key urban hazards in Dhaka are discussed below.

3.1. Floods and water-logging

Human interventions and unplanned urban development have led to regular flooding and water-logging in Dhaka. Due to the high density and consequent demand for land, canals and ponds, and more recently wetlands on the eastern and north-eastern areas, continue to be filled for buildings and roads. This has not been accompanied by an adequate drainage plan and hence heavy rainfall easily leads to flooding and water-logging.

The southern part of the city is bounded by the Buriganga River and the western part has a flood protection embankment, limiting options for urban expansion only to the north and east[†]. The eastern part of Dhaka is densely populated, with the majority of settlements consisting of low-income settlements, and is most severely affected by floods. Although there is a plan to build an embankment around this area, experts are concerned that this may impede water flow and cause further water-logging (Islam 2005). Paradoxically, the most affluent neighbourhoods of Dhaka – Gulshan, Banani and Baridhara - are adjacent to this area, and are thus also subject to flooding. The Dhaka Metropolitan Development Plan (DMDP) 2005-15 had extensive provision for large water-retention ponds on the eastern fringe, but this has not been followed and most of the earmarked sites have been or are being built upon.

Floods impact the urban poor in a number of ways. Their housing, usually of flimsy or sub-standard materials, and household assets, get damaged; water supply gets polluted or becomes unavailable; sanitation gets affected, spreading contagious diseases; and significantly, livelihoods get disrupted (Khan 2010). The urban poor mostly work in the informal sector and livelihoods such as home-based businesses, street hawking, rickshaw driving, and travelling to factories for work, all get affected. In extreme floods, they have to abandon their settlements and seek shelter on roadsides, schools or mosques. Floods/water-logging is perhaps the most serious hazard impacting Dhaka's slums.

3.2. Windstorms

Seasonal north-westerly windstorms are common in Bangladesh during March-May, some of which become tornadoes. There are also cases of windstorms in other times of the year which do not follow the typical seasonal pattern, possibly due to climate change (Finch and Dewan undated). Sometimes the windstorms are accompanied by severe hail, which can cause great damage and injury (BDNews24 2014).

In urban slums, even minor windstorms can cause havoc because of the typically weak house construction. The commonly used corrugated iron roofing sheets get blown off, wind-driven rain penetrates inside and damages

[†] Substantial development has taken place across the river on the south, but this is outside the metropolitan boundary.

household assets, and the residents' well-being is affected. There are no community-based early warning systems, nor recovery programs, and the urban poor have to face the adversity and manage their own recovery with great difficulty.

3.3. Earthquakes

Dhaka is located in a moderate earthquake risk zone, but experts have been warning of severe consequences if a major earthquake does strike this densely built and populated city (Hindustan Times 2010; New Age 2011). Because of unplanned urbanisation and sub-standard building practices, one prominent earthquake expert has suggested that "Dhaka is among the most vulnerable megacities in the world" (J.R. Choudhury in the New Age 2011). Although no significant impact has yet occurred, strong tremors such as in 2010 and 2012 have rocked the city and created panic among its residents (iaminweb 2010; USGS 2012).

One of the main dangers is collapsing buildings killing or trapping people, more acute in the case of multi-storey buildings, particularly those built of heavy materials such as brick and concrete. In most cases houses in slums are built of light-weight materials such as metal sheet, timber and bamboo, and are usually 1-2 storeys high. Thus the risk of getting killed or seriously injured in an earthquake is not very high. However, increasingly, brick is being used to build walls of houses in slums, which are often poorly constructed and lack a reinforcing structure. Additionally, old dilapidated buildings are occupied by squatters. Such buildings pose risk in the event a strong earthquake strikes. The densely built settlements with typically narrow roads amplify the risk because of the difficulty of rescue operations.

3.4. Fires

Fires in Dhaka, particularly in slums, are common. For example, in May 2012, a huge fire in slums of north-western Dhaka destroyed 150 houses and injured 12 people (Daily Star 2012). Because of the typically flammable building materials in slums (timber, bamboo, etc), fires ignite and spread easily, especially during the hot dry season (March-May). Various reports suggest that such fires are intentionally lit to evict slum residents, or are a result of feuds between *maastan* gangs (Ahmed and Johnson 2012; Daily Star 2011).

Because of the high density, firefighting and evacuation are very difficult and it is common for slum residents to lose household assets and belongings, an adversity that the poor are ill-prepared to deal with. Even if fire stations are nearby, given Dhaka's incessant traffic congestions and narrow roads in slums, it proves almost impossible for fire wagons to reach the site on time.

3.5. Climate change impacts

It is widely cited that Bangladesh is one of the countries in the world most threatened by climate change (see for example IRIN 2009; WWF 2009). Dhaka being a low-lying city surrounded by rivers and wetlands, and having a tropical monsoonal climate, has historically experienced natural floods. However, climate change has resulted in erratic weather patterns, and increased frequency and intensity of extreme weather events as evident globally with the greatest impacts in developing countries, particularly on the poor (IPCC 2012; Satterthwaite et al 2007).

In 2009 an unprecedented cloudburst in Dhaka broke a 53-old rainfall record and killed six people, and Dhaka also experienced the highest temperature of 38.7°C in 14 years (Bangladesh News 2009; Khan 2010). With its low elevation, Dhaka is vulnerable to inundation by a small rise in sea level induced by climate change (UN-Habitat 2008). Dhaka continues to draw climate change refugees from rural areas, fuelling its population growth and adding to its existing widespread poverty (Displacement Solutions 2010; Rabbani 2010). Despite the government's various initiatives to address climate change, the urban poor are generally neglected (Banks et al 2011).

The impacts of floods and water-logging, and associated secondary effects on the urban poor who live in settlements in marginal areas and without drainage has been discussed above in section 3.1, and these impacts can be expected to magnify in the future. Another key impact of climate change in Dhaka is heat stress. A recent 10-year record indicates a consistent rise of average temperature (Rabbani 2010). A study on the effects of climate change on the urban poor in Dhaka indicated serious health impacts, such as fever, and disruption of water services (Khan 2010). In addition, increasing urban development and traffic will continue to contribute to the 'urban heat island

effect' by generating more heat and adding to the climate change induced temperature rise, once again with a range of implications for the urban poor including loss of productivity and income, negative impacts on health and disrupted water and energy supplies. Such a situation is conducive for the ignition and rapid spread of urban fires as discussed above in section 3.4.

4. Key actors addressing urban poor issues

Bangladesh has a large number of bilateral and multilateral agencies, NGOs and other development organisations. However most of their efforts are targeted at rural areas and the urban poor tends to be overlooked (Banks et al 2011). Because of tenure insecurity, and its highly politicised and volatile nature in Dhaka where there is tremendous pressure on land, most agencies are unable or unwilling to implement development programs in urban slums. The work of agencies in this field is scanty and scattered, and therefore some of the key examples are discussed below.

4.1. Urban Partnerships for Poverty Reduction (UPPR) program

UPPR is the largest initiative in Bangladesh targeted specifically at the urban poor. Its aim is to improve the living conditions and livelihoods of 3 million poor people in 30 cities including Dhaka during 2008-2015. The program is implemented and managed by the United Nations Development Programme (UNDP) and funded largely by the UK's Department for International Development (UK-AID) and to some extent by UNDP, and receives in-kind technical and other support from the government's Local Government Engineering Department (LGED). To deliver its program, UPPR interacts with a range of NGOs and governmental agencies including municipalities and city corporations.

There are two main funding modalities: The settlement improvement fund (SIF) for providing water, sanitation and various physical and environmental improvements (latrines, drainage, footpaths, etc) and the socio-economic fund (SEF) to build capacity for accessing employment and business opportunities, and to address social development issues. At the core of UPPR are the Community Development Committees (CDCs) made up of slum dwellers; at least 90% of CDC leaders are women. The CDCs are supported to plan, manage and implement the outputs of the SIFs and SEFs.

Although UPPR's projects improve the built environment in urban slum settlements, its contribution to building physical resilience is inadvertent and does not stem from a specific analysis of urban hazards or other factors that directly undermine the resilience of slum communities. The program does not have any mechanism to improve housing, one of the key vulnerable elements in slums. Nonetheless, because of strong community demand, UPPR has begun to raise and strengthen the typical earthen floors of slum houses to resist floods and water-logging (for details, refer to www.undp.org.bd).

4.2. WaterAid Bangladesh (WAB)

Water, Sanitation and Hygiene (WaSH) is possibly the area where most agency activity is carried out in urban slums of Bangladesh. Although there are a number of actors in this field, WAB is a key agency in this field as it has been operating for a long time since 1986, and supports and works in partnership with a range of agencies and initiatives such as the AusAID (ex), Thames Water and SIDA (Swedish International Development Agency) funded 'Services to the Urban Poor' and the UNICEF-supported 'WaSH Cluster' (Rahman and Ellery 2011; WaterAid 2011). WAB is a key partner of the agency Water & Sanitation for the Urban Poor (WSUP); WSUP with funding from the World Bank is implementing water service improvements and sanitation for more than a planned 100,000 slum residents (WSUP 2007; WSUP 2012). An important partner of WAB is a local NGO called *Dushtha Shaystha Kendra* (DSK), which implements innovative community WaSH programs in urban slums (DSK 2005).

A key aspect of the work of WAB and its partners involves negotiation with DWASA and DCC, the main governmental service providers, to provide water supply and drainage to slums through collateral guarantee. In most cases these are bulk connections at slum boundaries, not door-to-door connections inside slums. However within slums, community hand-pumps and sanitary latrines are built within an integrated program of community development focusing on health and hygiene as key elements of building resilience; recent initiatives include

rainwater harvesting, important in the context of extensive arsenic contamination of groundwater in Bangladesh (DSK 2010).

4.3. *Habitat for Humanity (HfH)*

Although typical HfH works in rural areas or small towns, it initiated a pilot project in 2012 on *Building Resilience of Urban Slum Settlements: A Multi-Sectoral Approach to Capacity Building* in a Dhaka slum. The pilot activities focused on WaSH (drainage, community toilets, water supply, and water purification), solid waste management (household and community level waste collection and disposal), housing improvement (plinth-raising above flood level) and awareness raising (cleaning event and billboards). The pilot activities also included extensive training and capacity building activities to facilitate resilience (Habitat for Humanity Bangladesh 2013).

A long-term Community Development Plan (CDP) was developed in parallel to the pilot activities as well as partnerships with other NGOs working in slums were established, promising engagement over the long term. The HfH initiative is an example of an emerging interest to work with Dhaka's slum communities and a possible opportunity to build their resilience.

4.4. *Coalition for the Urban Poor (CUP) and associated community-based organisations*

CUP is a network of more than forty NGOs supporting the urban poor and active in urban slums. CUP advocates at the government level and with donors for promoting pro-poor policy, particularly to prevent slum evictions. In the past CUP assisted in institutionalising voting rights of slum dwellers, thus paving the way for formation of the community-based BOSCs (translated: Slumdwellers' Rights Protection Committees) with more than 2 million members. BOSCs have facilitated demands on Dhaka's Ward Commissioners and managed to get access to water supply, sanitation and electricity in some slums (Banks 2008). BOSCs act as a non-confrontational alternative to public demonstrations by seeking communication channels with policymakers. CUP has also partnered with agencies such as UNICEF to build community latrines in urban slums. CUP represents a key facility for strengthening resilience of the urban poor.

Since 2007, BOSC has been re-named as NDBUS (translated: Urban Poor Slumdwellers Development Organisation) and funded by the Bill and Melinda Gates Foundation through Urbis (NDBUS 2010). It also derives support from UPPR and implements a wide range of community development programs in slums.

5. **Key challenges to urban resilience**

The preceding sections have in various ways touched upon the many challenges relating to slums in Dhaka. Longstanding and continuing bipartisan political bickering is a fundamental obstacle to development in Bangladesh. In such a context, there is a lack of real political commitment for pro-poor policies and there are very few agencies active in cities. Most national NGOs and CBOs are by-and-large weak and have yet to realise their potential power in advocating for pro-poor urban policies and programs.

Rapid urban development and population growth creates a context of ever-changing circumstances and disallows the stability required to implement sustainable programs. Widespread corruption in the government, and in slums, is reflected in the *mastaans'* control of rent, water and electricity supply. Due to the lack of secure tenure and clear and enforced policies to protect the rights of slum dwellers, Dhaka's urban poor live in constant threat of eviction. The limited engagement of disaster management agencies in urban areas also restricts the possibility of building resilience in slums. In tandem, there is also a lack of climate change adaptation and resilience building policies that could benefit the urban poor.

6. **Opportunities for building urban resilience**

Despite the above serious challenges, there are potential opportunities for building resilience in urban slums in Dhaka. However quick results and ease of wide replication should not be expected; realisation of these opportunities would require a long-term perspective and sustained advocacy to bring on board a wide range of actors.

The government is taking climate change seriously and has been ahead of many other developing countries in the formulation of national strategies including the National Adaptation Program of Action (NAPA) and the

Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2008. Although the urban poor have so far been inadequately considered in these strategies, there is opportunity for advocacy for building resilience using these strategy instruments. Similarly, the National Urban Sector Policy formulated in 2010 offers another policy instrument for advocating resilience building in urban slums.

Although the focus of the government's Disaster Management Bureau (DMB) and most NGOs working in the disasters field has been in rural areas, with recent earthquake scares in Dhaka, there is more interest in addressing urban resilience. This might offer the opportunity to also address a wider range of urban hazards, particularly floods.

Notwithstanding the limited engagement of the government and NGOs in urban slums, a growing interest in cities is reflected in the development of the Bangladesh Urban Forum (BUF), a multi-stakeholder platform for dialogue and action to address urban issues (Carr 2012); the first BUF session was held in 2011 and the next one is scheduled for 2014. The key objective of BUF is to share knowledge and experience to improve urban policy and practice. A wide range of agencies are members of BUF, indicating an emerging interest in addressing urban issues and thus potential future opportunity for strengthening resilience in urban slums.

Given the extreme and widespread poverty in Bangladesh and the many challenges and urban hazards, building resilience in Dhaka is arguably a difficult task. Yet the fact that there are urban programs, albeit few, which manage to operate and achieve a level of success is an indication of the potential for scaling up and replication. Despite the limited engagement of the government, there are policy instruments that can possibly be utilised for the benefit of resilience for the urban poor. The backdrop is set for the next stage.

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