

Rohingya crisis

Lessons learned about the impact of cyclones

Introduction

The following lessons have been drawn from the impact of cyclones in Bangladesh and specifically Cox's Bazar district. Other literature reviewed includes lessons from cyclones in Myanmar. Documentation on the specific impact or [lessons from the impact of cyclones on the Rohingya population in Cox's Bazar is limited](#). The lessons learned in this document have been drawn from past cyclone experiences in Bangladesh and Myanmar more generally. These are considered relevant for the current Rohingya crisis. For more background on cyclones in Bangladesh and their impact in Cox's Bazar district, [click here](#).

The living conditions of the Rohingya population differs significantly from the Bangladeshi community and interventions addressing the impact of natural disasters will be different. At the time of writing it has been made clear that [there are no evacuation plans](#) for the Rohingya population. Reasons for this include [movement restrictions, scarcity of land, and a lack of usable, stable structures in which to relocate people](#). Upon the onset of a cyclone, the government will instruct host communities to seek safety in cyclone shelters, though the number of cyclone shelters is inadequate.

The type of information dissemination that has worked in the past include the use of megaphones and radio. Women and adolescent girls face additional protection concerns if the Rohingya population decides to relocate. Many of the Rohingya population have indicated not knowing how to reinforce their shelter in preparation of a cyclone, or not having the means to do so. In previous cyclones, markets in the Cox's Bazar area have recovered quickly. WASH, health, education, and nutrition infrastructure is likely to sustain significant damage. Access constraints have included the breaching of embankments, blocking of roads, and disruptions in mobile reception.

This document has been written based on secondary data available on the Rohingya refugee influx and cyclones in Cox's Bazar. Any feedback or information that may complement this report is more than welcome at sn@acaps.org. For all other products on the Rohingya influx by the ACAPS-NPM Analysis Hub [click here](#).

Early warning messaging

- [Messaging should be consistent throughout all sites and delivered as early as possible](#). During cyclone Mora (2017), early warning systems in the official refugee camps were reportedly more developed and delivered earlier than in makeshift settlements. This resulted in them being more effective. In the two official refugee camps, local authorities disseminated the message a day before the cyclone came and precautions were taken to evacuate vulnerable people to other sturdier sites inside the camps (mosques and schools) (The Daily Star 09/06/2017; Al Jazeera 30/05/2017).
- [Time of day is a significant factor in the impact of a cyclone](#). Warnings should be issued before people have gone into their shelters for the night to increase the chance of hearing the message. During cyclone Mora people were alerted late at night, at around 10:00pm, when many people were already in their shelters and asleep. The cyclone struck at 06:00am (The Daily Star 09/06/2017).
- [Utilise trusted information sources to share key messaging about what to do in the case of a cyclone](#). An October 2017 assessment found that the most trusted source of information for the Rohingya population is face-to-face communication. Receiving information through friends/family, religious leaders, and community leaders were ranked highest in trusted sources of information. Majhis and humanitarian workers were listed as the seventh and eighth most trusted sources, respectively, behind the army (Internews 10/2017).
- [Community radio is seen as a good practice to inform communities of an impending cyclone, and to disseminate messages on damages and safety concerns in the aftermath of a cyclone](#) (Daily Star 16/06/2017). Among the Rohingya community, radios are listed as a trusted source of information. More than 45,000 radios are meant to be distributed to households in early April. Radio is no guarantee of effective communication, due to challenges with radio reception in the camps. Two radio stations are generally used ([Bangladesh Betar](#) and [Radio Naf](#)). Both work with BBC Media Action in disseminating information on cyclones; radio programming is done in Chittagonian.
- [During diphtheria vaccination campaigns in the camps, megaphone batteries only lasted for 2-3 hours](#) after charging overnight. With extra batteries, megaphones can be used for 5-6 hours. Sound produced by megaphones travels best downwind (Paul 2008).
- It is helpful if messages include the expected magnitude of the cyclone and where it will likely hit in a language that is clear and able to be understood by lay people (Paul 2012).

Imprecise, delayed, and uninformative messages cause mistrust and confusion.

Affected populations in Bangladesh have recommended that messages should be better at describing the threat (such as the certainty that the storm will make landfall, the urgency to take action and the duration of the winds), followed by indications of where to get more information on the storm, and what protective measures to take (Roy and Kovordanyi 2015). For example, prior to cyclone Mahasen (2013) in Rakhine state, FM radio provided warning updates to the population. Yet, **the time between updates was up to two hours; the large gap between messaging caused communities to lose trust in the updates** (HCT Myanmar Lessons Learned Mahasen 2013).

- **Use of technical vocabulary** in messages such as “forecasted movement direction” and “time of landfall” **leads to misinterpretation** and may dilute the message. Warning messages work best when reduced to essential information that is regularly updated (Roy and Kovordanyi 2015).
- Over half of people (both Rohingya and non-Rohingya populations) assessed in 2015 across five townships in northern Rakhine state, reported that their **main action upon hearing a forecast would be to evacuate to a safer place** (KAP REACH 2015). This expectation needs to be mitigated during preparedness in the Cox’s Bazar Rohingya sites as evacuation or large scale relocation of the population are not options.
- **Culverts in the road are not a safe space to shelter during a cyclone.** Culverts are likely to fill up with water, putting lives at severe risk.
- Challenges to accessing information mean the **Rohingya populations rely on second-hand information and word of mouth.** Rumours will exacerbate misinformation. In Myanmar, news from the radio was a main source of information on cyclones. Educated young men would read newspapers and disseminate this information to the community (this information is not available within the sites). According to a 2015 assessment across five townships in northern Rakhine state, young women reported being completely dependent on word of mouth (REACH 2015; CwC WG 12/2017). Generally, young women are also less informed on weather patterns in Bangladesh, or its accompanying natural disasters (CwC WG 03/2018).
- Understanding and uptake of messaging benefits from using the right terminology in the appropriate languages. **Terms used to describe pre- and post-monsoon cyclones and the monsoon, are different** in Bengali, Chittagonian, and the Rohingya language (CwC WG 28/02/2018). An overview of these terms can be accessed [here](#).
- **Structures to prepare for, and respond to, natural disasters** both within the community and externally, **must be made clear to the Rohingya community.** Almost half of people assessed across five townships in northern Rakhine state (both Rohingya and non-Rohingya population) in 2015 reported that they had no understanding of who was

responsible for what in the event of a natural disaster. Further, 13% of the respondents reported having a disaster management committee and only 6% had a plan for dealing with disasters. Communication between established disaster management structures at the camp level and Rohingya communities must be ensured in order to avoid confusion and misinformation (KAP REACH 2015).

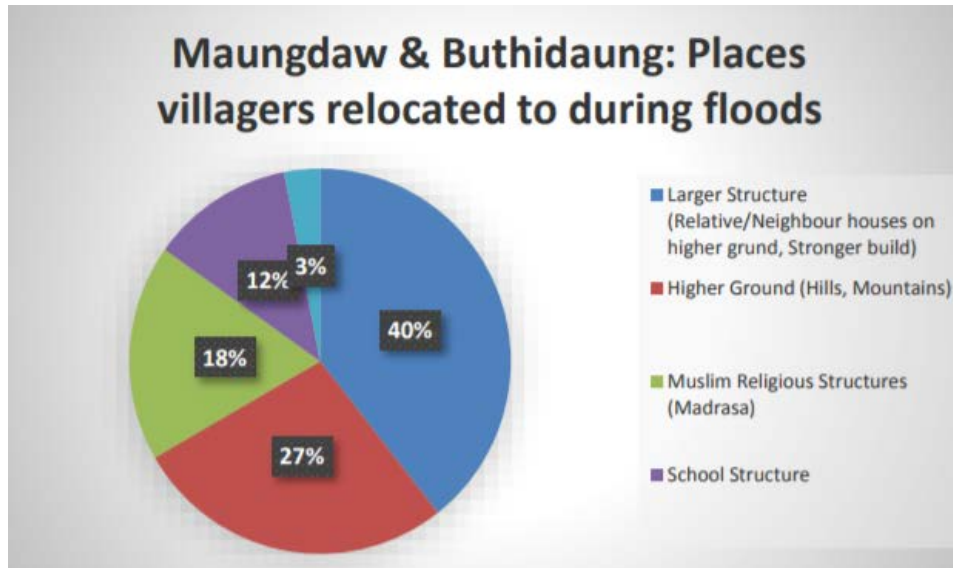
Access and communication infrastructure

- Unrooted trees blocking main roads have at times been cleared relatively quickly. After cyclone Mora, authorities told affected populations they could keep tree logs if they removed them; these can be used for timber, reconstruction, and firewood (BDRCS 01/06/2017). This could be a way to ensure access on roads to the camps.
- **Damaged embankments** in Teknaf following cyclone Mora **were the main cause of blocked access** to several villages (WFP 03/06/2017).
- Both humanitarian organisations and the Rohingya population rely on mobile phones in the camps.
- Electricity was cut in Teknaf for at least four days following cyclone Mora (WFP 03/06/2017).
- **Mobile networks** in both Ukhia and Teknaf **were down for at least a day** following cyclone Mora (WFP 03/06/2017).
- In the event that mobile networks restore quicker than electricity, humanitarian workers may find difficulty charging their phones in areas where electricity is still cut.
- A cyclone that hits the camps in Ukhia and Teknaf is also likely to hit other areas in Cox’s Bazar or Bangladesh. This may lead to competition over resources, and a scarcity of supplies, storage, and delays in procurement.

Shelter

- Information on how to make the current living arrangements as secure as possible is required. As there will be **no evacuation**, the Rohingya population will be instructed to reinforce their shelters. Yet, in a March assessment, 40% of the assessed Rohingya population **did not know how to make their accommodation safer** (CwC WG 26/03/2018). A further 24% of people said they had **insufficient funds** to carry out any cyclone preparations (CwC WG 26/03/2018).

- It should be kept in mind that although evacuation will not take place, **the Rohingya population may still relocate to buildings they perceive to be sturdier**. In past cyclones, the Rohingya population has also sheltered in CGI toilets as they were still perceived as stronger than shelters. After cyclone Komen (2015) which brought floods in Rakhine state, 41% of people in assessed villages (43) in Buthidaung and Maungdaw moved to safer places. These included:



Source: KAP REACH 2015

- Sheltering behaviour is directly linked to mortality**. Having a warning that a cyclone is imminent is insufficient; moving to shelters is essential (ACAPS SDR 2014). This indicates the importance of having plans in place and clearly communicated to the Rohingya about what they should do when they know a cyclone is coming. In a recent set of focus group discussions, 95% of people indicated not knowing where to go in the event of a cyclone (CWC WG 03/2018).
- After cyclone Mora, people were in need of **NFI kits, lighting, and shelter materials** to rebuild homes (WFP 03/06/2017).
- The Rohingya refugees largely live in juphri shelters, structures made of a bamboo frame covered in plastic sheeting, which means they are extremely susceptible to cyclones. Around 96% of majhis in camps and camp-like settings report that people

live in juphri (bamboo, plastic sheeting) houses and 4% stated that people live in kutcha houses (IOM NPM Round 9).

- Female headed households will face more difficulty in reinforcing their shelters and rebuilding their shelters**. Additional support for female headed households should be prioritised both before and after cyclones. Approximately 14% of female headed households in a shelter assessment done in camps in Ukhia and Teknaf indicated they had skills and expertise in shelter construction (Shelter Assessment 18/01/2018).
- Kutcha housing is more prone to damages than pucca housing**. During severe cyclones, kutcha houses (mud-brick walls) have been left almost completely damaged. Pucca houses (brick and concrete foundation), though suffering damages on the exterior, usually remained structurally intact (World Bank 2010). In both Teknaf and Ukhia upazilas, shelters in the Bangladeshi host community are mostly kutcha, thus serious damages can be expected in the Bangladeshi community as well as among the Rohingya population. Some of the Rohingya population have sheltered with their Bangladeshi neighbours in previous cyclones.
- Corrugated Iron (CGI) roofing is not always been secured properly onto structures such as latrines and mosques. In the event of heavy winds, improperly secured **CGI roofs are likely to fly through the air, posing danger to people in the sites**. In addition, CGI is likely to easily penetrate plastic sheeting of shelters.

Water, sanitation and hygiene (WASH)

- A cyclone usually comes with heavy rains which are expected to result in floods and landslides. The risks related to WASH are similar to those outlined in the **March monsoon review**. 25% of latrines are at risk of being affected by floods and landslides in the Kutupalong–Balukhali expansion and Thangkhali.
- A lack of functioning WASH facilities after cyclone damage, or due to floods and landslides, is particularly difficult for women and adolescent girls, who have been known to restrict their food intake in order to avoid using unsafe and unsegregated WASH facilities (Plan International 10/2013).
- Water contamination is likely to increase** in the event of cyclone-induced floods. Faecal matter and animal carcasses may contaminate water sources in the aftermath of a cyclone, leading to an increase in the risk of waterborne disease. For a full description of risks see the **March monsoon review**.

- **Salinization of water increases with storm surges**, as saline water seeps into tube-wells and boreholes that are not properly sealed. The risk of storm surges is highest in Shamlapur and other small host communities along the Teknaf coast. Salinization is a slow, ongoing process, which affects the quality of drinking water, soil quality, agriculture, and useable land for food cultivation. As salinity reduces the amount of available fresh water, people resort to different techniques to get fresh water. This includes the use of filter systems to increase the drinkability of saline water, which poses risks to health (Saha 2017). This could be a problem for the Rohingya population in host communities and the host community itself.
- **Cyclone shelters often lack adequate WASH facilities.** If toilets are present, they are often located downstairs underneath cyclone shelters. This means they risk becoming inundated or inaccessible during cyclones. The lack of safe facilities leads to unsanitary conditions, and acts as a deterrent to evacuation. This affects the host community and the Rohingya population in host communities (Quader & Mahbub 2012; Saha and James 12/2016; Jisan et al 03/2015).

Health

- Injury from dislodged building materials is common during cyclones. The top three cyclone-related injuries are lacerations, blunt trauma, and puncture wounds. 80% of these injuries are confined to the feet and lower body (Shultz 2005). Given the quality of shelter and density of dwellings **health facilities will have to be open to deal with injuries immediately**; though 24/7 access has not yet been established.
- Storm surges that are associated with cyclones are usually the main cause of death (ACAPS SDR 2014). **Drowning is the leading cause of death for children aged 2–10 in Bangladesh** (data is not available specifically for the Rohingya population). In the event of cyclones and subsequent flooding, the affected population often shelters on higher ground or an embankment to wait until flood waters recede. This creates dangerous situations for children, as they are at risk of falling in the water when living on narrow strips of land (Plan International 14/08/2017; UNICEF 2005; WHO 2011).
- Should floods and landslides occur, and waterpoints be damaged and contaminated with faecal matter, the risk for water- and vector-borne diseases increases. Chronic diseases such as asthma are known to be exacerbated. Overcrowding increases the risk of transmission of communicable diseases. For a full description of the risks, see the **March monsoon review**.
- As with other health care activities, reproductive and sexual health care can be cut off after a severe cyclone (Plan International 10/2013). This will be of particular concern for women who go into labour and give birth during and immediately after a cyclone. A traumatic event such as a cyclone may lead to early labour. Based on demographic data and family counting, an estimated 60,000 Rohingya women are pregnant in total.

Food security

- In the event of disaster, the government usually responds with the distribution of cash and rice for Bangladeshi host communities. Targeting is done by the government in coordination with the Disaster Management Committees (DMCs). Government distributions are augmented with support from development partners (UN and NGO). Local government officials try to coordinate these. It is recognised that the development partner package is larger than the government package.
- Cyclone Mora (2017) hit during Ramadan. **Cash based responses should take into account delays that can be incurred by public holidays as banks close.** After cyclone Mora, cash based responses to Bangladeshi suffered some delays due to *Eid*.
- Cash for Work activities have proved useful to target the most vulnerable, as only the poorest households will participate (ACAPS SDR 2014). This approach does not address all vulnerabilities, however, as people with disabilities or illnesses may not be able to participate in cash for work activities and are thus at risk of exclusion unless particular effort is made.
- Past experiences with cyclones in **Cox's Bazar area indicate that markets tend to remain functional or recover quickly** (HCTT 05/2016). This has allowed for the distribution of multipurpose cash grants in the host community. Yet, **food prices often rise immediately after the cyclone** and the availability of agricultural inputs in the markets are reduced (WFP 03/06/2017).
- **Price peaks last up to five months, and during severe events may last up to seven months.** Rises in food prices lead people to take out loans (or increase existing loans) to feed their families. (WFP & HKI 07/2015).
- Households affected by cyclones have been found to spend less on food than non-affected households. This results in a reduction in food intake after a cyclone (Saha 2017).

- **Cyclones have a disproportionate impact on day labourers as they lose time to work when rebuilding their shelters.** This will have an impact in camps as 17% of Majhis report that those living in their locations have income sources with irregular day labour being the most common source of income (in around 9% of locations). Casual day labour is more likely an income source for men; women have fewer opportunities and rely on income that is gifted (e.g. aid) rather than in exchange for labour (Oxfam 11/2017; IOM NPM Round 9).

Protection

- **There has not been a government-led evacuation of the Rohingya population.** This is also not expected to happen in 2018. However, the Rohingya population, upon hearing cyclone warnings, may decide to move to structures believed to be sturdier or may decide to shelter in open areas. In this process, the following protection considerations should be included:
- **Women and children are disproportionately affected by cyclones.** This is mostly because women and children are less likely to leave household shelters. This is due to a number of reasons:
 - **Young children may face more difficulty leaving their shelters** or accessing cyclone shelters and in these cases mothers stay behind as they are the primary caretaker (Saha and James 12/2016).
 - **Women often have to await permission from their husbands** (or male head of household) in order to leave their shelters and seek refuge (Paul 2008). As men have more freedom of movement and can therefore be outside the home, this permission can come too late.
 - Women and children are unlikely to leave if the husband or male head of household decides not to leave the household shelter himself. In the case of older people, women will stay behind if the male head of household is older and faces physical barriers to accessing safer areas (Saha and James 12/2016).
- In the aftermath of disasters in Bangladesh, **adolescent girls have been found to be disproportionately affected**, often due to cultural constraints (Plan International 10/2013). Within the Rohingya population, women and adolescent girls face similar constraints, such as the need to uphold *pardah*. As their movement is limited, adolescent girls may be reluctant or unable to move out of their household shelter and are likely to face difficulty accessing humanitarian services.
- **Children may take up shelter with people who are not their immediate family members**, putting them at potential risk of abuse and/or exploitation (UNICEF 20/06/2017).
- Lack of lighting is often a concern for women in cyclone shelters and in other displaced settings after disasters. In the camps and settlements, lack of lighting remains a safety concern. 40% of majhis indicated that inadequate lighting is a primary safety concern related to shelter (IOM NPM Round 9). If **cyclone warnings are issued late at night, people will have reduced ability to relocate** as it will be difficult to navigate in the dark. Existing lighting is likely to be damaged due to the impact of the cyclone causing concerns in the days that follow.
- As of 2015 only around 7.7% of cyclone shelters in Cox's Bazar had separated or private spaces for women (Jisan et al 03/2015). The **lack of a private or separated space for men and women has acted as a major deterrent for evacuation**, as women have to uphold *pardah* (IFRC 2010; Paul 2014). This may be an issue for the Rohingya population in host communities, and host communities themselves.
- Vulnerable populations will face more difficulty in the event of a cyclone. These include:
 - **People with disabilities and older people will find leaving their shelters challenging.** Should people decide to shelter in structures inside the camps and settlements, similar problems may arise due to the difficult terrain.
 - Previous reports show **early marriage increases in occurrence after cyclones**, as families feel their condition has worsened (Hassen et. al 01/2015). Among the Rohingya population, early marriage is common practice, and may increase to cope with the disaster.
 - **Human trafficking and violence against women and girls are known to increase after natural disaster.** 71% of assessed Bangladeshi women indicated an increase in violence during a disaster, including domestic abuse and rape. Among the Rohingya population, similar concerns exist including that overcrowding may exacerbate violence (Hassen et. al 01/2015).

Nutrition

- **Most nutrition facilities are temporary and have limited protection from natural disasters** (Nutrition sector 12/2017). A cyclone and possible subsequent floods and landslides will affect nutrition operations, for a full description of risks see the **March monsoon review**.
- **Cyclones have been shown to have a direct negative effect on wasting** in children. Cyclone events correlate with lower weight for height z-scores, meaning that levels

of acute malnutrition increased after cyclonic events. A common explanation for this is that children are not getting sufficient food or that they are not able to process this food due to diarrhoea. In addition, dietary diversity is possibly negatively affected as well (WFP & HKI 07/2015).

Education

- Providing education for the Rohingya children in Bangladesh faces significant challenges (curriculum not allowed, lack of land for education facilities, lack of qualified teachers). Based on what has been learned about the impact of natural disasters such as cyclones on education it can be expected that there will be challenges with continuing to provide temporary learning opportunities to Rohingya children.
- **Reduced attendance and school dropout is common after a cyclone in the host community**, due to loss of learning materials and use of schools as cyclone shelters or accommodation for people whose homes have been damaged. Children are more likely to have to engage in work inside or outside the house following a disaster. There are also recorded increases in early marriage (ACAPS SDR 2014).
- **Girls, particularly in class four and five, struggle to access schools during disasters** due to domestic work and privacy-related issues such as lack of gender-segregated toilets in schools (ACAPS SDR 2014).

Information gaps

The most significant gap in knowledge comes directly from the fact that the current Rohingya influx is unprecedented in terms of the size of the population and the density of the sites in which they live. Because of this, there are limited direct lessons which can be found about the Rohingya population and the sites in which they currently reside in relation to cyclones. The government has not made its position clear on the provision of aid, services, movement restrictions, and/or relocation of the Rohingya population. The lessons here and stakeholder preparedness are thus based on what has been learned about similar situations and applying this to what is known about the current situation.

- There is no information on the number of mosques or madrassas in camps and settlements. This is important as these may be important places people shelter or pray in during a storm.

- Limited information on large, safe structures in camps and settlements is publicly available. It is unclear which exact structures have better chances of withstanding a cyclone.
- Number of structures with CGI roofing have not yet been mapped out.
- There is no information on the lessons learnt regarding shifts in vulnerability in the camps as a result of cyclones.
- It is unclear how the Rohingya population intends to respond to a cyclone.
- It is not always clear how the GoB targets beneficiaries for food and cash distribution in Bangladeshi host communities.

NPM-ACAPS Analysis Hub is supported by

