

PRE-DISASTER SECONDARY DATA

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Nature of disaster: Flash floods and landslides

Note about this document: This document was a study undertaken in Bangladesh with the support of government departments, NGOs and UN agencies. The document has been reviewed by each of the clusters to ensure accuracy and relevance. This is a living document and should be updated on a regular basis, after the publication of new national data sources and as more information becomes available. Any feedback on the document should be made to ACAPS at info@acaps.org.

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COUNTRY PROFILE

CLIMATE AND GEOGRAPHY

- Bangladesh is 147,570 km² and consists of a flood plain made up of the Ganges, Brahmaputra, and Meghna rivers flowing into the Bay of Bengal.
- The river delta comprises over 230 rivers and tributaries.
- Two thirds of its land areas is <5 metres below sea level, however, the southeast is hilly (WB 2011).
- The average temperature in the cooler months is 12-25° C (November – May) and is 23-35° C (June – September). Humidity averages 70% (BBC 2011).
- Bangladesh is globally considered to be one of the most vulnerable countries to climate change. Inland monsoon flooding and intense tropical cyclones are the main climate related hazards (BCCSAP 2009).

POPULATION PROFILE

- The population is 149,772,364, the eighth largest in the world. It is expected to rise to 230 million by 2050 (Census 2011 WB Indicators).
- Disaggregated pre-crisis demographic and socio-economic data from the 2011 Census is available on the Humanitarian Country Task Team's web platform (HCTT).
- Population density is 1,014 people/km², compared 411 in India, 189 in Nepal, and 119 in France. This makes Bangladesh the eighth most densely populated country in the world (WB Indicators)
- 39.7% of the population is <18 years (CEA 2013).
- 7% of the population is over the age of 60, of those 11% is over 80 (UNDESA 2012).
- The average household size is 4.4 persons (urban 4.4 and rural 4.3) (Census 2011).
- 15.6% are female headed households (Census 2011).
- 73% of the population is rural (WB Indicators).
- Bangladesh is 146 of 187 on the Human Development Index, indicating a low level of human development (UNDP 2012)

- The capital Dhaka was ranked the second worst city in the world to live in based on education, health care, infrastructure, culture and environment, and stability ([Economist Intelligence Unit 2013](#)).
- The literacy rate is 54.1% for men and 49.4% for women.
- The youth (14–24 years) literacy rate is 75.4%, showing a significant improvement in literacy ([CEA 2013 Census 2011](#)).
- The female teenage marriage rate is 32.5% ([CEA 2013](#)).

ADMINISTRATIVE DIVISIONS

- Bangladesh is administratively divided into seven Divisions and 64 Districts.
 - Districts are further divided into Upazilas (also known as Thanas). Official data from the BBS (2011) reports 491 Upazilas. This figure does change as Upazila boundaries are redrawn (combining Upazilas or dividing them) a 2012 estimate from the Local Government Engineering Department (LGED) gives the number of Upazilas as 518.
 - These are further divided into Union Parishads of which there are 4,451 in Bangladesh.
- Disaster Management Committees exist at the District, Upazila and Union level (although the level of activity of these DMCs varies).
- Key local government positions responsible for disaster management are:
 - District Relief and Rehabilitation Officer (DRRO) who reports centrally to the Department of Disaster Management
 - Project Implementation Officer (PIO), who reports to the DRRO and exists at Upazila level
 - Upazila Chairman, an elected representative at Upazila level
 - Union Parishad Secretary, a secretary of the Union level Disaster Management Committee
 - Union Chairman and members who are locally elected to represent at the Union level

HEALTH INDICATORS

- The crude birth rate is 17.88 per 1,000 ([Census 2011](#)).
- The crude death rate is 4.8 to per 1,000 ([Census 2011](#)).
- Fertility rate is 2.2 ([Census 2011](#)).
- The infant mortality rate is 37 per 1,000 live births ([WB Indicators](#)).
- Maternal mortality rate is 240 per 100,000 ([WB Indicators](#)).
- Non-communicable diseases account for 52% of all deaths ([WHO 2011](#)).
- Drowning is the leading cause of death for children in Bangladesh aged 2-10 years ([WHO 2011 UNICEF 2012](#)).

- HIV prevalence is under 0.1% with an estimated 7,500 PLHIV in Bangladesh ([UNAIDS 2012](#)).
- 9.07% of the population has a disability (8.1% male and 10% female) ([HIES 2010](#)).

ECONOMY AND MARKETS

- GDP growth was 6.1% in 2012.
- Agriculture comprises 19% of the GDP and 23% of export, with rice the staple ([MoA, GOB 2013](#)).
- Obstacles such as lack of electricity, land disputes, extreme congestion, and lack of urban planning have hindered economic growth. However, the economy has begun to gain strength, with the potential to generate \$40 billion in exports annually from the clothing industry ([The Economist 2012](#)).
- Off shore and on shore natural gas reserves may bring future prosperity to Bangladesh ([BBC 2012](#)).
- Fluctuating yields, particularly in rice harvests, are associated with climatic conditions and frequency of natural disasters (floods and cyclones). Even when these disasters are low-profile, they can have a devastating impact on food security ([UNICEF 2009](#)).

SOCIO-CULTURAL CHARACTERISTICS

- 98% of the population is Bengali ([UNHCR 2011, CARE 2011](#)).
- 89.5% of the population are Muslims, with Hindus comprising under 10%, and smaller populations of Adivasis, Biharis, Christians, and Ahmadiyyas ([UNHCR 2011, CARE 2011](#)).
- Attacks on minority groups persist. Minorities continue to be subject to violence and other human rights abuses ([RDC 2010](#)).
- The Rohingya are an ethnic, linguistic, and religious minority, numbering between 200,000 and 500,000 in Bangladesh they mostly reside in the South East ([IRIN 19/11/2013](#)),

MEDIA

- Television is the most popular source of news and entertainment in urban Bangladesh. Urban access to television is 91%, compared to rural areas where access to television is 67% ([InfoAsAid 2012](#)).
- Radio ownership has fallen steadily in recent years, from 36% in 1999 to 15% in 2011 ([InfoAsAid 2012](#)).

- A 2011 Survey indicated that 73% of radio listeners tuned into stations on their mobile phones, but only 34% still listened to programmes on a radio set (InfoAsAid 2012).
- One in five Bangladeshis do not watch TV or listen to radio at all (InfoAsAid 2012).
- 27% of females and 13% of males do not watch TV, listen to radio, or are reached by any other media on a regular basis (InfoAsAid 2012).
- 40% of Bangladeshi men and 14% of women read newspapers at least once a week (InfoAsAid 2012).

MOBILE PHONES

- The mobile network covers 98% of the population (InfoAsAid 2012).
- Some *mobile holes* exist in the sparsely populated Chittagong Hill Tracts in the southeast, the mangrove swamps of the Southern Sundarbans in the southwest, and in the extreme northwest (InfoAsAid 2012).
- At end February 2012, there were 87.9 million active mobile subscribers
- 66% of all persons aged 15+ years own at least one mobile phone with an active SIM (InfoAsAid 2012).

POVERTY PROFILE

- Poverty is concentrated in three geographic areas: the northwest, which is affected by droughts and river erosion; the central northern region, which is subject to serious seasonal flooding that limits crop production; and the southern coastal zones, which are affected by soil salinity and cyclones (IFAD, 2011).
- Determinants of poverty include:
 - Land Ownership: the chronically poor do not own cultivable land and depend on volatile daily wage incomes. 4.6% of Bangladeshis are landless. 60.5% are functionally landless, owning under ½ acre (HIES 2010).
 - Literacy: poverty rates are higher, in both rural and urban areas, when household heads are illiterate (JBIC 2007).
 - Gender: women’s wages are half of those of men, and women’s employment is often temporary (JBIC 2007). However, poverty levels are lower for female headed households. Using the upper poverty line, the rate is 32.1% for male headed households and 26.6% for female headed households (HIES 2010).

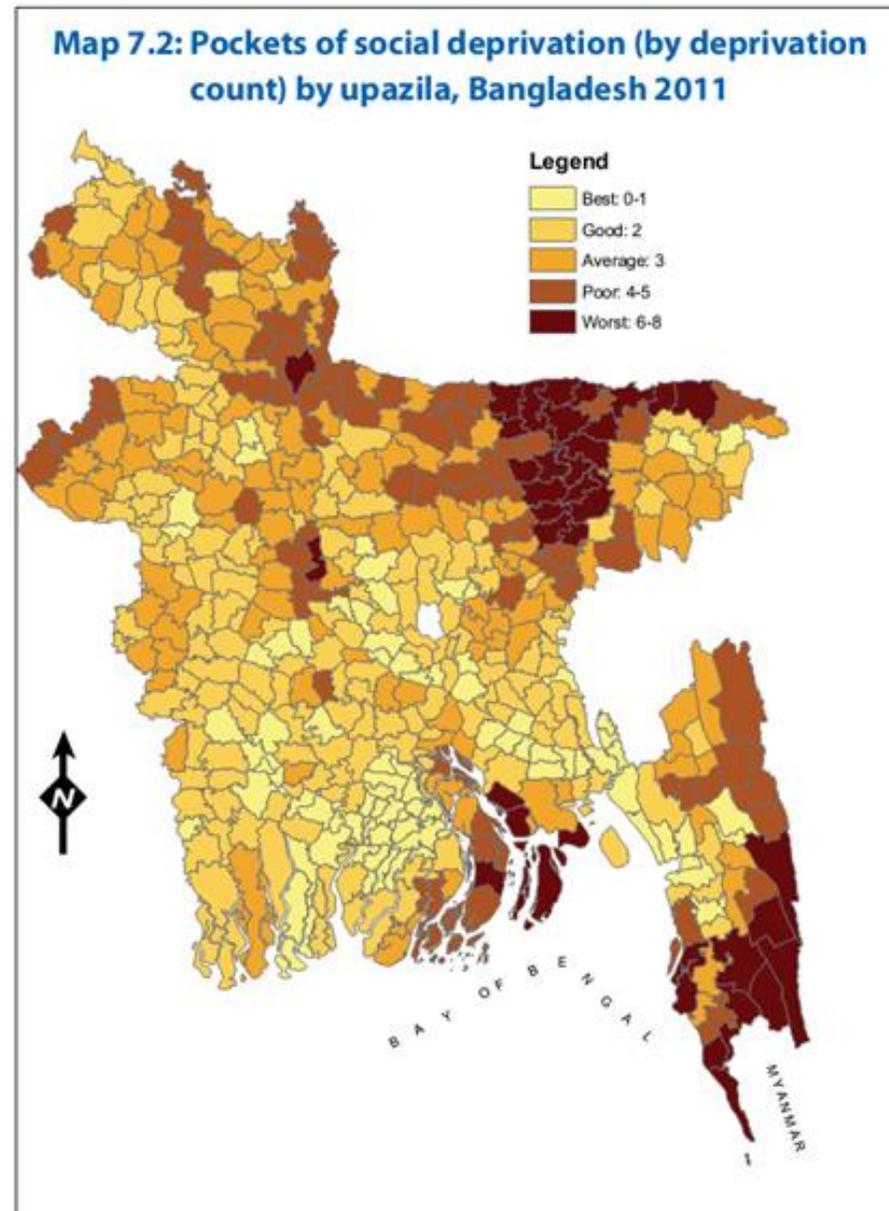


Figure 1: Source, (CEA 2013).

- Monthly income for female-headed households is significantly lower than their male-headed counterparts. Almost all (96%) households reported that men are the only income earners in the household. Out of necessity, relatively more women from the poor are engaged in income earning activities (WFP).
- The average monthly income in 2010 was Tk. 11,479 (rural = Tk. 9,648 and urban = Tk. 16,475). There is a significant underreporting of income (HIES 2010).
- The average monthly expenditure in 2010 was Tk. 11,200 (rural = Tk. 9,612 and urban = Tk. 15,531), representing an increase in real expenditure of 36% from 2005 – 2010 (HIES 2010).
- Families receiving remittances have an income on average 82% higher than families not receiving remittances. Poverty rates are 61% lower for remittance receiving families (HIES 2010).
- 32% of the population has taken loans from financial and non-financial institutions, friends, and money lenders (HIES 2010).
- Per-capita income varies significantly by region. Coastal and *char* households have the lowest per-capita income; northwest and drought-prone households enjoy the highest income and expenditure figures (WFP).
- The recently updated social deprivation map, provides a different picture than the poverty map, due to the different indicators used.
- Social deprivation is concentrated in the north, northeast, southeast, and to a lesser extent south central areas. The best performing districts are Khulna and Barisal, while Sylhet consistently lags behind (CEA 2013).

DISASTER MANAGEMENT FRAMEWORK

- Disaster Management is the responsibility of the Ministry of Disaster Management and Relief. Within the Ministry the Department for Disaster Management (DDM) has a policy and advisory role. Bodies which support Disaster Management include the following, many of these are only activated when an emergency is declared by the government (SOD 2010):
 - The National Disaster Management Council is headed by the Prime Minister and is responsible for formulating new policy and delivering directives on all concerns.
 - The Inter-Ministerial Disaster Management Coordination Council is responsible for implementing policy and is headed by the Minister of Disaster Management and Relief.

- The National Disaster Management Advisory Council is headed by an experienced person nominated by the Prime Minister.
- The National Platform Disaster Management for Disaster Risk Reduction coordinates and provides necessary facilitation to relevant stakeholders.
- The Focal Point Operation Coordination Group of Disaster Management is head by the DG of DDM to review and coordinate the activities of various departments/agencies related to disaster management and also to revive the Contingency Plan prepared by concerned departments.
- The NGO Coordination Committee of Disaster Management headed by the DG DDM reviews the coordinates the activities of concerned NGOs.
- The Committee for Speedy Dissemination of Disaster Related Warning/Signals head by the DG DDM to examine, ensure and find out the ways and means for the speedy dissemination of warning/signals among the people.

DISASTER MANAGEMENT REGULATORY FRAMEWORK

- In 2012 a Disaster Management Act was passed, creating the framework for Disaster Risk Reduction (DRR) and emergency response management.
 - The National Disaster Management Policy is a strategic policy document describing the broad national objectives and strategies for disaster management.
 - The 2010–2015 National Plan for Disaster Management outlines the systemic and institutional mechanisms for DRR and emergency response management. NB, this Plan along with other key documents such as the Standing Order on Disasters (SOD) precedes the DM Act and the associated creation of a separate Ministry of Disaster Management and Relief and Department for Disaster Management (DDM).
- The Guidelines for Government at all Levels (Best Practice Models) are available to guide the Government’s DRR and emergency response management.
- The Standing Order on Disasters (SOD) outlines the national management arrangements and describes the detailed roles and responsibilities of the relevant government bodies at the central and local level (SOD 2010).
- Quantitative information on a disaster in the initial days comes from the Government via their:
 - SOS forms which provide information on approximate loss, damage and emergency requirements, including affected, dead and missing.

- D-Forms include detailed assessment on damage and loss
- Government sitreps based on this information are produced and published on the DMIC website
- All INGOS and NGOs require Government approval for new projects. An FD6 is used in non-emergency situations and takes a minimum of 45 days to be approved. If a disaster has been declared by the Government, a fast-track system allows for use of the FD7 which can be approved in 24 hours.

DISASTER MANAGEMENT COORDINATION STRUCTURES

- The Local Consultative Group Mechanism (LCG) is one of the key the structures through which the Government engages in dialogue with development partners (www.lgcbangladesh.org)
- There are thematic 18 LCG Working Groups (in addition to the LCG Plenary) including the Disaster and Emergency Relief (DER) which is co-chaired by the Ministry of Disaster Management and the UN Resident Coordinator.
- The DER is mandated to ensure effective coordination of national and international stakeholders around all aspects of the disaster management cycle.
 - DER membership consists of senior decision makers from UN agencies, donors, and a representative of both the INGOs and NGOs.
 - The DER is co-chaired by the UN Resident Coordinator and the Secretary, Ministry of Disaster Management and Relief.
- Within the LCG DER, the Humanitarian Coordination Task Team (HCTT) is a working group which provides an operational level forum for coordinated disaster preparedness, response, and recovery across sectors.
- Membership of the HCTT includes:
 - All cluster lead agencies
 - Two donor representatives
 - Three elected representatives of the INGO Forum Emergency Sub Group
 - One representative of the NGO community
 - IFRC.
- In Bangladesh, clusters have been constituted, with Government approval, to engage on disaster preparedness. (This does not imply formal UN Cluster activation). Currently the clusters that have been formed are: WASH, food security, early recovery, health, nutrition, education, logistics, and shelter.
- Cross cluster coordination takes place through the HCTT around preparedness. Clusters are designed to also operate as sub-sets of the relevant thematic LCGs.

- The INGO Forum is a voluntary grouping of all INGOs operating in Bangladesh. The INGO Emergency Sub Committee consists of senior staff of the INGOs that have a humanitarian operational capacity.

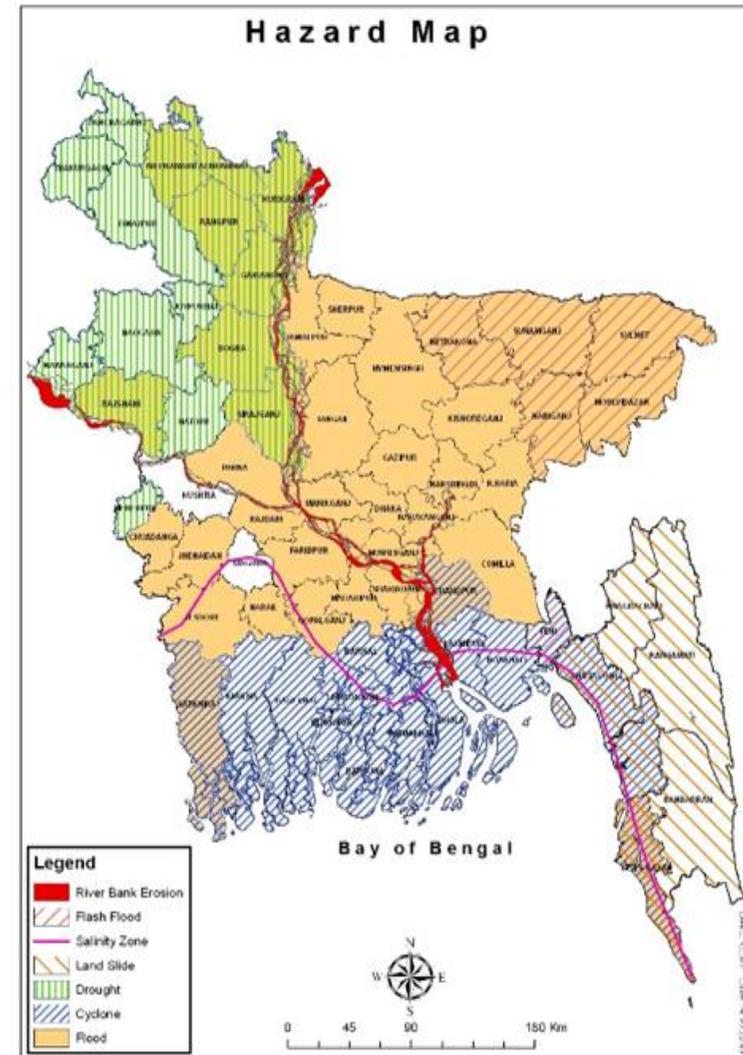


Figure 2: CDMP/DMIC 2010

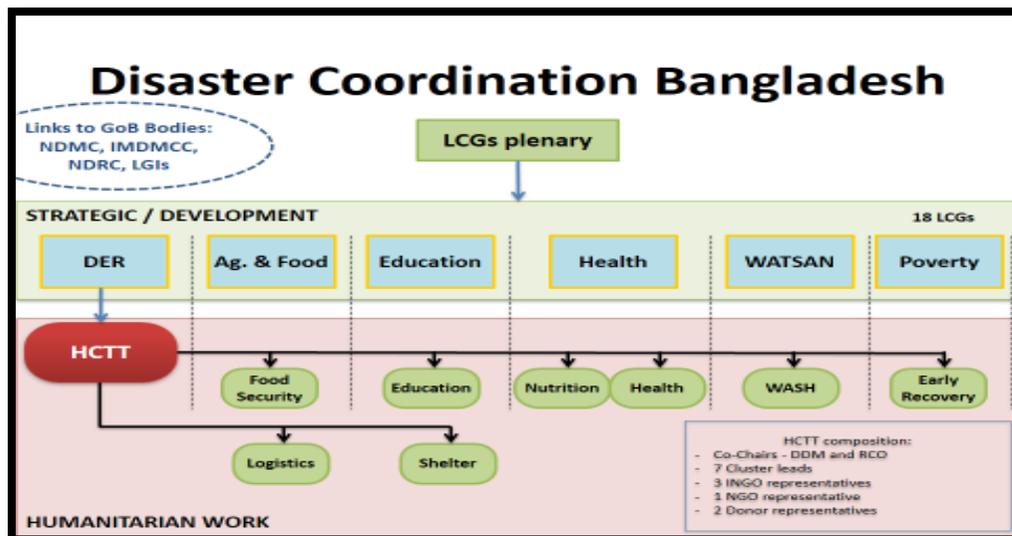


Figure 3 JNA (unpublished)

INFORMATION AND KNOWLEDGE MANAGEMENT

- There are multiple data sources in Bangladesh. For the purposes of disaster management in Bangladesh the key nationally and internationally recognised data sources are:
 - The Census 2011 ([Census 2011](#))
 - The Household Income and Expenditure Survey ([HIES 2010](#))
 - The Multiple Indicator Cluster Survey ([MISC 2009](#))
- These sources have been heavily drawn on for the purposes of this review. A new MICS will be published by the end of 2014.
- The Bangladesh Bureau of Statistics (BBS) also holds a wealth of information provided by surveys and monitoring undertaken by a number of different government departments. The core data is not easily accessible, which means mining data at any scale is too time consuming at the start of an emergency. During the process of writing these Secondary Data Reviews clusters were asked to identify key baseline indicators from secondary data that they require to carry out thorough needs assessments. Some of these are already available and others

will need to be a work in progress. The status of these baselines has been highlighted within the document.

- Information Management is handled both within organisations, UN agencies, INGOs and NGOs as well as in different government departments. For the purposes of Disaster Management there is a Disaster Management Information Centre (DMIC), which is currently in the process of transitioning out of CDMP into the Department of Disaster Management. The information needs of development partners involved in disaster management and the products and services which DMIC can provide is still a work in progress.
- Extracting lessons learnt on disaster response was a key constraint to the secondary data review. There is limited information publically available on low profile disasters. Cyclone responses have the greatest amount of lesson learning, but much is focused on internal and external operational issues, rather than critical analysis of programmatic, strategic, assessment, and coordination issues. This analysis is done, but retained within agency documents in progress and donor reports making it difficult to access.

FLASH FLOODS AND LANDSLIDES

- The areas identified as most prone to flash flooding are in the north east and south east of Bangladesh:
 - Sylhet District
 - Moulvibazar District
 - Habiganj District
 - Chittagong District
 - Cox's Bazar District
 - Bandarban District.
- A flood, which is caused by heavy or excessive rainfall in a short period of time over a relatively small area, is referred as flash flood. In flash floods, water levels rise and fall rapidly with little or no advance warning. Typically, they occur in areas where the upstream basin topography is relatively steep and the concentration time of the basin is relatively short (BWDB 2014).
- Flash floods can occur over a period of minutes or hours (WMO 2003).

OVERVIEW OF FLASH FLOODING SINCE 2005 Source: (Em-Dat 2014).					
Date	Location	Type	Killed	Affected	Damage (US\$)
June 2012	Chittagong, Bandarban, Cox's Bazar	Flash floods	131	5,148,475	n/a
July 2011	Cox's Bazar	Flash Flood	10	1,570,559	n/a
June 2007	Chittagong area	Flash flood	120	80,060	\$14million
October 2005	Naogaon, Joypurhat, Gaibhanda ¹	Flash flood	19	100,000	n/a
May 2005	Moulvibazar, Habiganj	Flash flood	13	50,000	

¹ Although Em-Dat describes these as flash floods, these areas are typically impacted by monsoon flooding, not flash flooding.

- They are most likely to occur across the northern belt of Bangladesh and the southeast (WMO 2003).
- Flash floods are most common from April to July and in September-October (WMO 2003).
- One function of flash floods is to carry sediment, which is eroded from the hilly catchment area. During heavy rainfalls in the hilly region, massive erosion takes place on the exposed surface of the hill. When there is high intensity rainfall, coarser sediment starts to erode and move along the rivers. This sediment is ultimately deposited on the river bed, in khals, canals and agricultural land. During a flash flood, sediment transport rates increase significantly resulting in a disproportionate distribution of sediment and changes in channel sizes, shapes, and even location (BWDB 2014).
- Flash floods are hard to predict. However in 2013, the Flood Forecasting and Warning Centre (FFWC) piloted Flash Flood Warnings in a few stations in the north east of Bangladesh (FFWC 2014).

LANDSLIDES

- Landslide is a regular geologic hazard especially for south eastern Bangladesh, notably in Chittagong, with an increasing trend of frequency and damage (Landslide Forum 2008).
- Significant risk of landslides in the rapidly growing urban centres of Chittagong, Teknaf and Cox's Bazar require increased attention because of the potential damage to the national economy when disasters affect urban areas (CDMP 2012).
- Landslides are a complex-disaster phenomenon that can be caused by earthquakes, volcanic eruptions, heavy rainfall (typhoons, hurricanes), sustained rainfall, heavy snowmelt, unregulated anthropogenic developments, mining and other factors. In Bangladesh, landslides are mostly triggered by heavy rainfall. However, underlying causes of landslide include deforestation, hill cutting, and unregulated development work. Moreover, poverty and landlessness force poor people to live in the risky hill-slopes (Nat'l Plan 2010-2015). All of these factors not only cause landslides but also contribute to the exacerbation of their impact.
- Landslides killed over 300 people in Bangladesh from 2000-2008, with losses of hundreds of homes and millions of dollars of damage to properties (Landslide Forum 2008).

- The landslide of 11 June 2007 killed 135 people and affected 1.5 million people when heavy monsoon rainfall intensified by a strong storm from the Bay of Bengal caused abnormal precipitation in the landslide area. The combined effect of rainfall and hill cutting induced slope instability triggered the landslide in Chittagong ([Landslide Forum 2008](#)).
- Landslides in Chittagong are examples of human induced landslides where hill slopes are being steeped daily by hill cutting activities and other associated factors summarised as, but not limited to:
 - Slope instability caused by land degradation / hill cutting
 - Heavy rainfall
 - Additional factors including deforestation, seismic activity, and abnormal tidal flow.
- Creation of a landslide contingency plan that would direct proper coordination during a crisis has been suggested as the beginning of a strategy to mitigate the occurrence and severity of landslides ([Landslide Forum 2008](#))
- A detailed landslide inventory and land use mapping has been undertaken in Chittagong, Cox's Bazar and Teknaf. This provides exact details of households most vulnerable to landslides ([CDMP 2012](#)).
- CDMP and Asia Disaster Preparedness Centre (ADPC) have developed a landslide community early warning project as part of CDMP. Volunteers monitor rain gauges and the data is monitored by ADPC's Bangladesh office ([CDMP 2012](#)).

EARLY RECOVERY

- The Early Recovery cluster is part of the humanitarian coordination structure that is formed to:
 - Address issues not addressed by other clusters such as livelihoods, governance, security and rule of law, and crosscutting issues such as environment, gender etc.
 - Improve preparedness and coordination of early recovery interventions
 - Sensitize and contextualize the concept of early recovery.
 - Facilitate all sectors to move into the recovery phase
- Early Recovery as a *principle* is inherent in the mandate of every cluster.
- There are four pillars of Early Recovery: livelihoods; governance; environment; and community infrastructure.

- To ensure that Early Recovery is an integral part of all clusters, an Early Recovery Network, comprising of focal points from each existing clusters, is managed under the auspices of the UN Resident Coordinator.

THE EARLY RECOVER FACILITY (ERF)

- In Bangladesh, there is a pooled fund in the form of the Early Recovery Facility (ERF).
- The ERF was established by UNDP as a way of financing and implementing emergency response and early recovery efforts to disasters in order to close the gap between the relief phase and long-term recovery.
- There is a programme branch to the ERF which funds early recovery activities and a policy development and capacity building of government branch.
- The ERF is sufficiently flexibility that it can support and complement national efforts during times of emergency response, when necessary.
- To support the government in times of crisis, ERF has pre-approval to spend up to \$60 million at its disposal to be able to quickly respond to emergencies based on build back better approaches.
- The ERF has pre-approval from the Government and does not require additional approval post-disaster.
- The ERF has 49 INGO and NGO partners who are pre-approved and do not require further approvals to commence work.

ERF RESPONSES

- ERF through its pre-qualified NGOs implemented livelihood recovery programme in Chittagong, Bandarban, and Cox's Bazar districts. 11,598 most vulnerable families benefited from the livelihood recovery interventions comprising of cash for works and cash grant.

EDUCATION

EDUCATION KEY CHARACTERISTICS

- Bangladesh has made great gains in education, as per the HDI. But national progress hides regional disparities (CEA 2013).
- Nationally, BANBEIS is responsible for the collection (including annual enrolment data), dissemination, documentation, and publishing of educational information (BANBEIS, accessed 2014).
- Just under one in five (18.9%) Bangladeshi girls attended secondary school in 2008. 47% of enrolment in Government secondary schools and 18% of enrolment in non-government schools was female (BANBEIS).
- Drop-out rates vary according to source and method of measurement. The 2013 ASPR cites a drop-out rate of 27%, but a completion rate of 75% (ASPR 2013). In comparison, the CEA notes that 23% of children aged 6 to 10 are out of school (CEA 2013).
- There is a correlation between remoteness, social deprivation, and out of school children rates. Levels between girls and boys is comparable, and child labour does not appear to be the cause of children dropping out of school (CEA 2013).
- The dropout rate is high due to children's need to help with farming and household chores, child-unfriendly teaching-learning methods, overcrowded classrooms, and unattractive educational environment (UNICEF).
- Of the children interviewed in a 2011 UNICEF study, over 5% of children aged 5-11 are in child labour, increasing to 14% for 12-14 year old children. The proportion of child labourers among children attending school is about 6%, but increases to 22% for children not attending school. Boys are three times more likely to be involved in child labour than girls. Among boys aged 12-14 years, 23% was involved in some economic activity (UNICEF, unpublished 2012)².
- There has been an increase in the national primary enrolment rate from 50% in 2007 to 97% in 2013 (DPE).

² From UNICEF *Out of School Children, 2011-12*, unpublished.

- The national education policy is for children to start school at the pre-primary level, age 5, using nationally approved minimum standards and curriculum (Education Cluster).

National Education Rates	Figures	Source
PRIMARY SCHOOL		
Gross intake rate	106% ³	(MISC 2009)
National primary school attendance	81% - (83% girls and 80% boys)	(MISC 2009)
School attendance rate for 5 year olds	22%	(MISC 2009)
National attendance rates for the poorest quintile	77% - (82% girls and 73% boys)	(HIES 2010 and Education Cluster)
Primary national enrolment rate	97% - (99% girls and 95% boys)	(ASPR 2013)
Completion rate for five-year primary education cycle	67%	(BANBEIS, 2001)
SECONDARY SCHOOL		
Net Attendance Rate	54% - (59% girls and 50% boys)	(CEA 2013, fr 2001)
Dropout rate	66% girls and 58% boys	(BANBEIS,2007)

CHILDREN WITH DISABILITIES

- The mandate for implementing Education For All lies with the Ministry of Education and the Ministry of Primary and Mass Education, but the education of children with disabilities is managed by the Ministry of Social Welfare and is seen as a matter of charity, not a human rights issue (UNICEF 2013).
- In 2012, there were 89,994 children with disabilities at school (ASPR 2013).

SCHOOL YEAR

- The school calendar for primary and secondary school runs from January to December. Exams are at the end of the year.

³ indicating either that students are double enrolled and/or attendance rolls are not accurately compiled.

- At the Union there are adaptable school calendars, which officials can adjust due to disasters, but few diverge from the standard calendar (KI, Education Cluster, 2014).

EDUCATION COORDINATION

- The Education cluster for preparedness is operational and co-led by UNICEF and Save the Children. The cluster has agreed to meet on a bi-monthly basis.
- Primary Education falls under the remit of the Ministry of Primary and Mass Education (MoPME). It is operationalized through the Directorate of Primary Education (DPE) (KI, Education Cluster, 2013).
 - The MoPME and DPE are responsible for all Government primary schools and non-registered Government primary schools.
 - The Bureau of non-formal education (BNFE) operates under DPE and is responsible for schools run by civil society. The bureau is working on an equivalency framework so children from non-government schools are able to sit exams. Currently, only children in BRAC schools are able to sit exams. Government primary schools are free, but students must pay for books, pens etc.
 - *Ebtedayee* Madrasa schools are managed by the Madrasa Education Board but recognized by DPE and included in the Annual School Census (ASC). These schools teach with a mixed religious and government curriculum. *Coumi* Madrasa schools do not follow the government curriculum and are not included in the DPE ASC.
- Secondary Education falls under the remit of the Ministry of Education and is operationalised by the Directorate of Secondary and Higher Education.
- Currently, there is no Education cluster website.

PRE-CRISIS BASELINE EDUCATION DATA

- There is no integrated management information system for non-formal primary education (ASPR 2013).

⁴ There is no standardised water quality testing in Bangladesh. The focus of the school water supply is to ensure there is water available for handwashing not drinking water (UNICEF KI).

- The following indicators are used to provide the baseline for Phase 1 and Phase II assessments:

Education Pre-Crisis Baseline Indicators	
Baseline Indicator	Notes
Disaggregated demographic data	2011 Census data, available in excel on HCTT web platform. Disaggregated to Union level.
List of schools in the affected area	Data not currently available with the cluster
Number of student's in the affected area	Data not currently available with the cluster
Primary school National Attendance Rate	Data collected for Annual School Survey. Disaggregated data not currently available with the cluster
Secondary National Attendance Rate	Data collected for Annual School Survey, Disaggregated data not currently available with the cluster
At least one toilet in the school	Data collected for Government Primary Schools for the Annual School Survey. Disaggregated data not currently available with the cluster
Separate girls and boys toilets	Data collected for Government Primary Schools for the Annual School Survey. Disaggregated data not currently available with the cluster
Potable water supply ⁴	Data collected for Government Primary Schools for the Annual School Survey. Disaggregated data not currently available with the cluster
Number of schools acting as flood / cyclone shelter	Data available with the WASH cluster
Drop-out rate	Data collected for Government Primary Schools for the Annual School Survey. Disaggregated data not currently available with the cluster

IMPACT OF FLASH FLOODING ON EDUCATION

- There is no specific information in the literature reviewed regarding the impact of flash flooding on schools beyond:

- Physical impediment to access
- Loss of damage to learning materials. Unlike in other types of flooding where there are warnings it is not possible for learning materials and classroom assets to be removed prior to a flashflood.
- Damage to school structures.

LESSONS LEARNT

- There were no specific lessons learnt regarding education in flash flooding and landslide affected areas.

GAPS IN INFORMATION

- Information on past impact on education from flash flooding and landslides
- Figures on numbers of schools beyond registered and non-registered.
- Access to core data from which the ASPR and BANBEIS take their figures
- Lessons learnt on education responses to flash flooding and landslides

FOOD SECURITY AND LIVELIHOODS

KEY CHARACTERISTICS

An Integrated Food Security Phase Classification (IPC) acute analysis has been done for all coastal districts, this includes two districts prone to flash floods and landslides; Cox's Bazar and Chittagong.

COX'S BAZAR

IPC⁵ analysts concluded that 30% to 35% of the population falls under food insecurity IPC Phase 3 (Crisis phase). Contributing factors include (IPC 2013):

- Reduced income generating opportunities during the disaster and rainy season.
- 73% of women consume an inadequately diversified diet
- 20% of households have poor and borderline food consumption patterns which is greater than the national average⁶

⁵ IPC provides 5 phases for classification of food security ranging from Phase 1-“Minimal” to Phase 5- “Famine”.

- The proportion of children who are underweight is 38%, which falls under IPC Phase 4 (Emergency Phase).

CHITTAGONG

- 30% - 40% of the population falls under acute food insecurity IPC phase 2 (Stressed Phase). Contributing factors to this include (IPC 2013):
 - 53% of the women consumed inadequately diversified diets
 - 15% of households have poor and borderline food consumption patterns is greater than the national average⁷
 - The proportion of children who are underweight is 40%, which falls under IPC Phase 4.

BANDARBAN

- The following baseline food security and livelihoods description was provided in the 2012 Phase 1 assessment in Bandarban after flash flooding (JNA SE 2012):
 - Poverty is exacerbated by lack of access to land. 47% of households in Bandarban do not own agricultural land against 36% in Bhola
 - 2/3 of the employed persons in Bandarban are self-employed
 - Around 90% of household income in Bandarban is spent on food, far above the national average of 62%
 - Food security in Bandarban is affected by continuous rodent and pig attacks on crops, shifting crop cultivation, discontinuation in bamboo collection, the ongoing communal conflict in the area, and crop damage due to excessive rainfall.

SYLHET

- A coordinated needs assessment to flash flooding in Sylhet in 2012 identified the main livelihood groups as agriculture 30.82%, agricultural labourer 15.59%, non-agricultural labourer 7.33%, commerce 12.2%, transport 2.21%, construction 1.66%, house renting out 3.11%, fishing 3.6%, others (mostly stone collectors) 23.48%. Sylhet is near the Meghalaya province of India and is a partially hilly area (Sylhet JNA 2012).

⁶ National average not cited in report.

⁷ National average not cited in report.

- The main sources of food and income for the poorest livelihood group were stone collectors and waged labour (Sylhet JNA 2012).
- Household food stocks vary between livelihood and socio-economic groups. Poorer households generally rely on daily purchases of food and do not maintain food stocks (Sylhet JNA 2012).

FOOD SECURITY AND LIVELIHOODS COORDINATION

- The Food Security cluster meets regularly in Dhaka. Technical Working Groups are set up on an *ad hoc* basis to work on particular issues (including needs assessment).
- The cluster is co-led by WFP and FAO in Dhaka. District focal points in all coastal belt districts are a work in progress and will be rolled out in 2-3 pilot districts during 2014.
- The cluster has up-to-date mapping in the form of a 4W (using the new standardised IMWG tool).
- There is a comprehensive cluster website <http://foodsecuritycluster.net/>
- As reflected in the contingency plan, all cluster members have agreed on⁸ (FSC Contingency Plan 2013):
 - A standardised recommended response package for dry food for the first 7 days (immediate response)
 - A recommended short-term (week 2-8) standardised food package (food only)
 - A recommended short-term (week 2-8) standardised package (cash and food mix).

PRE-CRISIS FOOD SECURITY AND LIVELIHOODS BASELINE DATA

- The VAM Unit in WFP is preparing a compendium of proxy indicators/variables of food security and nutrition along with their disaggregation level and source. This is not published yet, but will be a key source of data (KI, VAM, 2014).
- The VAM unit has requested the Bangladesh Bureau of Statistics (BBS) to generate food security related proxy variables at Upazila level from the 2011 Census. This should include percentage of households with major income sources from

agriculture lay labour and those with major income sources from non-agricultural activities (KI, VAM, 2014).

- Key indicators to provide a baseline for Phase 1 and Phase 2 assessments have been agreed by the FSC Technical Working Group as:

Baseline Indicator	Notes
Demographic data	Census data, available in excel on HCTT web platform in excel. Disaggregated to union level.
Poverty levels	Available from WFP, in excel. Disaggregated to Upazila level.
Livelihood groups	The JNA is in discussion with the cluster and the information management working group about where and how to access this data.
Number of landless	Disaggregated to Division level in the HIES. The JNA is in discussion with the cluster and the information management working group about where and how to access this data.
Integrated food security phase classification (IPC)	Not available nationally, currently the flash flood prone areas it is available for are; Chittagong and Cox's Bazar.
Number covered by government social safety net programme	This data is not readily available. It could potentially be collected through Upazila Chairman or PIOs. For those enrolled on the Vulnerable Group Development programme WFP could request this information.

- Additional pre-crisis data should include seasonal price trends and access to markets
- The Bangladesh Integrated Food Security Phase Classification (IPC) is housed within FAO and provides a set of protocols to classify the severity and causes of food insecurity and provide actionable knowledge by consolidating wide-ranging evidence. It is a process for building technical consensus among key stakeholders. The Acute Food Security Situation for the coastal region has been completed, and other zones are planned to follow.

⁸The above applies to cyclone based emergencies but it is anticipated that these packages will be recommended for flooding as well.

IMPACT OF FLASH FLOODS AND LANDSLIDES

- The 2012 South East JNA identified the following as the major impacts of the flash floods
 - Food stocks are damaged or destroyed.
 - Food security is affected through loss of crops, food stocks and agricultural inputs and equipment
 - Potential disruption to markets (in the flash floods of 2012 only one market in Cox's Bazar was not re-established in the first 48 hours).

FOOD SECURITY AND LIVELIHOODS RESPONSE LESSONS LEARNT

- In 2012 in after the flash floods in Sylhet all the markets were functional. This implies that if affected households are given cash grants, they can access all the survival materials ([Sylhet JNA 2012](#)).
- In flash flood prone areas raised seedbeds will have a significant impact in preventing losses ([Sylhet JNA 2012](#)).

KEY INFORMATION GAPS

- Baseline figures for seasonal migration
- Literature on impact of flash floods and landslides on food security and livelihoods
- Collated food security and livelihoods lessons learnt.

HEALTH

KEY CHARACTERISTICS

- Health service provision is through the Government, the private sector, and the NGO sector.
- The health services provider structure is built on the country's administrative pattern which follows the national government, division, district, Upazila, Union, and ward administrations ([Health Sector Profile 2010](#)).
- Bangladesh faces many challenges in improving the health of the population, particularly the poor and vulnerable. Maternal and neonatal mortality, though decreasing, are not reducing at an acceptable rate ([Health Sector Profile 2010](#)).
- Health care is provided for free at the community clinic level ([Health Bulletin 2012](#)).

- The for-profit sector is a key service deliverer for all income groups (providing 30% of services to the poorest two quintiles). There is a modest role played by the NGO sector which typically provides less than 10% of services for all income groups (with perhaps slightly more for the poorest quintile) ([Health Sector Profile 2010](#)).

MATERNAL HEALTH

- The maternal mortality rate is 194 per 100,000 ([BMMS 2010](#)).
- Antenatal care for women by medically trained personnel increased from 33% 1999-2000 to 55% in 2011 ([HPNSDP 2013](#)).
- An estimated 73% of births are attended by non-medically trained persons ([UNFPA 2013](#)).
- In 2010, 76% of deliveries still took place in the home ([UNFPA 2013](#)).
- Close to 7,000 mothers die each year due to pregnancy-related causes ([UNFPA 2013](#)).
- Nearly two-thirds of all maternal deaths are the direct result of obstetric complications ([UNFPA 2013](#)).
- Unmet need for family planning has increased from 11% in 2004, to 17% in 2007 ([UNFPA 2013](#)).

CHILD HEALTH

- The infant mortality rate is 36 per 1,000 live births ([SVRS 2010](#)).
- Drowning is the leading cause of death for children aged 2-10 years, followed by pneumonia, and malnutrition ([UNICEF 2005](#)).
- Drowning, usually occurs close to home, in and around the local community. The majority of drowning deaths occur during sunny weather. It is a neglected form of child mortality and often goes unreported ([UNICEF 2012](#)).
- The leading causes of mortality for infants are pre-term birth, pneumonia, and birth asphyxiation ([UNICEF 2005](#)).
- The leading causes of morbidity for infants are acute respiratory infections (ARI), diarrhoea, and malnutrition ([UNICEF 2005](#)).
- The leading causes of morbidity for children aged 1-17 are ARI, diarrheal diseases, and fever ([UNICEF 2005](#)).

- The Bangladesh Health and Demographic Survey (BDHS) 2007 indicates that only about 37% of sick children receive care from a trained provider, with girls and the poor having lower rates (BDHS 2011).
- 86% of children 12 – 23 months are fully vaccinated, the figures is 85% for girls and 87% for boys (BDHS 2011).
- Coverage for measles is 88%, the Government target is 90% (BDHS 2011).

DISEASE

- Diarrhoea is highly prevalent throughout the year, but typically spikes in April and October (Icddr,B I/V 2013).
- The main public health diseases are tuberculosis, malaria, dengue and soil-transmitted helminthiasis (WHO 2010).
- Malaria is highly endemic in 13 of the 64 districts (over 95% of reported cases), with 10.9 million people at risk in these areas. The three Chittagong Hill Tract districts (Bandarban, Khagrachari and Rangamati) and Cox’s Bazar district report more than 80% of the malaria cases and deaths every year (WB/GoB/WHO 2010).
- Dengue Fever has increased due to rapid urbanisation and high urban and peri-urban population density (CDC 2012).
- There is no routine surveillance of levels of *aedes* mosquitoes which carry dengue (CDC 2012).

NON-COMMUNICABLE / CHRONIC DISEASE

- Non-communicable diseases account for 52% of all deaths, 27% due to cardiovascular disease and 9% to cancer (WHO 2011).
- Injuries account for 10% of all deaths (WHO 2011).

HIV

- HIV prevalence is under 0.1% with an estimated 7,500 people living with HIV in Bangladesh (UNAIDS 2012).
- Chittagong and Khulna have the highest number of new cases after Dhaka Division (UNAIDS 2012).

DISABILITY

- 9.07% of the population has a disability (8.1% male and 10% female). The figure is 9.63% in rural areas and 7.49% in urban areas (HIES 2010).
- Disability caused by injury, after infancy, is more than twice as likely to happen to boys as to girls (UNICEF 2005).

HEALTH COORDINATION

- In Bangladesh, WHO-BAN has been leading the UN DER (Disaster and Emergency response) health Cluster and ensuring health sector coordinating mechanisms involving UN agencies, NGOs, CBOs, Health authorities, donors, and community members, including between the centre and the field, and other sectors/clusters.
- The Health cluster responds to both emergencies and to assess health sector preparedness activities on an ongoing basis (ERM 2012).
- The Ministry of Health and Family Welfare (MoHFW) is responsible for the implementation, management, coordination and regulation of national health and family planning related activities, programs and policies.
- The MoHFW regulates the private and NGO sector.

HEALTH PRE-CRISIS BASELINE DATA

- All Government health facilities are mapped in this link [Health Infrastructure in Bangladesh](#).
- Health Data is available through the Health Management Information System.
- Health cluster information management tools such as UN-DER Health Cluster Standard Operating Procedures, post disaster disease surveillance for morbidity and mortality, Agency Inventory format, and the 3W were developed and finalised in 2012 (ERM 2012).
- There are not currently agreed essential pre-crisis health baseline indicators.

CONTINGENCY PLANNING AND PREPAREDNESS

- The Emergency Preparedness and Response Programme is an active unit of Directorate General of Health Services for adequate disaster preparedness activities and response to emergencies (EPR 2013).
- The Directorate General Health Services, WHO, and other stakeholders manage a buffer stock of drugs and medical supplies which in the past have been used during emergencies at district and Upazila levels, including emergency drugs

(antibiotics, IV fluids, antipyretics, analgesics, topical ointments, drops, nebulizer, anti-snake venom injections etc.) (KI, Health Cluster 2013).

- A number of guidelines exist for health professionals and community health volunteers for disaster preparedness and response and are available through the health cluster (EPR 2012).

IMPACT OF FLASH FLOODS AND LANDSLIDES ON HEALTH

- Coordinated assessments from the 2012 flash floods highlighted the impact on WASH facilities and shelter. This would suggest possible health implications, but health data to confirm this was not available, however cases of malaria and communicable diseases were reported (JNA SE 2012).
- In Chittagong the 2012 Phase 1 assessment revealed three of 24 health care facilities reported not functioning as a result of infrastructure damage, staff shortages, and a lack of supplies. It isn't well known if accessibility to the health care facilities was impacted as a result of the flash floods and landslides (JNA SE 2012).
- The immediate health impacts of floods include drowning, injuries, hypothermia, and animal bites (NIH 2010).
- Post disaster disease outbreaks can be triggered by damaged water and sanitation systems. Diarrhoea, ARI, and skin-eye-ear infections are common in post disaster situations (ERM 2012).
- The public health needs of the affected population increase as a consequence of displaced people living under open sky, lack of safe drinking water, and damage to sanitary systems (KI Health Cluster 2013).
- Drowning and snakebites are the main causes of death in floods (ERM 2012)
- The adverse human health consequences of flooding are complex, far-reaching and difficult to attribute to the flood event itself. The main health impacts are deaths, injuries and mental health illnesses during the flood event itself, during the restoration process, or from knock-on effects brought about by damage to major infrastructure including displacement of populations (WHO accessed 2014).
- Health risks also are associated with the evacuation of patients, loss of health workers, and loss of health infrastructure including essential drugs and supplies. In the medium-term, infected wounds, complications of injury, poisoning, poor

mental health, communicable diseases, and malnutrition are indirect effects of flooding. In the long-term, chronic disease, disability, poor mental health, and poverty-related diseases including malnutrition are the potential legacy (NIH 2010).

LESSONS LEARNT

There are no specific lessons learnt regarding health in the literature reviewed.

KEY INFORMATION GAPS

- Lessons learnt documentation remains scant
- An agreed list of pre-crisis baseline data
- Understanding of drowning during flash flooding
- Information on changes in accessibility of health facilities as a result of flash floods, landslides and other disaster events.

INFRASTRUCTURE / LOGISTICS

LOGISTICS KEY CHARACTERISTICS

- Bangladesh's inland water system is 8,705km long with 3,060km of main cargo routes. The network is reduced to 5,200km in the dry season (data from 2006) (GoB 2008).
- Over 87 million passengers are carried annually and more than 58 million ton of cargo is transported annually.
- Main roads are under the jurisdiction of the Roads and Highways Department. Smaller roads, which make up 91% Bangladesh's roads, are under the jurisdiction of the Local Government Engineering Department (GoB 2008).
- 9.5% of roads are paved (GoB 2008).
- There are three international airports, located in Dhaka, Chittagong, and Sylhet (Airport Authority 2013).
- There are a further 13 domestic airports: Barisal, Comilla, Cox's Bazar, Ishurdi, Jessore, Khulna, Rajshahi, Rangpur, Saidpur, Sandwip, Shamshernagar and Thakurgaon (Airport Authority 2013).

- 56.1% of the population has access to electricity. The figure is 52.8% in urban areas and 13.6% in rural areas (CEA 2013).
- Demand for electricity drops after a major emergency due to the damage to housing and small and medium scale industries (GoB 2008).

STORAGE

- The Directorate of Food has set up an early warning system for floods which enables Local Supply Depots and the Central Stores Depots to adopt contingency measures (Logistics Cluster 2013).
- The Water Development Board passes regular information on water levels due to incessant rains and floods to the Directorate of Food who in turn passes on this information to the districts (Logistics Cluster 2013).
- During an alarm situation, the Central Stores Depots and Local Supply Depots erect a Baffle Wall up to three feet at the entrance of the godowns/warehouses to prevent water from entering inside (Logistics Cluster 2013).
- There are numerous warehouses managed by UN and INGOs throughout the country that are identified and mapped for emergency preparedness.

Seasonal Effect on Transport (Logistics Cluster 2013)			
Transport	Comments	From month	To month
Road Transport	Availability of trucks for transportation of material is affected due to the mango season which clashes with the Boro Season.	May	July
Rail Transport	Rail is used for transporting relief material. Movement of trains is affected during floods due to water logging on the tracks.	July	October
Air Transport	Air transport is seldom used for distribution of relief material due to the presence of a good road network.	November	February

LOGISTICS COORDINATION

- The Logistics cluster is led by WFP.
- Logistic cluster meetings are held on monthly bases with participation from UN and INGOs
- There is a Logistics cluster website (Logistics Cluster)

CONTINGENCY PLANNING AND PREPAREDNESS

A Logistics cluster contingency plan is being prepared.

IMPACT ON LOGISTICS AND INFRASTRUCTURE

- In Sylhet after the 2012 flash floods, there were no reported access problems, even though some embankments had been damaged or washed away (Sylhet JNA 2012).
- In the south east in 2012, the Phase III assessment found that there were needs for rehabilitation of community infrastructure and it was recommended that this be completed through cash for work projects (Phase III Assessment 2012).

LESSONS LEARNT

There are no specific logistics lesson learnt in the literature reviewed.

KEY INFORMATION GAPS

- The Logistics Capacity Assessment will be updated at the end of March 2014.
- Impact of destroyed roads and waterways on the response and early recovery.
- There is no analysis of availability of key relief items for a major emergency.

NUTRITION

NUTRITION KEY CHARACTERISTICS

- Child <5 nutrition has decreased since the 1990s, but the rate of reduction has been slow (UNREACH, Unpublished).
- Chronic stunting and wasting are persistent challenges (UNREACH, Unpublished).
- The pattern and change in wasting has been small and inconsistent.

BDHS National Nutrition Data		
Type of Malnutrition	2007	2011
Wasting	17%	16%
Severe wasting	3%	4%
Stunting	43%	41%
Severely stunted	16%	15%
Underweight	41%	36%
Severely underweight	12%	10%

- The main causes of under nutrition are inadequate hygiene (hand-washing) and inadequately diversified diets of mothers and young children (KI, Nutrition cluster, 2014).
- Due to maternal malnutrition and early pregnancy, one in five babies is born with a low birth weight (WFP 2012).
- Seasonality remains an important issue in malnutrition. Summer months see higher levels of malnutrition, connected with childhood morbidity and restricted access to food. This matches the cyclone and flooding season which leads to increased diarrhoeal diseases which in turn is linked to increases in malnutrition (UNICEF 2009).
- The coastal belt, including Chittagong, has the greatest prevalence of underweight children, including wasting and acute malnutrition. This is also the case for underweight girls, but not underweight women (FSNSP 2013).

NUTRITION COORDINATION

- Nutrition falls under the Ministry of Health. The Institute of Public Health Nutrition (IPHN) is responsible for formulating policy and strategies for nutrition activities, programmes, research, training, and surveillance. It hosts the National Nutrition Services (NNS) which aims to reduce the prevalence of malnutrition among the people of Bangladesh with special emphasis on children, women, adolescents, and underprivileged sections of society (IPHN).
- The Nutrition cluster for preparedness meets on a monthly basis, coordinated by UNICEF and co-chaired by IPHN.
- Sub-national cluster coordination mechanisms have been established, with District disaster focal points identified, and district disaster management committees trained on nutrition in emergency.

- The 3W mapping and cluster contact list has been updated and is available via the Nutrition cluster.

NUTRITION CONTINGENCY PLANNING AND PREPAREDNESS

- In collaboration with the Ministry of Food and Disaster management, the NNS is developing a guideline for disaster preparedness that aims to prevent and treat malnutrition after disasters. Once completed, all health workers will be trained so that they are able to respond to the nutritional needs of the population in case of an emergency. A strong emphasis is for Health Workers to promote, protect and support breastfeeding, and appropriate complementary feeding and hygiene among children <2 (IPHN).
- The Nutrition cluster maintains a district level inventory of stocks pre-positioned by cluster members, including anthropometric equipment and essential nutrition supplies.
- A detailed Nutrition cluster contingency plan is being finalised
- The nutrition cluster has established a Rapid Nutrition Assessment Team (RNAT) which is expected to lead post disaster rapid nutrition assessments and nutrition surveys
- Phase III JNA assessment guidelines for nutrition are under development.
- The Nutrition cluster has contributed to setting standards for scaling-up a full set of direct nutrition interventions needed to prevent under-nutrition and micronutrient deficiencies, through development of job aids and tools under the *Nutrition in Emergencies* national training module.

PRE-CRISIS BASELINE NUTRITION DATA SURVEILLANCE

- Nutrition data is collected by a number of different actors including, the BDHS, the Food Security Nutritional Surveillance Project (FSNSP), and individual agencies.
- FSNSP provides up-to-date seasonal information on nutrition and food security in six regions of Bangladesh as well as nationally. The data is collected for the post Aman season (February – April), Monsoon (June – August) and post Aus Harvest (October – December) (FSNSP 2013).

- A set of standard nutrition indicators have been integrated into routine Health Management Information System which will substantially increase nutrition data available from monthly health clinic reports, including information on coverage of essential nutrition interventions, and the anthropometric status of children. This information will allow trend analysis at disaggregated levels, which is critical to early warning.
- IPHN/NNS recently established a Nutrition Information and Planning Unit to regularly monitor and analyse the nutrition situation based on a diverse range of sources, including routine information from the Health sector, FSNP surveillance, surveys, etc.

IMPACT OF FLASH FLOODS AND LANDSLIDES ON NUTRITION

- In light of the high pre-existing rates of malnutrition across the country, the nutrition situation could easily and quickly deteriorate after a disaster and, particularly, increase the vulnerability of children <5.
- In a disaster, a lack of shelter and/or water will result in decreased hygiene, often with limited available space where women feel comfortable to continue breastfeeding and/or engage in complementary feeding (KI, Nutrition cluster, 2014).
- In a disaster, food crops and market are destroyed and/or disrupted resulting in less access to diversified nutritious food leading to inadequate energy and micronutrient intake (KI, Nutrition cluster, 2014).
- Lack of shelter/water and disruption to livelihoods are typically the first sectors to be compromised when a disaster hits which is why under-nutrition often aggravates soon after an emergency (KI, Nutrition cluster, 2014).
- Pre-crisis vulnerability in relation to nutrition and the impact on food and livelihoods could impact on child feeding practices that could further compromise nutrition.
- Disasters may not have a direct and immediate impact on nutrition, but they create situations that increase vulnerability and can lead to a rise in under-nutrition complicated by factors such as inadequate hygiene, a lack of shelter for private and safe spaces for women to breastfeed or feed children, and inaccessibility to nutritious food. The nutrition situation of pregnant/lactating

women and children, who are most vulnerable, should be closely monitored at all times (KI, Nutrition cluster, 2014).

LESSONS LEARNT

- There are no specific references to nutrition in the Phase I assessments undertaken in response to the flash floods on 2012.
- Concurrent sectoral interventions implemented post disaster will go a long way in mitigating and reducing the deterioration of nutritional status.
- Nutrition sensitive strategies should be mainstreamed into responses of key sectors (KI, Nutrition Cluster, 2014):
 - Food security/livelihoods to ensure vulnerable populations have access to and consume adequately diversified nutritious diets.
 - Shelter interventions need to ensure mothers have safe, private, and hygienic spaces to breastfeed infants and young children as soon as possible after any displacement to prevent the reduction in breastfeeding.
 - WASH activities to ensure caregivers hand wash with soap before handling of food and feeding to avoid contamination and subsequent illness in children that can lead to under-nutrition. These should be both in terms of provision of water as required and also soap and hygiene promotion.
 - Health activities to ensure essential health and nutrition services are delivered by health providers at quality and scale to vulnerable populations (including micronutrient supplementation, counselling and promotion, disease management, management of acute malnutrition, etc.).

INFORMATION GAPS

- Impact of flash floods and landslides on nutrition status
- Lessons learnt from previous nutrition responses.

SHELTER

SHELTER KEY CHARACTERISTICS

Shelter Types in Bangladesh	
Pucca	Fully brick structures
Semi-pucca	Floors and/or walls made of brick and the rest made from tin (metallic sheet)
Kutchha	Floors made of soil and roof and walls made of tin
Jhupri	Floors made from soil and roof/walls made from bamboo

- There is no clear written definition of *partially or completely destroyed* house. However, the consensus among shelter cluster partners is:
 - *Partially damaged* is where any component of a house (roof/wall/foundation/column) is damaged, but the house is repairable.
 - *Completely destroyed* is when the house is severely damaged or washed away and cannot be repaired.

EMERGENCY SHELTER

- Temporary shelter in emergency response is defined as *a temporary structure which provides adequate shelter for a short period of time immediately after the event* (Shelter TWG).
- Where possible, shelter materials used for emergency responses should be appropriate for early recovery. This can be difficult due to the different needs for building on embankments and on flat ground (Shelter Cluster TWiG 2009).

TRANSITIONAL SHELTER

- Transitional shelter/semi durable shelter for transitional response is defined as *a structure which provides adequate shelter which covers a period of time from the emergency phase until longer term durable solutions can be provided. If required they can be dismantled and relocated* (Shelter Cluster TWG).
- Transitional shelter interventions must consider land rights issues. In Bangladesh, where population density is high, it can be difficult to get Government approval for transitional shelter sites due to political concerns, resentment by host

populations, fear the site may become permanent, or fear the value of the land may be reduced (unpublished UNDP).

- Types of transitional shelter sites include dispersed settlements, collective centres, and cluster transitional shelter.
- The Shelter cluster has developed standard shelter kit lists for people displaced to embankments and one for people living on their own land or returned home. (Shelter Cluster TWiG 2009).

Main Features of Standardised Transitional Shelter (Shelter TWG 2013)	Flooding and cyclones in inland and coastal areas
Plinth	Height variable Above 1 ft HFL, 5" Brick wall with 10" X 10" brick pillar
Columns and frame	10 No RCC (5 in x 5 in with T section)
Wall Cladding	CGI + Bamboo Mat
Trusses and CGI fixing	Timber truss , Tin Screw (Bolt), Cyclone strap
Foundation	Below 1.5 ft GL , T Shape
Roof shape	hipped
Roof slope	30- 35 degree
Length of Canopy	1.5 ft
Plinth space for veranda	6ft wide extended earth filling
Ceiling	bamboo mat
Window	3 No (Beneficiary choice)
Door	2 No (Beneficiary choice)
Height (PL to Ceiling)	minimum 7 ft
Latrine	Single Chamber, minimum 5 to 7 ring, Bamboo/ wooden Pole, .24 mm CI sheet for wall cladding, 0.30 mm CGI sheet, Ramp, fero-cement work
Gender	Partition, Two no of door, secured toilet
Disability	Staircase/ramp
Age	Staircase/ramp (Railing for older people)

PERMANENT HOUSING

Permanent housing in recovery response is defined as *a permanent structure built to normal national standards appropriate for the exposure to hazards* (Shelter TWG).

SHELTER COORDINATION

- The Shelter cluster is led by UNDP during non-emergency periods and led by IFRC during emergency responses.
- The shelter cluster for preparedness is established and meets regularly. There is a Technical Working Group who meet on a regular basis.
- There is a comprehensive website which is a resource for humanitarian agencies working in the Shelter sector ([Shelter Cluster](#)).
- The location of NFIs is still under discussion in Bangladesh between the shelter cluster, early recovery cluster and the food security cluster (KI, [Shelter TWG, 2014](#)).
- The shelter cluster are in the process of agreeing a standard shelter kit package.

PRE-POSITIONING AND CONTINGENCY PLANNING

- There are pre-positioned shelter items, by both cluster members and the Government. These are currently in the process of being mapped.

PRE-CRISIS BASELINE SHELTER DATA

- The key baseline required for the shelter cluster is available on the HCTT website in excel format.
- The data on land ownership which is key complex issue facing the shelter cluster is difficult to find.

Baseline Indicator	Notes	Location
Disaggregated demographic data	2011 Census data, available in excel on HCTT web platform. Disaggregated to Union level.	JNA Baselines
Type of housing	2011 Census data, available in excel on HCTT web platform. Disaggregated to Union level.	JNA Baselines
Land Ownership	Disaggregated to Division level in the HIES. The JNA is in discussion with the cluster and the information management working group about where and how to access this data.	n/a

IMPACT OF FLASH FLOODS AND LANDSLIDES

- The flash flooding season begins before the monsoon, therefore people whose houses are partially or fully damaged by pre-monsoon flash flooding can be exposed during the monsoon season unless repairs/reconstruction takes place quickly.
- During the flash floods of 2012 in the south east, people were displaced from their homes. For some this displacement was temporary, but an estimated 100,000 people were unable to return to their homes once flood waters had receded due to the damage to their houses ([JNA SE 2012](#)).
- Shelters/houses in the flash flood prone rural areas are not designed to withstand flash flooding. In the Phase III assessment in Chittagong, shelter was identified as the priority need ([Sylhet JNA 2012](#)).

LESSONS LEARNT

- Very little shelter lessons learnt documents directly related to flash floods or landslides were found during the review.
- Present housing construction in the flash flood prone areas are often NOT designed to withstand this hazard.
- Reconstruction of shelters/houses damaged in the pre/early monsoon months needs to take place quickly to prevent increased vulnerability through the monsoon period.

KEY INFORMATION GAPS

- Data from previous responses on migration and displacement, including, numbers who migrated as a result of the disaster and length of time displaced into collective shelters.
- Information on shelter construction types specific to the land slide prone areas.

WASH

WASH KEY CHARACTERISTICS

- Water quality in Bangladesh is compromised by the presence of arsenic detected in 61 of 64 districts of Bangladesh. The south east is one of the few not affected areas and the north east is mildly affected (UNICEF 2009).
- There are no systematic mechanisms for water quality monitoring and surveillance in Bangladesh (UNICEF 2009a).
- Only one third of secondary towns have piped water, and where it exists it is often contaminated due to leakages and intermittent supply (UNICEF 2009a).
- There are greatly varying figures on sanitation coverage due to different terminology for improved sanitation (UNICEF 2009a).
- The National Sanitation Strategy aims to have 100% of the population with access to sanitary latrines by 2015. Currently, 60% of the population has latrines, 32% hygienic and 25% unhygienic (DPHE).

Bangladesh Sanitation Definitions (MISC 2009)	
Hygienic sanitation facilities – GoB	Improved sanitation facilities - WHO/UNICEF JMP
Facilities that are individual or shared by maximum of two households	Individual facilities
Flush or pour-flush toilet/latrine to: <ul style="list-style-type: none"> ▪ Piped sewer ▪ Septic tank 	Pit latrine with a slab and water seal
Pit latrine with a slab and water seal	Pit latrine with slab and lid, no water seal
Pit latrine with slab and lid, no water seal	Pit latrine with a slab and flap, no water seal
Pit latrine with a slab and flap, no water seal	Pit latrine with a slab but no lid nor water seal
VIP latrine	VIP latrine
Composting latrine	Composting latrine

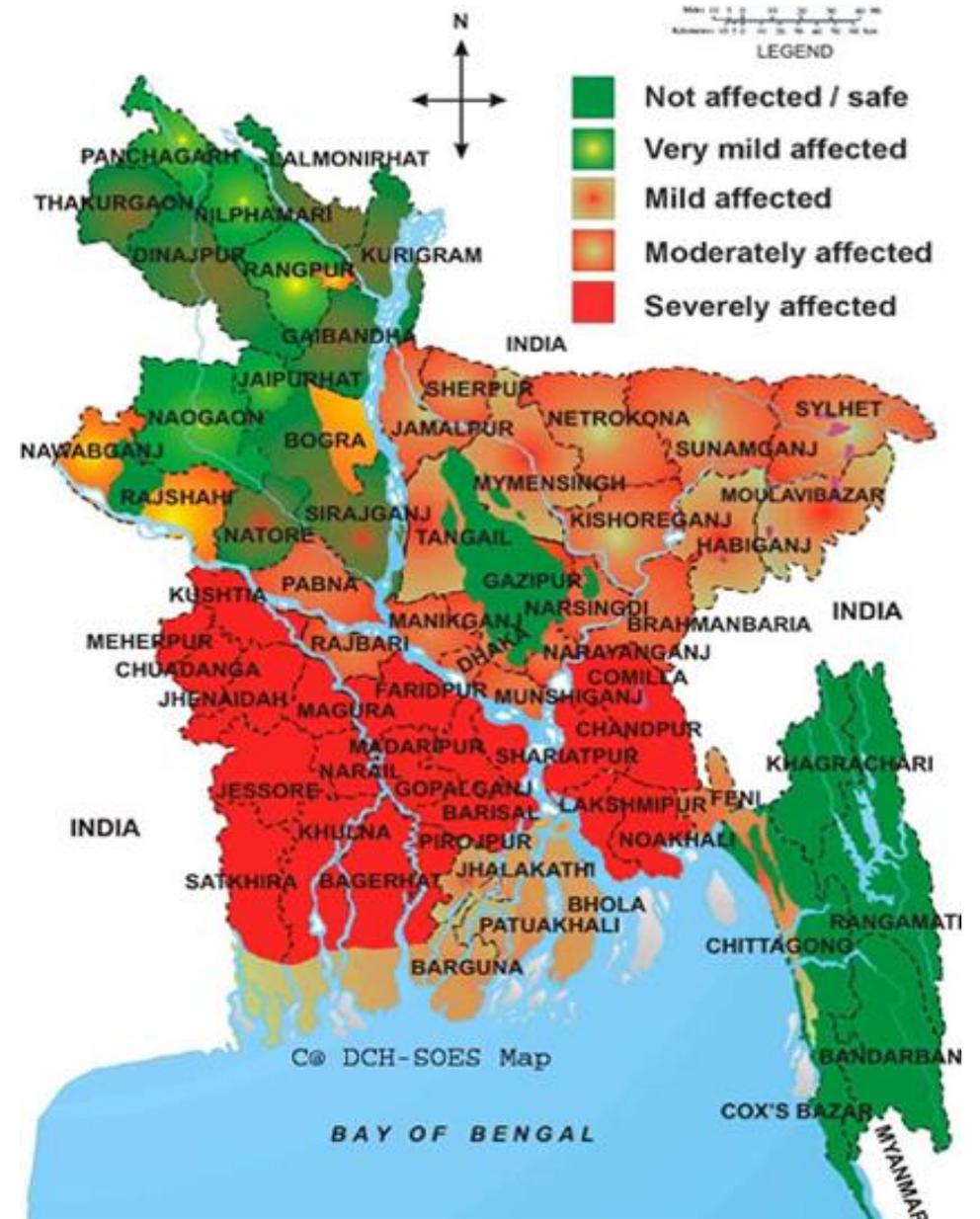


Figure 4: Arsenic Map

WASH COORDINATION

- At the national level, the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives is responsible for the overall development of the Water Supply and Sanitation (WSS) sector.
- The Department for Public Health Engineering (DPHE) is responsible for implementation of GoB WSS projects.
- The DPHE is represented down to the Upazila level; at the Union level, there is a Union WASH Committee.
- The WASH cluster for preparedness is functioning and is coordinated by UNICEF's WASH department and co-lead the DPHE.
- The WASH cluster website is currently under construction.

CONTINGENCY PLANNING

- The WASH cluster has developed a Contingency Plan for 2014, which includes a planning for a caseload ranging from best case scenario, 321,723 to worst case scenario 614,383.
- There is an up-to-date list of prepositioned supplies, Government, UNICEF, and cluster members in the plan, available from the Information Manager of the WASH cluster.

PRE-CRISIS DATA

- The WASH cluster has identified the following as the key WASH baseline indicators ([WASH cluster 2014](#)):

Indicator	Notes
Number of water points	Government only
Arsenic contamination	
Sanitation coverage including	Unimproved, improved, shared and open defecation
Number of primary schools	Government, registered non-government and community schools
Number of flood shelters	Total number, capacity and other use
Number of toilets in shelters	Separate male/female, which floor and water supply
Water supply in shelters	

- The data sources used for the pre-crisis data are:
 - The Multiple Indicator Cluster Survey ([MISC 2009](#))
 - The Bangladesh Health and Demographic Survey ([DHS 2011](#))
 - World Bank: Hard-to-Reach Areas ([Hard-to-Reach 2011](#)).
- There is currently no repository or mapping of hygiene baseline, however operational agencies in cyclone affected areas have hygiene surveys which they can share.

IMPACT OF FLASH FLOODS ON WASH

- Toilets are washed away in the torrent of water
- Water supply in the hilly areas of the Chittagong Hill Tracts is already problematic, this is further compounded by flash floods and landslides
- Water supply and access to sanitation was a key priority after the 2012 flash floods. In all affected Upazilas of Bandarban, over 50% of people did not have access to clean water or sanitation facilities.
- People who are displaced from their homes take shelter in areas or buildings without adequate WASH facilities

LESSONS LEARNT

There were no specific WASH lessons learnt related to flash floods and landslides found during the review.

KEY GAPS IN INFORMATION

- Lessons learnt from WASH interventions.
- Disaster resilient sanitation solutions relevant to the flash flooding/ land slide prone location. The WASH cluster did not include hygiene baselines, as these are not included in any national/international surveys, which provide geographically disaggregated data.
- The indicators do not provide information on whether WASH facilities within cyclone shelters are currently functioning or not functioning.
- Disaster responses in certain areas can dramatically alter coverage, which is not reflected in this data