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Rohingya Refugee and Humanitarian Crisis: Synergies within Bangladesh Government and Humanitarian Communities

(Case study: WASH for Rohingya Refugee)

Md Mostafizur Rahman

Division of Water Resources Engineering
Department of Building and Environmental Technology
Lund University

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By:

Md Mostafizur Rahman

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Division of Water Resources Engineering
Department of Building & Environmental Technology
Lund University
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221 00 Lund, Sweden

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Author:	Md Mostafizur Rahman
Supervisor:	Linus Zhang
Examiner:	Ronny Berndtsson
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Abstract

Humanitarian Crisis is an alarming problem throughout the world. Bangladesh also is undergoing Rohingya refugee crisis with grave severity and challenges. Over 1 million Rohingya people have been settled over the top of hills, living without inadequate WASH facilities. This study tried to analyse the humanitarian crisis by Pressures-States-Responses framework depicting the factors exacerbating the situation, its impact and responses to overcome the crisis. Results showed that unplanned water and sanitation structures, risk of landslides and soil erosion with flooding and wind-storms during monsoon, lack of coordination, unavailability of fund etc. are inflaming the crisis creating severe health problem to the vulnerable people. Hence, to overcome the crisis, a synergies mechanism within Bangladesh and Humanitarian communities like UN agencies, LNGOs, INGOs etc. had been established. To solve WASH crisis, WASH Sector, leaded by DPHE, on behalf of Bangladesh, and co-chaired by UNICEF and Action Against Hunger had taken several respone activities. Besides, UNHCR, IOM, MSF, OXFAM, BRAC etc. are collaboraing each other to improve WASH crisis. Responses also had been taken by Bangladesh Government funded by World Bank and ADB. Yet to progess a lot, hence multilateral discussion within countries and agencies, water safety plan, rain water harvesting, hill slopes strengthening and more studies and research are recommended to initiate in this study.

Key words: Rohingya Refugee, Humanitarian Crisis, WASH, Synergies, Humanitarian Community.

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ACRONYMS

AWD-Acute Watery Diarrhoea
CIC-Camp-in-Charge
CwC-Communicating with Communities
DC-Deputy Commissioner
DPHE-Department of Public Health Engineering
FDMN-Forcibly Displaced Myanmar Nationals
FGD-Focus Group Discussion
FSM-Fecal Sludge Management
GBV-Gender-Based Violence
GoB-Government of Bangladesh
GoC-Government of Canada
IFRC- International Federation of Red Cross and Red Crescent Societies
INGO-International NGO
IOM-International Organization for Migration
ISCG-Inter Sector Coordination Group
JRP-Joint Response Plan
LNGO-Local NGO
MSF- Médecins Sans Frontières
NGO-Non-Governmental Organization
NPM-Needs and Population Monitoring
O&M-Operations & Maintenance
RRRC-Refugee Relief and Repatriation Commissioner
SEG-Strategic Executive Group
SGD-Sustainable Development Goals
UN-United Nations
UNFPA-United Nations Population Fund
UNHCR-UN High Commissioner for Refugees
UNICEF-UN Children's Fund
UNOCHA- UN Office for the Coordination of Humanitarian Affairs
WASH-Water, Sanitation and Hygiene
WFP-World Food Program
WHO-World Health Organization

Chapter 1

1. Introduction

1.0 Background

Refugee problem is one of the most complicated issues of today which is multidimensional and global. The wretched matter is that lots of ill-fated human beings are facing curses every year in this lovely world becoming landless, houseless and even orphan. The problem started mainly in the middle of twentieth century when most of the refugees were European, but presently majority are from Africa and Asia. Alarmingly, 80% of today's refugees are women and children. Above all, it is comprehensible that refugee problem is directly linked with human rights and such rights should be honoured before, during and after the process of seeking asylum to restrain and reconcile refugees flow (UNHCR, 1993). A survey from UNHCR shows (Figure 1) that since 2007, the number

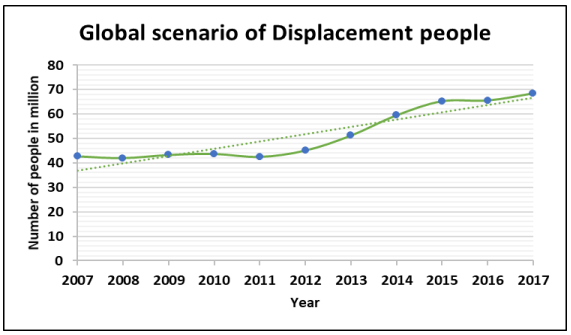


Figure 1: Global scenario of displacement people.

of displacement people are gradually increasing. In 2007, it was 42.7 million and in 2017 the number reached at 68.5 million which indicates that in the last 10 year the number increased by more than 60% (UNOCHA, 2019). Socio-political crises are exacerbating the number of vulnerable people, like Rohingya Refugee, wrestling with humanitarian catastrophe and such vulnerable people are the most challenging for social stability (SEG, 2019). The pain of the stateless people is strenuous to feel since they lose to claim human rights and that is the fate of many refugees today, including Rohingyas, whose human rights now require to be assured both inside the closed territories of national states and in the wide world of globalization (Ludden, 2019).

From the middle of twentieth century, Bangladesh has begun to undergo the muddle of Rohingya issues and now the hurdle becomes very complicated regarding severe human crisis. Mainly some inhuman actions of Myanmar military, UN called it "a textbook example of ethnic cleansing" (Asrar, 2017), Rohingyas have been obliged to flee to the neighboring safe place of livelihood Bangladesh as Figure 2 showed the fleeing status of Rohingya people to Bangladesh. It was the year 1978 when the 3rd major Rohingya influx (till 2019) in Bangladesh had happened, around 220,000 Rohingyas ensued but after few months 180,000 are forcibly repatriated (ACAPS & NPM, 2017). The 2nd major Rohingya influx was in 1991-'92, around 250,000. In 1992, a Memorandum of Understanding (MOU) signed

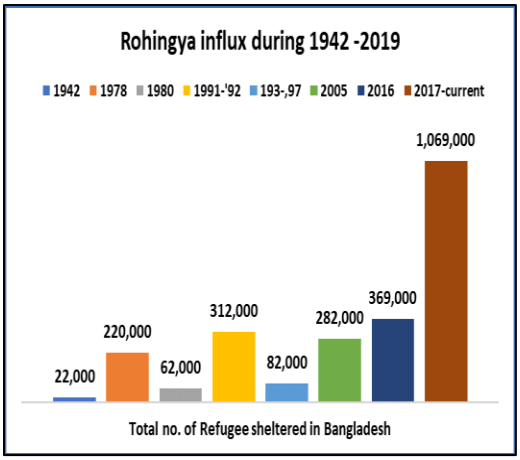


Figure 2: More than 1 million Rohingya influx during 1942-2019

between the Governments of Bangladesh and Myanmar. In 1993, an MOU signed between the UNHCR and GoB, to guarantee the protection of the refugees in the camps and voluntary repatriation through private interviewing of refugees. According to MoU, around 230,000 Rohingyas repatriated between 1993-'97. But unfortunately, again in 2017, the huge number Rohingya influx proceeded to Bangladesh. (MSF, 2002)

Pope, the head of the Catholic Church and sovereign of the Vatican City State, called Rohingya as "the presence of God today" during His visit to Bangladesh (Report, 2017). Filippo Grandi, UN high commissioner for refugees, declared Rohingya crisis as one of the world's biggest refugee crisis (Aljazeera, 2019). "Treated like cattle", one of the Rohingya Refugee families shared their status with Angelina Jolie, the envoy for the UN refugee agency and Hollywood star (The Guardian, 2019). UNICEF (2019) mentioned the world's fastest-growing humanitarian emergency as the children's crisis since around sixty percent of the Rohingya's are children. Government of Canada implied to treat Rohingyas with respect and dignity irrespective of religion, ethnicity or where they came from (GoC, 2018). The former US president Barak Obama articulated that Rohingya held the same dignity as we did, in his speech at Yangon University, Myanmar (Ullah, 2017a).

Hence, the Humanitarian crisis is easily distinguishable. Practically, although from the very beginning Bangladesh has saved the lives of one million refugee, the country itself facing enormous socioeconomic challenges due to massive population, unplanned urbanization, natural disasters and adverse climate change effects (SEG, 2019). Porter (2019) mentioned that while Rohingyas were safe from the violence of Myanmar, but now they had to face another challenge of finding clean water. Hence, simply the crisis seemed to be a crisis of WASH including other basic needs of human being.

Emphasizing on ensuring the life-saving support to Rohingya People, SEG (2019) asserted that the role of Government, Non-government and International organizations were indispensable to establish human dignity through effective synergies mechanism. Principally, as a host country Bangladesh has a tremendous responsibility to lessen the humanitarian crisis. On the other hand, since the unwholesome living environment are direly affecting the future of Rohingya people which is against the Humanitarian principle. the Humanitarian community has also vital role to mitigate the dilemma. Eventually, a synergies mechanism is vitally important within host country, Bangladesh and Humanitarian community to resolve this greatest humanitarian crisis.

1.2 Terms of understanding

Rohingya Refugee

Rohingyas are from Myanmar's western Rakhine state considered as ethnic, linguistic and religious minority of the Myanmar community (Al Imran & Mian, 2014). The Government of Bangladesh mentions the Rohingya as Forcibly Displaced Myanmar Nationals (FDMN) and the UN system refers to this population as Rohingya refugees, in line with the applicable international framework. (SEG, 2019)

Humanitarian Crisis

The criteria of humanitarian crisis mentioned by Colliard & Others (2014) as:

- A rapid and serious deterioration in a situation,
- Numerous victims or numerous people whose lives are in danger,
- The unique nature and the extent of the crisis plunges the population into a situation of great distress,
- Substantial material destruction,
- Institutional management undergoing great difficulty or incapable of managing the situation.

Rohingya Refugee crisis is conspicuously a humanitarian crisis since they are lodging in a situation with high levels of human suffering in which basic human welfare is in danger on a mighty scale (Quintanilla, et al., 2014). Hence, undoubtedly the Rohingya situation is one of the greatest humanitarian crises of the world in now-a-days.

Humanitarian Community

The Community engaged with Humanitarian aid. Basically, Humanitarian connects to the practice of saving lives and alleviating suffering. It is usually related to emergency response (also called humanitarian response) whether in the case of a natural disaster or a man-made disaster such as war or other armed conflict. Therefore, Humanitarian aid is material and logistic assistance to the people of homeless, refugees, and victims of natural disasters, wars and famines who need help. Naturally, Humanitarian aid is short-term help. (wikipedia, 2019)

Synergy

The combined power of a group of things when they are working together that is greater than the total power achieved by each working separately. Team work at its best results in a synergy that can be very productive. Synergies is plural of Synergy. (Cambridge, 2019)

WASH

WASH is the collective term for Water, Sanitation and Hygiene. Due to their interdependent nature, these three core issues are grouped together to represent a growing sector. While each a separate field of work, each is dependent on the presence of the other. For example, without toilets, water sources become contaminated; without clean water, basic hygiene practices are not possible. (UNICEF, 2016a)

1.3 People of Point

The Humanitarian crisis was not limited within Rohingya crisis, the problem similarly affected the host communities also. So, to overcome the humanitarian crisis first it was important to find out the affected and target populations. Hence, the term ‘affected populations’ refers to the entire population impacted by the crisis, including host communities. People ‘in need’ refer to a sub-set of the affected population who have been assessed to be in need of protection interventions or humanitarian assistance as a result of the crisis. ‘Target population’ refers to those people in need who are

specifically targets of support interventions and assistance activities contained in this response plan (SEG, 2019). Practically, it is not workable to work for whole affected people at the same time.

The following figures (Figure 3 & 4) show that most of the Rohingya Refugee sheltered in the Ukhia Upazila, Cox's Bazar and specially in the Kutupalong-Balukhali Expansion camp site.

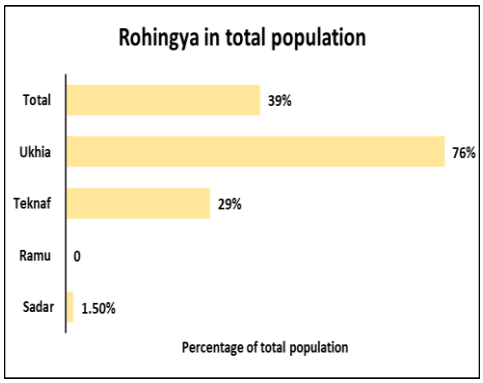


Figure 3: Most of the Rohingya people are in Ukhia Upazilla, Cox's Bazar.

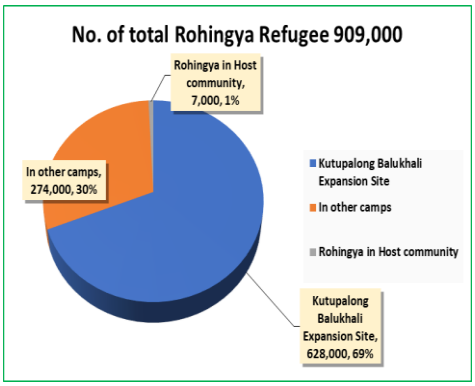


Figure 4: Most of the Rohingya are in Kutupalong-Balukhali Expansion Site.

Interestingly, 76% of Ukhia's population are Rohingya now. The situation of Teknaf is better compared to Ukhia, here 29% (Wake & Bryant, 2018). Another vital matter, 69% of Rohingya Refugees have been staying in the Kutupalong-Balukhali Expansion camp which made it one of the largest refugee camps in the world. As a consequence, the population density in Ukhiya has increased to 3,468 per km2 and the average density of Ukhiya and Teknaf increased to 2,085 per km2 (ISCG, 2018a) as shown in Figure 5.

Among the FDMN people, only 3% having age 60 or more, whereas 55% are children (WHO, 2019a) as shown in Figure 6. Bangladesh government and International community have saved countless children's life by taking humanitarian effort but concurrently, there is still no viable solution in sight for these Rohingya children, who live in the world's gigantic and most clogged refugee settlement. (Bhuiyan, 2019).

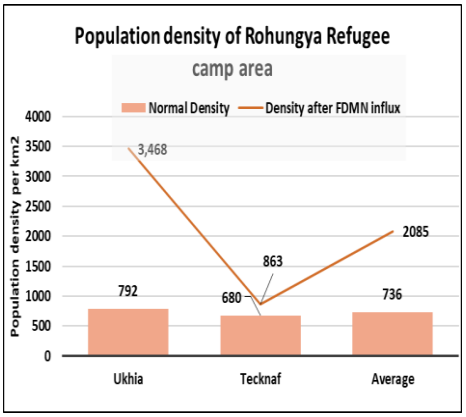


Figure 5: Population density of Ukhiya and Teknaf after Rohingya influx

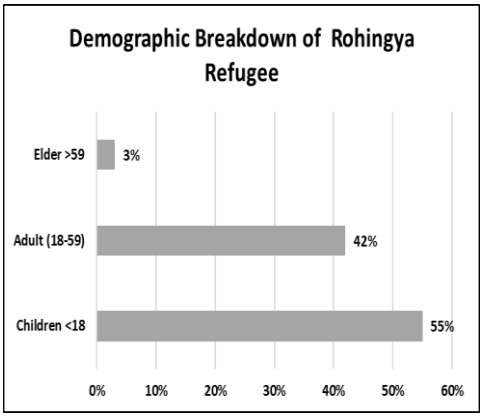


Figure 6: Demographic breakdown among FDMN

1.4 Problem formulation

1.4.1 Lack of WASH facilities

UN declared the human right to water and to sanitation as the right of every individual, without discrimination, to sufficient, safe, acceptable, accessible and affordable water and sanitation for personal use. Even in any emergency situations such as conflict-related humanitarian crises or natural disasters, retain all of their human rights, including to water and sanitation and there are no conditions that can justify a failure to fulfil them. (UNICEF, 2014)

The camps are outstandingly gridlock having lack of clean water and proper sanitation facilities (Loy, 2017) and are prone to natural disasters, especially cyclones and floods (GOB, 2019). The water crisis seems an old crisis facing from early stage of Rohingya influx as a woman lamented that she had to spare water for her other family members which made her to take bath only two or three times per month (MSF, 2002). Similar problem with the sanitation facilities which is mentioned as a big issue, especially for women, which leads to very poor hygiene practices, lack of privacy and unsafety, increasing the risk of sexual abuse and harassment. (OXFAM, 2019a)

1.4.2 Uncertainty of Children's future

Children of Rohingya Refugees, living in the most crowded camp are deprived from basic education and healthy environment to flourish inherit qualities. Patinkin (2018) stated as the next generation had no dreams. Literally the place is not for boys and girls who are busily helping families, fetching heavy

containers of contaminated water, standing in long queue for food handouts (UNICEF, 2017a).

1.4.3 Ecological Imbalance

There was huge deforestation in the Refugee camp due to rapid and unplanned set up of camps (MSF, 2018a). Besides, the existing camp has rapidly expanded into forest areas (GOB, 2019). Noticeably, Teknaf Wildlife Santuary is an area of 538 species of plants and 613 species of wildlife, including Asian elephants. Hence, the deforestation might be alarming for the coastal resilience of Teknaf Peninsula (Imtiaz, 2018).

1.4.4 Health Crisis

Rohingya humanitarian crisis is directly associated with health crisis, especially for children and women who are suffering from malnutrition and water-borne diseases. Singh & Others (2018) mentioned that Acute Watery Diarrhea (AWD) and Water and Sanitation Diarrheal diseases are common in refugee camp settings. Needless to say, conditions in the overcrowded refugee camps are auspicious for the spread of any disease. (Loy, 2017)

1.4.5 Socioeconomic disturbance

Already it is noticed that the number of Rohingya Refugee in Ukhia and Teknaf is well enough to create substantial unbearable condition in the locality economically, socially and culturally (COAST & CCNF, 2018). Specially, in and around the makeshift camps the crisis increases among the registered refugees, the local population and unregistered Rohingya due to lack of water and other basic resources. (Kiragu, et al., 2011)

1.4.6 Natural disasters

During monsoon, there is a high risk of landslides of the Rohingya Refugee settlement due to its hilly topography (Crew, 2018). Moreover, heavy rains could smash existing latrines and tube-wells, washing sewage into drinking water supplies, raising the threat of disease outbreaks (Mehta & Kuschminder, 2018) which exacerbate the humanitarian crisis.

1.5 Research Question & Objectives of the Study

1.5.1 Research Question

What are the challenges to overcome Rohingya Humanitarian Crisis, namely WASH crisis through effective synergies within Bangladesh Government and Humanitarian community?

1.5.2 Objectives of the Study

Water and human existence are the two sides of the same coin, hence humanitarian crisis means basically water crisis and in another sense weakness of effective synergies. Certainly, water is directly related to health, sanitation, food and nutrition, education and overall human dignity. So, it's the responsibility of the people of Bangladesh as well as world community to protect the dignity of Rohingya Refugees through effective coordination.

Hence, the objectives of this study are:

1. Finding out the factors exacerbating the WASH crisis;
2. Assessing synergies mechanisms within Bangladesh Government and Humanitarian Communities to subdue Rohingya humanitarian crisis;
3. Analyzing response activities regarding WASH crisis.

1.6 Relevance of the Study

The problem concerning Rohingya Refugee crisis is one of the grave challenges for Bangladesh to reach to Sustainable Development Goals since a society within territories without having sound health, safe drinking water and sanitation facilities means lack of sustainability of the country and importantly as the cost of unsafe water is enormous. Certainly, to overwhelm such emergency humanitarian crisis, the role of humanitarian communities and International organizations are crucial. Hence, the coordination mechanism is very important to control such dilemma state.

1.7 Limitations of the Study

The world societies and Bangladesh Government are running conjointly to ensure livelihood facilities for more than 1 million Rohingya Refugee and the affected host community who are unceasingly facing confronts to have sound health, better WASH (Water, Sanitation & Hygiene) facilities and human dignity. Although the author was able to make a short visit to the Rohingya Refugees' overcrowded camps to perceive the humanitarian crisis, but that was too little to comprehend the whole situation. Both time and financial restrictions were the prime limitations of this study. Moreover, there seemed to be coordination gap up to a level within different agencies. In addition, it was not possible to get any information regarding the role of public representatives to solve the crisis.

1.8 Outline of the Thesis

There are five chapters in this thesis work. Chapter 1 is the introduction, which includes background, terms of understanding, people of point, problem formulation, research question and objectives of the study, relevance of the study, limitations of the study and methodology. Chapter 2 offers reviewing of laws related to Refugees, present WASH scenario of the refugee camps and framework of synergies mechanism within Bangladesh Government and Humanitarian communities. Chapter 3 reflects the analysis framework PSR (Pressures-States-Responses). Chapter 4 discloses the findings and discussions with challenges. Lastly, Chapter 5 concludes with conclusion and Recommendations.

1.9 Materials and Method

1.9.1 Data

Both primary and secondary data sources were used to collect research information. The primary information has been collected through discussion with concerning government officials and field visit at the Rohingya Refugee camps in Ukhia upazilla of Cox'sBazar. Journal articles, books, government, non-government and international organisation reports including articles published in the electronic and print medias were the sources of the secondary information. The study adopts both qualitative and quantitative approach in analyzing the issue.

1.9.2 Study area

There are total 34 Rohingya Refugee camps which is situated in two upazilas in Cox's Bazar district, Bangladesh. The district Cox's Bazar, around 400 km away (by road) from capital Dhaka, is the most famous tourist zone in Bangladesh having the longest natural sea beach in the world. Figure 7 shows the location of Cox's Bazar (Rasheed & Sakhawat, 2017) and Rohingya Refugee camp.

Figure 7: Location of Rohingya Refugee camp, Cox's Bazar, Bangladesh

1.9.3 Special features of the study area

The hydrology of the study area is mainly typical hill slope and the area is complicated by the varying terrain and topography. During monsoon, runoff from adjacent uplands regulates the surface hydrology in the forest areas. Another important feature is that there is interaction between fresh water flowing from the upstream hilly areas and the tides flowing from the Bay of Bengal. (GOB, 2019). The hydrogeology of the study area is based on lithology which has complex groundwater conditions characterized by a complex geology of folded Tertiary sediments. Fortunately, the area is apparently arsenic free, but high

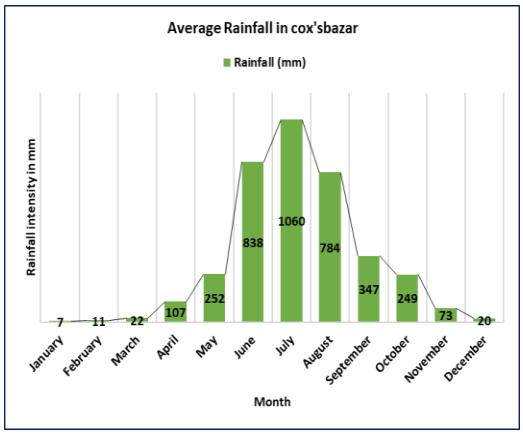


Figure 8: Monthly average rainfall in the study area.

groundwater salinity exists in areas close to the Bay of Bengal. Usually, the Teknaf area is unsuited for shallow depth tube-wells (less than 400ft). (GOB, 2019). Cox's Bazar's climate is tropical having monsoons characterized by mainly 4 seasons; pre- monsoon (March to May), Monsoon (June to September), post monsoon (October to November), and dry season (December to February). Importantly, the study area is highly susceptible to tropical cyclone and tidal surges. Cyclone storms develop in the Bay, generally in April – May and October- November, occasionally coming to shore and causing severe damage to human settlements. The monthly average rainfall in the study area (Ahmed, 2018) is shown in above Figure 8.

1.9.4 Methodology

PSR (Pressures-States-Responses) framework

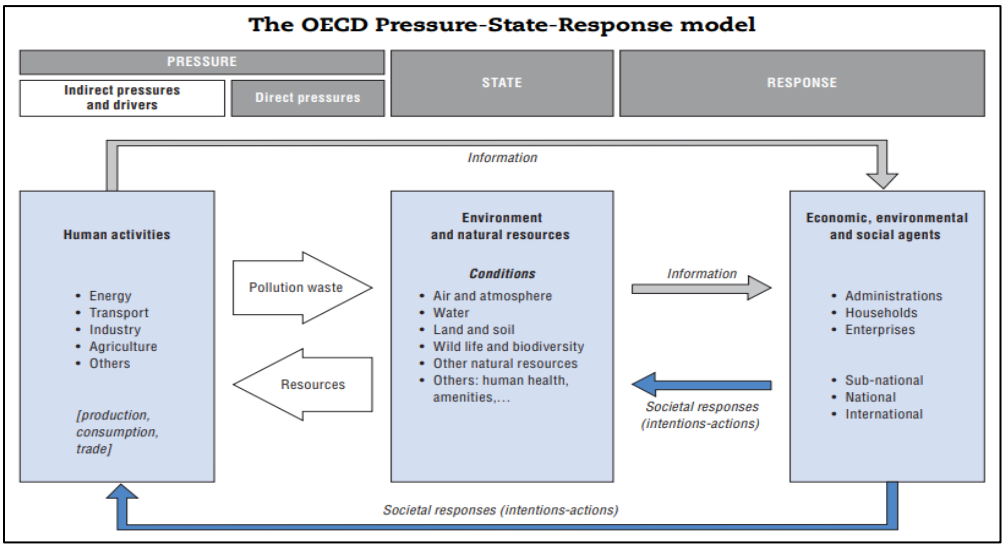


Figure 9: PSR (Pressures-States-Responses) framework by OECD

For the analysis of Humanitarian Crisis and its coordination Responses, PSR (Pressure-State-Response) framework is a suitable tool since humanitarian crisis is influenced by some internal and external factors, creating interactions within society and environment describing a cause-effect relationship so as the aim of PSR framework developed by OECD as shown in Figure 9 (OECD, 2013). The analysis's results through PSR framework might be a good understanding of the policy maker and humanitarian community to solve the crisis for better welfare of the humanity.

Chapter 2

2. Review of Refugee Rights, WASH scenario and Synergy mechanism

2.1 Rohingya Refugee status in Bangladesh law

Rohingya Refugees are remarked as *Forcibly Displaced Myanmar Nationals (FDMN)* by the government of Bangladesh (SEG, 2019) since Bangladesh is not a party to the 1951 Refugee Convention or its 1967 Protocol and the 1954 and 1961 Statelessness Conventions, even there is no domestic law in Bangladesh to regulate the administration of refugee affairs or to guarantee refugee rights (Kiragu, et al., 2011). This is why the Rohingya Refugees are noticed as "Stateless". Nonetheless, from the very beginning Bangladesh is struggling to protect the Rohingya people continuing its efforts to ensure basic human services on humanitarian ground. As a neighbouring country, Bangladesh treated them as guests (DPHE, 2018) since Bangladesh is party of different human rights conventions which indirectly protect the rights of refugees and asylum seekers, such as the Convention on the Rights of Migrant Workers and Their Families (Kiragu, et al., 2011), the UN Convention on the Rights of the Child (Reliefweb, 2018). Besides, article 25 of the constitution of Bangladesh is another reason of obligation for Bangladesh to continue with the refugee issue coming from other states (Al Imran & Mian, 2014).

2.2 WASH scenario at Rohingya Refugee camp

Rohingya people live in areas with population densities of less than 15 square metres per person which is far below even the bare minimum international guidelines for refugee camps: 30 to 45 square metres per person. Studied revealed that even 20 square metres per person would not allow room for crucial infrastructure like water and waste treatment facilities (Loy, 2017). The compressed living space clearly depicts the picture of WASH in the camp.

Sourcing from ISCG, Alamgir & Islam (2017) unfolded that 30 per cent of the 5,338 handpumps installed in the camps had become non-functional. SUMAN (2018) also mentioned that out of 6,000 shallow tube wells, about 1,500 were out of order, mostly due to a drop in the underground water level and a lack of proper maintenance. Sad to say, in April 2018, 42 % of individuals having less than 3 liters of clean drinking water daily which was insufficient to meet the basic needs of human body (Porter, 2019). Molla (2018a) mentioned that

sometimes it took ten hours for a family to get water due to long queue and many women bathed only once a week with the managed bucketful of water.

The reality is that the initial WASH scenario of the Refugee camps was severely precarious. Referring to a survey, Loy (2017) mentioned that more than 90 percent of household water sources in the camps are contaminated with E. coli bacteria (Figure 10). The test had been conducted between 18 September and 25 November 2017. It can be easily detected that only 9 % households were out of contamination risk whereas five times households were in greater risk of very high contamination.

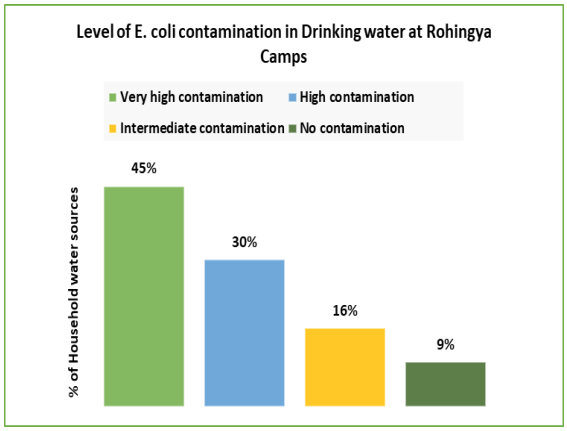


Figure 10: Level of E. coli contamination in household water sources.

Loy (2017) pointed out that more than one third of the 33,000 latrines installed in the camps are already unusable. Due to topography of the camp location, many facilities had been nonfunctioning and the plumbing systems didn't work properly. Figure 11 is outlining the number of vulnerable women which is more than 27% of the total affected people. Hence, around 350,000 vulnerable women were more endangered due to very poor sanitation. (UNFPA, 2018)

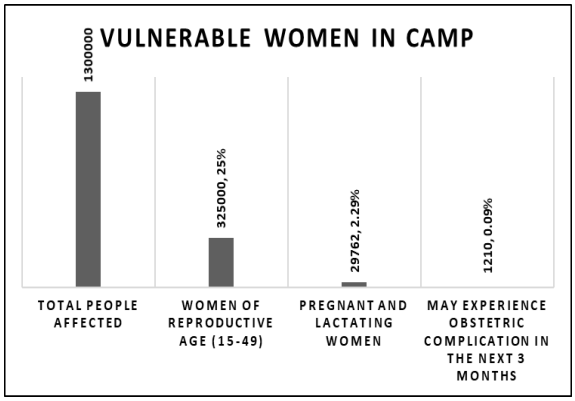


Figure 11: Vulnerable women in Camp

Furthermore, the risk of outbreaks of water borne diseases had been greatly widened due to poor hygiene and sanitation conditions (UNICEF, 2017b). Almost 95 per cent of toilets were close to water points which ultimately degraded the water quality (IOM, 2018). The Figure 12 illustrates that at the beginning of Rohingya influx, there were all are local patients, but later the picture was antithetical (COAST & CCNF, 2018). Woefully, in late 2017, an outbreak of acute watery diarrhea (AWD) had been seen resulting over 36,000 cases of AWD leading to10 deaths. (Porter, 2019)

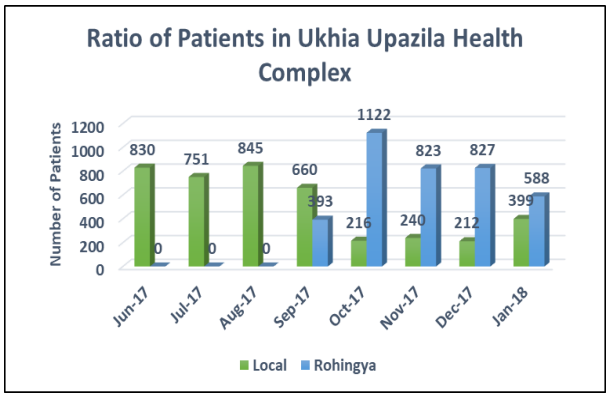


Figure 12: Ratio of Patients in Ukhia Health Complex

Daily nine million litres of safe water needed to meet water requirements of the target people. Several thousands of latrines had to be installed for safe sanitation and to stop outbreak of water borne diseases. Moreover, hygiene promotion activities were urgently needed. (UNICEF, 2017a)

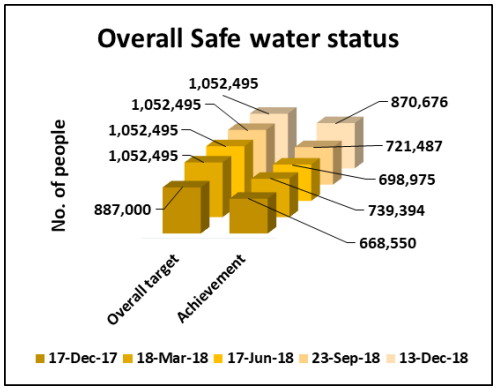


Figure 13: Safe drinking water status for overall target vs achievement.

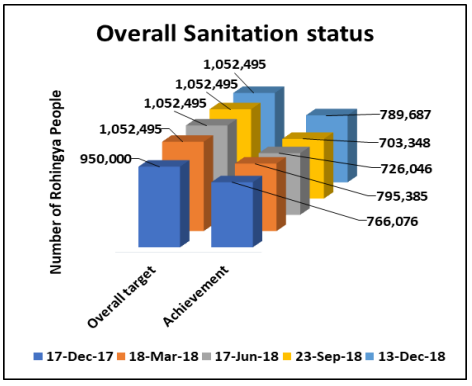


Figure 14: Sanitation status for Overall target vs Achievement.

At the end of 2017, 75% of the target population were covered by providing safe drinking water and after one year the number increased only by 8% i.e. the total coverage was 83% (Figure 13). Overwhelmingly, in the middle of 2018, the coverage was decline substantially. That time 66% people were served by safe drinking water. (UNICEF, 2017-'18)

The portrait of sanitation is not also satisfactory. In December 2017, 81% target population were embedded with safe sanitation facilities. But regrettably, the number was decreasing until September 2018 which was 67%. Although, in December 2018, the number slightly increased, reached at 75% still far behind from the target. Above Figure 14 is showing the whole achievement (UNICEF, 2017-'18). The image of hygiene improvement is quite reasonable. Initially, only 33% people were covered by hygiene facilities. Later, the facilities increased gradually and at the end of December 2018 which reached at 95%. Figure 15 shows that more than 50,000 people were needed hygiene facilities to reach the target. Compared to water supply and sanitation facilities, the hygiene status was competent at the end of 2018 discovering the overall achievement as 83%, 75% and 95% respectively. (UNICEF, 2017-'18)

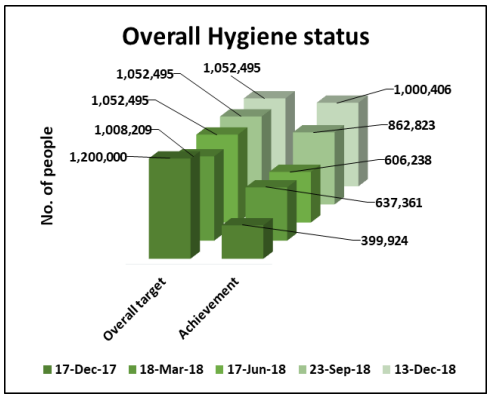


Figure 15: Hygiene status for Overall target vs Achievement

2.3 Humanitarian principle and Refugee Rights

It is vital to have a clear benchmark to establish any rights and so for refugees also. Hence, the most recognized and acceptable convention was the 1951 United Nations Convention relating to the Status of Refugees, and its 1967 Protocol relating to the Status of Refugees (UNHCR, 1993). According to the 1951 Refugee Convention, a refugee is defined as "a person who: Owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country or to return there because there is a fear of persecution...". Human rights law also talks about the rights of asylum as according to the Universal Declaration of Human Rights (UDHR) 1948 of Article 14(1), "Everyone has the right to seek and to enjoy in other countries asylum from persecution". Sensibly, the international refugee law is a part of the human rights law which aim is to promote human rights. (Al Imran & Mian, 2014)

The basic rights and others minimum standards for refugees such as treatment and juridical status were set by the convention. Moreover, it is strictly

constrained to expel or return forcibly of the refugees. IFRC (2019) mentioned the fundamental Principle of Humanity as:

- To prevent and alleviate human suffering wherever it may be found;
- To protect life and health; and
- To ensure respect for the human being;

UN Secretary-General, Antonio Guterres mentioned the 'world humanitarian summit 2016 for Refugees' as one step towards joint endeavor to lessen human suffering (UNOCHA, 2016). The humanitarian summit had three main goals as:

a) To re-inspire and reinvigorate a commitment to humanity and to the universality of humanitarian principles;
b) To initiate a set of concrete actions and commitments aimed at enabling countries and communities to better prepare for and respond to crises and be resilient to shocks; and
c) To share best practices which can help save lives around the world, put affected people at the center of humanitarian action, and alleviate suffering

2.3.1 WASH Rights of Refugee

Comprehending water aspects in a refugee situation is foremost since untoward circumstances creates water more critical. To make the state comfortable and advantageous, UNHCR (2011) claimed that access to clean water was not just "what" but also "how" provided this life sustaining resource. Hence, UNHCR asserted on some directives for refugee camps, such as:

- Adequacy and equity of water distributed
- Acceptability and safety of water supplied
- Social costs (burden) on the users
- Physical safety of the users
- Reliability of supply
- Environmental concerns/hazards
- Efficiency of supply
- Participation of stakeholders

According to (Sphere, 2018), the needs of basic water for a human being is 7.5 to 15 litres per day depending on different context like climate and individual physiology, social and cultural norms, food type etc. Similarly, as per (UNHCR, 2011) the average quantity of water available per person/day is at least 20 litres. UNHCR (2011) also stated for one hygiene facilitator per 500 refugees, ensuring gender balance in water committees, organizing minimum

one water quality test per 5000 beneficiaries per month etc. Sphere (2018) also expressed for minimum number of sanitation facilities i.e. latrines for any community, public places and institutions. Hence, for 50 Rohingya people, 1 toilet was recommended considering short-term period but regarding medium and long term 1 toilet is 5 persons only.

2.4 Synergy and Rohingya Humanitarian Crisis

Jim Yong Kim, the World Bank Group President, opined that refugee problem was not just a problem of host countries or just a problem for the refugees. The refugee situation was everyone's problem (Haider, 2019). Realistically, the Rohingya refugee crisis needs an effective coordinated response without any ambivalence. SEG (2019) also mentioned that to face the emergency of the Rohingya humanitarian situation, clear and effective coordination was essential since coordination would assure the most efficient and harmonized use of resources, and quick identification of gaps, duplications, and operational challenges. Sphere (2018) also highlighted that effective coordination would ensure to meet the needs optimizing WASH responses.

2.4.1 Key Humanitarian Actors

The Rohingya crisis is essentially a multidimensional humanitarian crisis where actors having different responsibilities are coordinating within themselves to overcome the crisis. As indicated in the Figure 16, the actors can be divided in two categories. Firstly, government stakeholders or state actors and secondly, humanitarian community. Hence, the major state actors are:

- Representatives of the central government (At national level);
    - PMO (Prime Minister's Office)
    - MoDMR (Ministry of Disaster Management and Relief)
    - MoFA (Ministry of Foreign Affairs)
    - MoHA (Ministry of Home Affairs)
- Representatives of the central government (At district/local level);
    - RRRC (Rohingya Relief and Repatriation Commission) under MoDMR
    - AFD (Armed Forces Division)
    - Police
    - DPHE (Department of Public Health Engineering) under MoLGRD&C
    - DGHS (Directorate General of Health) under MoHFW
    - DC (Deputy Commissioner) under MoPA

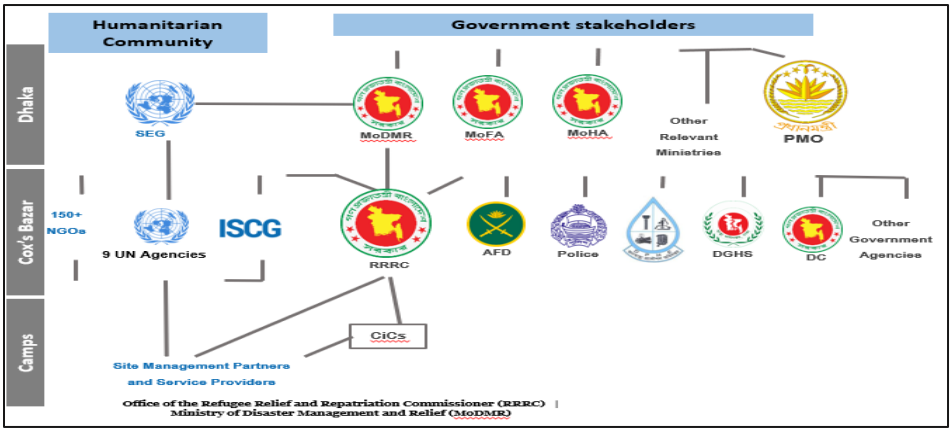


Figure 16: Key actors to manage Rohingya Response. (Sources: Kaja Blattman, Liaison Officer, RRRC, Cox's Bazar, Bangladesh).

2.4.2 Humanitarian Communities

- Local and national humanitarian actors (LNHA);
  - ✓ Bangladeshi NGOs
  - ✓ CCNF (Cox's Bazar CSO (Civil Society Organizations) NGO Forum)
  - ✓ Donor Organizations
- International humanitarian actors:
  - ✓ INGOs (International NGOs)
  - ✓ UN Agencies
  - ✓ Donor and philanthropic organizations (EU, CERF etc.)
  - ✓ Donor Governments

2.4.3 Coordination mechanism

Coordination regarding to deal with Rohingya Humanitarian Crisis Responses is maintained primarily in three levels; national level, field level and camp level. The following chart (Figure 17) depicts the whole picture of coordination mechanism.

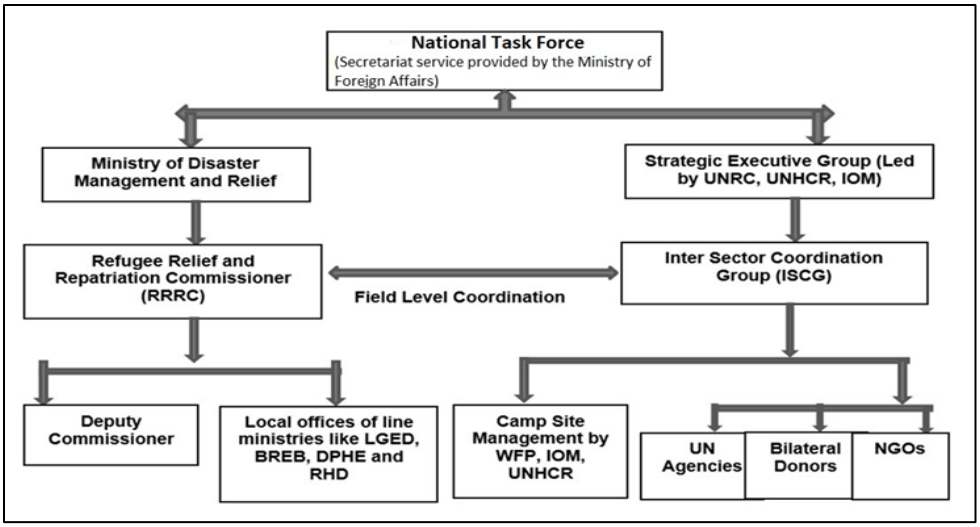


Figure 17: Coordination chart to manage Rohingya Response. (Sources: Kaja Blattman, Liaison Officer, RRRC, Cox's Bazar, Bangladesh).

In 2013, Bangladesh government initiated a strategy named "National Strategy on Myanmar Refugees and Undocumented Myanmar Nationals" for coordination with humanitarian communities which inaugurated the National Task Force (NTF), chaired by the Ministry of Foreign Affairs (SEG, 2019). Hence, at national level NTF is responsible for any kind of coordination. On the other hand, the Inter-Sector Coordination Group (ISCG) is the central coordination body for humanitarian agencies serving Rohingya refugees in Cox's Bazar, Bangladesh. These agencies are organized into 12 thematic Sectors and Sub-Sectors (e.g. Protection, Health, WASH) as well as Working Groups that focus on cross-cutting issues (e.g. Protection, Gender in Humanitarian Action, Communicating with Communities) (ISCG, 2018b). ISCG is led at the national level by the Strategic Executive Group (SEG) comprising representatives of IOM, UNHCR and the UN Resident Coordinator (Wake & Bryant, 2018). On a sub-national or District level, the Refugee Relief and Repatriation Commissioner (RRRC) of the Ministry of Disaster Management and Relief leads operational coordination. The Deputy Commissioner's office in Cox's Bazar also play a vital role in coordination as local administrator. RRRC and ISCG are the two main coordination bodies for GoB and Humanitarian communities respectively.

At Camp level coordination, the Camp-in-Charge (CiCs), officials under the RRRC's office, assume camp management responsibilities. CiCs chair regular camp level coordination meetings, attended by camp level Sector Focal Points.

These sectors focal points are operational staff of agencies delivering in the camps who oversee and coordinate service delivery in their specific technical areas within the boundaries of the camps, which is often delivered by multiple agencies. So, at camp level management CiCs and Sector Focal Points are accountable for all type of coordination on behalf of GoB and humanitarian communities respectively. (SEG, 2019)

2.4.4 WASH Sector coordination

For WASH sector coordination, there are three area focal agency; IOM, UNHCR & UNICEF as Figure 18 (WASH Sector & ISCG, 2019a).

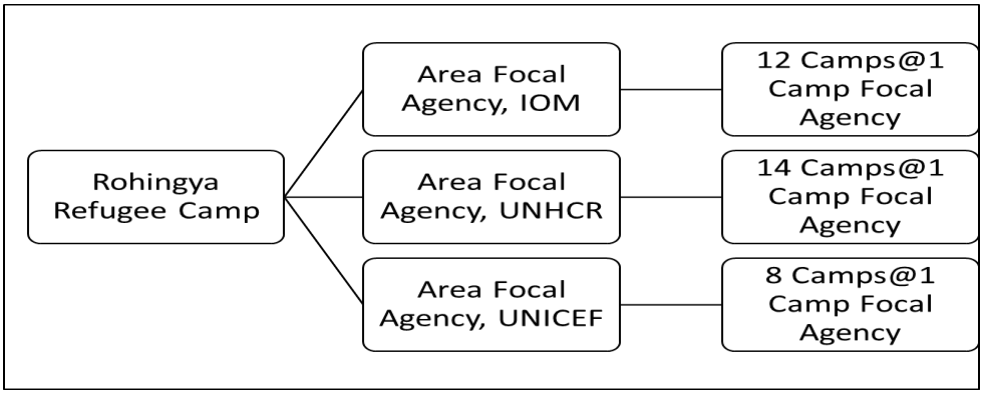


Figure 18: WASH Sector coordination mechanism within communities

For each camp, there is a camp focal agency who is responsible for WASH activities of the respected camp as well as all types of camp level coordination (WASH Sector & ISCG, 2019b). The list of camp focal agencies is attached in Appendix A. Department of Public Health Engineering (DPHE) on behalf of the Bangladesh government is working with UNICEF and Action Against Hunger (Figure 19) for coordination, oversight, monitoring and strategic planning for all WASH aspects of the humanitarian response. (REACH, 2018)

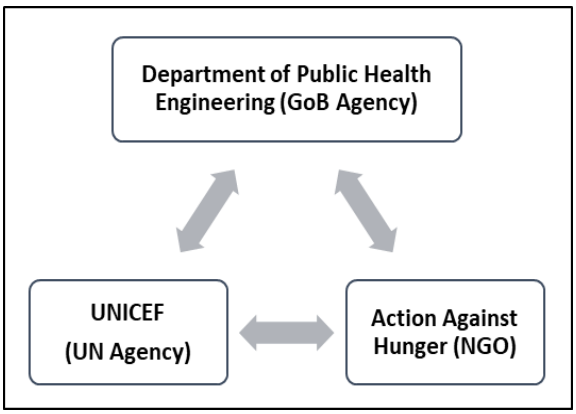


Figure 19: Coordination of WASH Sector

Initially, it was very difficult to support basic water, sanitation and hygiene (WASH) infrastructure to the Rohingya people which defined as a rush by humanitarian actors and consequences were poor quality and temporary in nature. Later, at the stabilized situation, the WASH sector had started to transition toward a medium-term WASH strategy highlighting quality over quantity of infrastructure, complemented with stronger operational management and community engagement (REACH, 2018). Besides the regular activities, each camp focal agency has to be associated with other sectors since WASH sector is directly linked to the other sectors in a camp management. Hence the WASH Sector's responsibility is very distinct and sensible. (WASH Sector, 2018)

2.4.5 Coordination Limitations

Major limitations of the Humanitarian Responses' coordination are identified as follows:

Firstly, Rohingya arrivals were not regarded as refugees, which meant that the International Organization for Migration (IOM), rather than the UN High Commissioner for Refugees (UNHCR), was initially given operational leadership (HPN, 2018). Basically, Bangladesh Government asked IOM to lead the Rohingya response since 2013 which empowered IOM by a greater prosecution role and hence, the repercussion was of overlapping mandate with UNHCR, since UNHCR officially conducts leadership role in any refugee crises. (Wake & Bryant, 2018)

Secondly, considering the socio-political aspect of Bangladesh, the government has initiated the Foreign Donations (voluntary activities) Regulation Act of 2016. Unfortunately, present humanitarian crisis has been troubled by introducing the act oversighting on financing and enhanced processes for the registration of NGOs, delaying project approvals, slowing down implementation and critically regulating international engagement with CSOs. (HPN, 2018)

Thirdly, structures, constructed by Bangladesh army at the beginning of the emergency were not well aligned with international coordination structures. (HPN, 2018)

Finally, due to initiating the 'projectised' approach, concerns had been raised where local and international NGOs seemed as subcontractors rather than partners. Moreover, local NGO participation at the sectoral level was squeezed by the large number and high turnover of international staff. (HPN, 2018)

Chapter 3

3. PSR (Pressure-State-Response) Analysis

The PSR framework assumes a chain of causal links starting with 'pressures' (human activities) to 'states' (conditions of natural resources like water, land and soil, wildlife and biodiversity, human health, amenities etc.) to 'responses' (the policy actions from different levels of the society, such as groups of individuals, governments or non-governmental sectors). In this study of Humanitarian Crisis and synergies responses, it was observed that there were several 'pressures' exacerbating the crisis and as well as the environment. Noticeably, hence the 'state' of the pressures would be considered as impact of the pressures on Rohingya Refugee humanitarian crisis. The responses initiated by Government of Bangladesh and Humanitarian communities were understandable.

3.1 Pressures

3.1.1 Emergency Response: Lack of planning

Government of Bangladesh was not prepared at all to face such massive Rohingya Refugee crisis, so suddenly immense amount of Rohingya influx made it difficult to manage the crisis properly. Porter (2019) mentioned the causes for poor site planning, loose regulation, and faulty infrastructures as the urgent need for water and the lack of time available to plan for such influxes. At end result, only 80% of 8,000 water points which had been constructed throughout the camp, were malfunctioning due to badly positioned or poorly constructed (Ingram, 2018). Not only water points, but also latrines are not properly positioned. As the latrines are located on low-lying land, meaning that the facilities will be flooded, contaminating water points located nearby. Sikder (2010) highlighted that the alignment of the shelters, location of the latrines, bathing cubicles, garbage pits etc. was not constantly installed considering the proper standards.

3.1.2 Lack of WASH facilities

Inadequacy of water supply

Emergency safe water supply is the most critical challenge in the Rohingya refugee camps having around one million people. The very common challenges like lack of available space for constructing water points, heavy

rainfall, dry season, dis-functioning of water points etc. are framing the water crisis day to day. Porter (2019) mentioned the dry seasons that threaten water availability. Moreover, during the dry season it was not possible to maintain equal pressure in all the tap stands happening to remove the tap from the pipe to increase discharge by the refugees (Sikder, 2010). Saltwater intrusion was another problem during monsoon as Molla (2018b) highlighted that surface water was available during the monsoons while groundwater was not suitable for extraction in large volumes since the aquifer had saltwater, being close to the sea. Sometimes, unfamiliar experiences caused difficulties in water supply activities. Such as, the reservoir of 50,000 m3 capacity was constructed to collect rainwater and spring water coming from the hills outside the camp, but it covered by silts and eventually reduces the capacity due to the cultivation activity at the upstream of the reservoir. Very often, fertilizer and pesticides worsened the water quality of the reservoir since the camp authority had no control over the land (Sikder, 2010).

Insufficient Sanitation facilities

The Rohingya refugees are not supported with adequate sanitation facilities which worsening the situation crisis. The following Figure 20 shows that Rohingya people in the Leda, 22,130 nos. and Unchiprang camps, 29,915 nos. are facing trouble with shortage of latrine although Shamlapur camp, 22,067 nos. refugees are within sphere standard. For noted, the humanitarian 'Sphere' standard of one per 20 people. (UNICEF, 2017c)

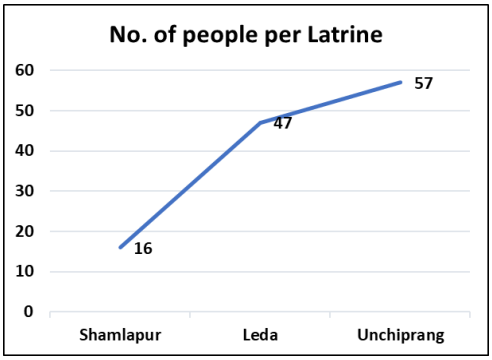


Figure 20: Example of sanitation conditions in Rohingya Refugee camps

3.1.3 Deficiency of WASH awareness

WASH unconsciousness and ownership is one of the great challenges affecting the situation. Reality was that, Rohingya people were not considered for long-term residence in the camps, hence the issues were focused only to meet the standards. Moreover, for almost all the aspects of their life, the refugees were dependent on the aid agencies (Sikder, 2010). All these have a grave impact on hygiene consciousness. Consequently, very often latrines were not kept clean after using. Such unsanitary, unclean and uncomfortable places might be a matter of life and death for a pregnant woman and her fetus

experiencing maternal mortality and severe birth outcomes (SHARE & WSSCC, 2014).

3.1.4 Environmental Challenges

Deforestation in Camp Area

Since the Rohingya influx August 2017, the surrounding forest area of Ukhia and Teknaf, particularly in Ukhia as the Figure 21 showed, more than 2300 acres of area were deforested (Khatun, 2017). In total, 4500 acres were deforested which engendering ecological imbalance of the Cox's Bazar district. Presently, to lessen the pressures in the existing camps, some camps had been expanded causing deforestation.

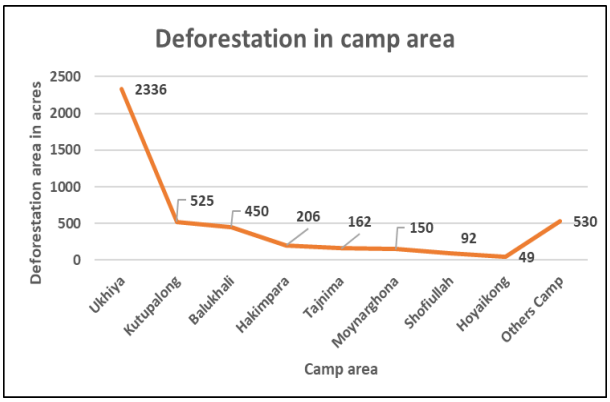


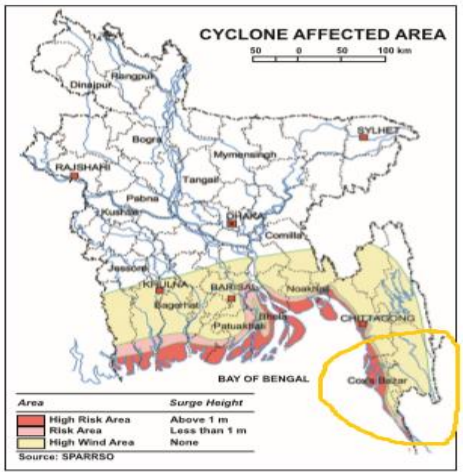
Figure 21: Deforestation Rate in Camp Area.

Such as the Kutupalong-Balukhali expansion site continued to expand to the west, where the land consists of remote, hilly terrain that had been plundered of trees and vegetation. Other camps could be experienced the same results (MSF, 2018b). The vital reasons for deforestation were to make space for Rohingya camps, make furniture and cook food (Palma & Jinnat, 2019).

3.1.5 Natural Disaster and Rohingya Refugee Camp

Geographical context of camp area

The camp geographical location might bring a greater risk for vulnerability of Rohingya people. Figure 22 shows that Cox's Bazar is in high risk cyclone affected areas. Hence, the camp area is much vulnerable. Moreover, the problem with groundwater. Even though, Ukhia has ground water varying in depth of shallow layers around 30m with a second deeper aquifer between 152-244m, Nayapara and Leda camps in Teknaf have no exploited ground



water. The problems become more critical in the dry season lasts for 5 months from November to March, during these months the water table goes down on average 15-20 m (WASH Sector, 2018).

Monsoon and camp area

In the monsoon, the livelihoods remain enigmatic in the refugee camp. Mentioning a survey report by Red Cross Red Crescent, Reliefweb (2019)

Figure 22: Rohingya Refugees are staying in the High-Risk Area.

highlighted that around 574,000 people in camps made with rotting bamboo, urgently need well-built shelters to protect them from extreme temperatures, monsoon downpours and two cyclone seasons a year. Referring to long monsoon and cyclone seasons in Bangladesh, Ingram (2018) noted that living conditions in the camps were always awkward and precarious. He also underlined that toilets, learning centres and health clinics were flooded with heavy rainfall. The road became muddy and water logging creating unable to walk. Monsoon drives around 2.5 meters of rainfall in three months, turning camps into unhealthy swamps (OXFAM, 2019b). GREEN (2018) introduced monsoon season as life-threating challenge for 1 million Rohingya refugees.

3.1.6 Climate Risks to Rohingya Child

The outcomes of climate affect all walks of people, but the poorest and most vulnerable children first, hardest, and longest (UNICEF, 2016b). Lamentably, children living in ill-protected atmosphere, are more susceptible to climate risks in Bangladesh since this country demanding 6th considering most affected climate hazards in the recent periods (Eckstein, et al., 2017) as shown in Appendix B. Hence, the Rohingya children would be in higher risks as they already in threat.

There are around 500,000 Rohingya children (Table 1) living in the well-congested camps. Among them more than 350,000 children being below 12 years are seriously in great peril due to cyclones, storm surges, and extreme temperatures. More distinctly, around 250,000 girls would have to face critical challenges during disasters considering gender-based violence (SEG, 2019).

In addition, children are more likely than adults to die or be injured during disasters due to drink unsafe water and skin diseases. (UNICEF, 2016b)

Table 1: Rohingya Refugees (age and gender disaggregated)

Children (0-4 years)	Children (5-11 years)	Children (12-17 years)	Adults (18-59 years	Elderly (>59 years)
18%	23%	14%	41%	4%
163,200 people	208,500 people	127,000 people	371,700 people	36,300 people
81,600 girls 81,600 boys	99,700 girls 108,800 boys	63,500 girls 63,500 boys	208,500 women 163,200 men	18,100 women 18,200 men

3.1.7 GoB policy and Rohingya Crisis

The policy of host country is very important to subjugate any crisis within the country. Hence GoB's Rohingya policy shapes the humanitarian crisis as a multidimensional hardship. Principally, the problem is started with the recognition of the Rohingya people. Although each Rohingya falls under the universal concept of 'refugee' and United Nations define Rohingyas as the most persecuted community in the world (Ullah, 2017b), GoB mentions Rohingya people as Forcibly Displaced Myanmar Nationals (FDMN) (SEG, 2019) due to Bangladesh is not a party to the 1951 Refugee Convention or its 1967 Protocol (Kiragu, et al., 2011).

Hence, logically it seems that Bangladesh has moved from refugee-welcoming policy to refugee-hostile policy without having any comprehensive refugee policy. In the beginning, international aid agencies, the Médecin Sans Frontières (MSF), Action Against Hunger (AAF), and Britain's Muslim Aid were asked to terminate supporting unregistered Rohingya refugees. Importantly, in 2014, the Government has announced a strategy regarding Myanmar refugees and undocumented nationals emphasizing to provide temporary basic humanitarian relief such as food, water, medical care, sanitation facilities etc. and increasing national level coordination to pave the way of solving the humanitarian crisis. (Ullah, 2017b)

3.2 States

3.2.1 Soil erosion & Landslides

One of the significant environmental challenges was soil erosion in the camps due to rapid and unplanned deforestation. HPN (2018) mentioned the consequences of acute deforestation, dangerously prone to landslides and flooding. Landslides and soil erosion, affecting water resources, irrigation, and groundwater reserves (Palma & Jinnat, 2019). Both might be exacerbated by heavy rainfall during monsoon. Huq (2019) highlighted the environmental hazard issues very sincerely concerning about landslides. Sikder (2010) also revealed the germs of soil erosion and landslides indicating blocking the drains by silts and accumulating soil from surroundings to elevate the plinths of sheds which needling the situation and increases the rate of erosion.

A report from Inter Sector Coordination Group highlighted that there were around 500 landslides incidents occurred only during the last week of June/2018 (ISCG, 2018c). Table 2 showing other incidents also at that time.

Table 2: The effect of deforestation causing huge landslides

Incident in camps	by Landslides	Windstorm	Floods
22-27 June, 2018	495	420	7

3.2.2 Monsson and Rohingya Camp

The aftermath of monsoon had been easily perceptible in the Refugee camp where hundreds of thousands of people were crowded together under flimsy shelters in hilly and dusty terrain. It would be a holocaust. HPN (2018) spoke briefly about the repercussion of monsoon as:

- Latrines were flooded and demolished by landslides, spreading waste;
- Homes were flooded, and more than 6,000 people were displaced;
- Facilities and infrastructure were damaged or destroyed;
- Around 200,000 people in the camps were at risk, including 25,000 in extremely high-risk areas.

Conditions are dire, with overflowing latrines and contaminated water, there's a high risk of a major outbreak of disease. (OXFAM, 2019b)

People affected by monsoon, 2018

The great threat to Rohingya Refugees was heavy rainfall during monsoon. A report of WHO showed that more than 50,000 Rohingya people were affected during monsoon, 2018. The Figure 23 indicated that at the beginning of monsoon around 25,000 refugees were affected by rainfall. Days gone and number of affected refugees were swelled. Importantly, at the time of 26 July, the number surged by around 50% compared to 14 June. Surprisingly, the number of affected refugees escalated to almost 50,000 at 23 August from 25,000 at 14 June i.e. increased by 100 %. Later, the number mildly increased up to 20 September 2018 and reached at around 51,500. Hence, it was very certain that a huge number of Rohingya refugee had been affected during monsoon which was more vulnerable for children and women. (WHO, 2018a)

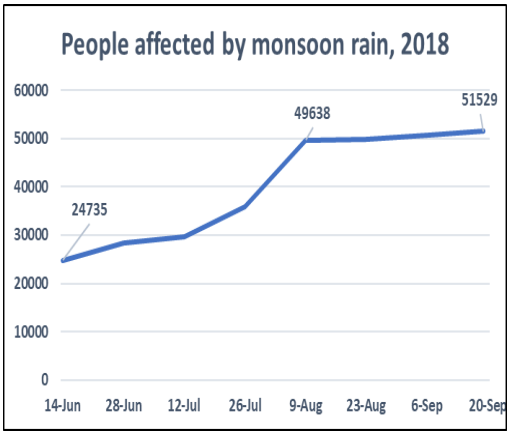


Figure 23: Refugee affected by monsoon, 2018

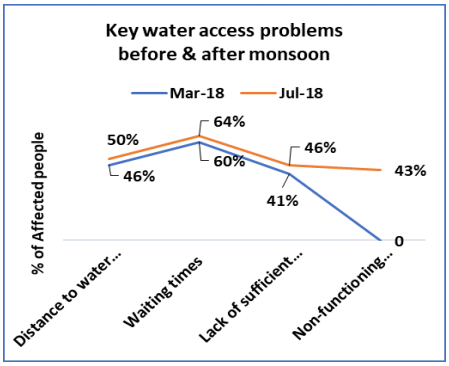
Report from World Health Organization disclosed that in the month of June 2018, more than 3300 shelters were severely ruined by heavy rainfall and windstorm (WHO, 2018a). The following Table 3 indicated the number of damaged shelters.

Table 3: At the month of June 2018, shelters damaged by monsoon.

Date	Shelters damaged
14 June/2018	2858
21 June/2018	3303
28 June/2018	3313

Water access problem

Water access problems were very common in the refugee camps. These problems remained same almost throughout the year except during and after monsoon. The Figure 24 displayed that 46 % people had distance to water point access problem before monsoon, but the problem increased by 4% after



monsoon. Almost similar deterioration had happened in the cases of waiting times and lack of sufficient water points access problems. The biggest problem occurred in case of non-functioning water points. Before July 2018 there was no people having problem with non-functioning water points, but in July 43% of population was facing the problems. (ACAPS & NPM, 2018)

Figure 24: Key water points access problem

Latrine access problem

Sanitation and hygiene problem were one of the critical challenges in the Rohingya refugee camps. More than half of the refugees had to face different types of latrine access problems. The most noted problem was lack of separate latrines. Around two-thirds of Rohingya people had to suffer for separate latrines during monsoon. Following Figure 25 highlighted that 57% were affected by latrines filling up and becoming non-functional, up from 44% in March due to difficulty of sludge transport during monsoon. Another important issue, especially for women was lack of lighting in latrines faced by around one-fourth of people before monsoon, but the problem increased for almost half of Rohingya people. 36% people affected by lack of cleanliness and hygiene facilities during the month of March which reached to 47 % in the month of July i.e. almost half of Rohingya people had to struggle with

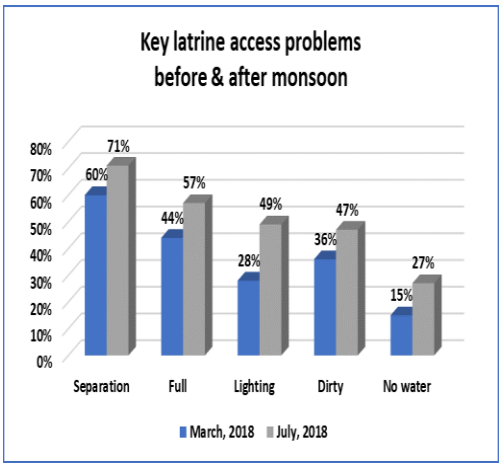


Figure 25: Key latrine access problems

the problem. Another significant deterioration was noticed in case of lack of water in latrines affected 15% of the population in March and 27% in July. In summary, it could be mentioned that during monsoon 50-75% Rohingya refugees had to suffer different from different types of sanitation and hygiene problems. (ACAPS & NPM, 2018)

Incident type and affected individuals

The refugees were acutely infected by distinct types of natural hazards during the month of May to September. Singh & Others (2018) demonstrated the numbers of affected Refugees as depicted in the Figure 26. Hence, it could be easily counted that around 26,000 Rohingya people were troubled by windstorm. The second most severe event was landslides which was responsible to attack more than 15,000 individuals in the camp area. Hence the least troublemaker was water logging. Only around 3,300 people were hit by water logging whereas flood hurt a number of almost 5,800 individuals in the camps.

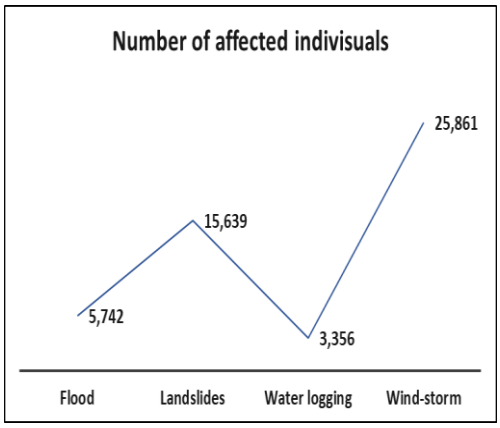


Figure 26: No. of people affected by different types of incidents

3.2.3 Water Scarcity

Crisis within crises and this was very true considering Rohingya humanitarian crisis. Hence, the future of water scarcity might be more critical as COAST & CCNF (2018) sincerely highlighted some features regarding water such as: a) Everyday around 15 million liters of water was pulled out of ground, b) Teknaf was already in the danger zone. Even deep tube-wells, 600 to 1000 feet deep, could hardly find water, c) In Ukhia and Teknaf, 70% of shallow tube-wells were running out of water, d) In a survey of 300 shallow tube-wells, 209 had no waters. Fifty of them had technical faults, but the rest of them simply ran out of water. During the field visit at the Rohingya Refugee camp, it had been seen that there were remaining many non-functional tube-wells' platforms. The tube-wells had to shift and reinstalled at the same location searching suitable aquifer of water availability at deeper depth by 20-30m each time. Due to huge extraction of ground water, the shallow layer of water was running out quickly. The long-term consequences might be very critical. Referencing officials of the Department of Public Health Engineering (DPHE) Cox's Bazar, Molla (2018b) stated that many of tube-wells went out of order mainly due to overuse. He also highlighted that the area was not fit to be home for these many people.

3.2.4 Water quality

In the context of water rights, water quality was one of the most important parameters for the Rohingya humanitarian crisis. Unwholesome atmosphere, unhygienic activities, lack of waste management, lack of hygiene knowledge etc. influenced the water quality to mold it undrinkable for vulnerable Rohingya people creating health problems especially Acute Watery Diarrhea (AWD). Report from World Health Organization (WHO, 2018b) concerning water quality surveillance result, samples were collected both from sources and households, demonstrated that gradually the surveillance results were improving up to round 4 in the month of April 2018.

Figure 27 signified that during the water quality surveillance rounds 1st to 4th, very high risk (E. Coli >100 cfu/100ml) water sources came down from 15 to 4%, and consequently low risk (meet standards) water sources went up from 44 to 77%. The changes were significant. Similarly, from Figure 28, it could be easily revealed that considering household water samples, during the water quality surveillance rounds 1st to 4th, low risk (meet standards) households went up from 13 to 39% and consequently very high risk (E. Coli >100 cfu/100ml) households came down from 48 to 14%. Hence, the changes were also remarkable.

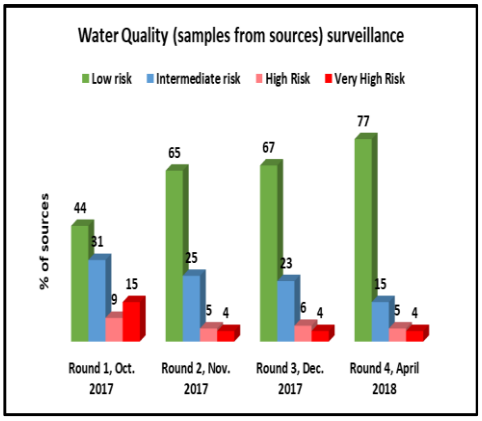


Figure 27: Results of water quality surveillance (collected from sources)

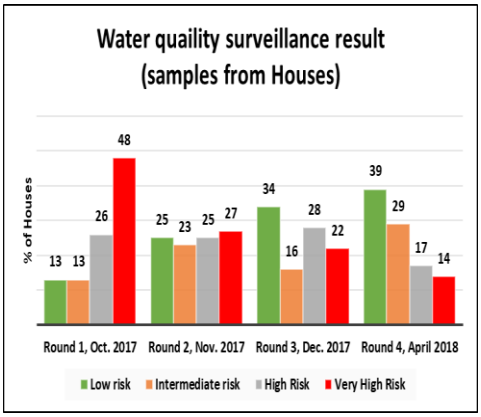


Figure 28: Results of water quality surveillance (collected from Houses)

Later, water quality surveillance results of 7th and 8th rounds were showing alarming (WHO, 2019b). These two rounds were conducted after monsoon. Figure 29 exhibited the results of the 7th round and the 8th round, indicating that there had been an increase in contamination of water post monsoon season, at both household and source level. At household level, E. Coli contamination increased by 6 % whereas at the source level, the E. Coli contamination augmented by 5%. Although the increased was not so notable, but the overall E. Coli contamination, especially in the household level, was still so high considering health aspect.

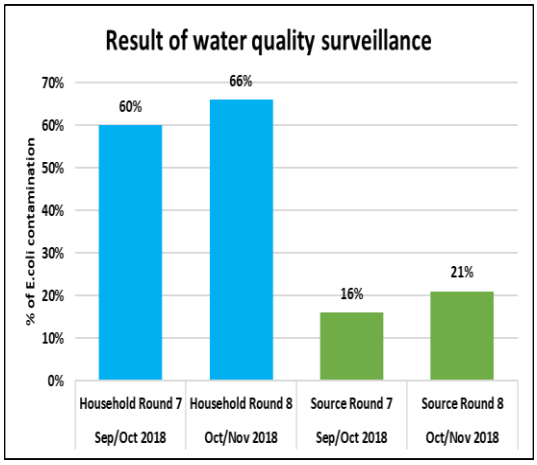


Figure 29: Percentage of contamination after monsoon

3.2.5 Health

Unhappily, the limitations of WASH facilities still triggering the overall health conditions of the affected people. Specially, acute watery diarrhea (AWD) which is the main effect of drinking unsafe water and living in unsanitary conditions. A report of World Health Organizations showed that in April 2018, the number of AWD cases were more than 64000 among over 40% were children ages less than 5 (WHO, 2019c).The Acute Watery Diarrhea and Water and Sanitation Diarrheal diseases are very usual in Rohingya refugee camps. The following Figure 30 delineates the severity of water borne diseases. In every quarter the number of AWD cases were increased by almost 100% which was a symptom of frightful lacking's of

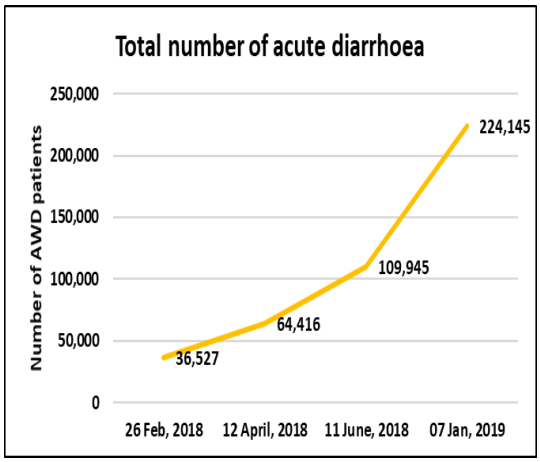


Figure 30: Status of Acute Water Diarrhea

WASH facilities. In February 2018, the AWD cases were around 36,500 whereas at the end of December 2018, there were more than two hundred thousand AWD patients. Specially, in the post monsoon, there had been an increase in the number of reported AWD cases. Besides AWD, COAST & CCNF (2018) mentioned about 6,200 diphtheria patients among the Rohingyas who fled from Myanmar. At least 38 Rohingyas died from diphtheria and 62 diphtheria patients from the host community were identified when they came to the hospital.

Ingram (2018) highlighted the facts of crisis in the Rohingya camp. Toilets were flooded by heavy rainfall resulting contaminations of water points, posing serious risks to the refugees' health. Fecal contamination was another important reason to spread water borne diseases. As stated by GOB (2019), surface and ground water reservoirs near the Balukhali- Kutupalong mega camp were contaminated by the fecal contaminants which washed down by rain waters and spread waterborne diseases. Without having no other means of safe water, local people bounded to use water from nearby ponds, canals and wells for washing clothes, cookeries and bathing. COAST & CCNF (2018) pointed out that not only Rohingya refugee but some 60 percent of the host community depended on the water of canals and streams for daily household works like washing and bathing.

3.2.6 Pollution

There were lacking or insufficient waste disposal system in and around the refugee camps, outcoming the alarming level of pollution. Around one million Rohingya people, living in a small area, had been producing a huge quantity of waste every day. If 50% of the people threw one plastic packet every day, it would be 15 million plastic packets in a month. (COAST & CCNF, 2018). The packets ended up in canals and streams blocking the waterflow. This situation might be severed during monsoon when the canals and lowlands would be flooded. The openness of these dirty drainage systems was more dangerous and life threatening for the little children playing around it.

3.3 Responses

3.3.1 Establishment of Synergies mechanism

The endmost desired to conquer the humanitarian crisis demanding effective and planned responses from humanitarian communities as well as host country, Bangladesh. Hence, the first most obligation was an effective coordination within all humanitarian actors as EU Commissioner for

Humanitarian Aid and Crisis Management, Christos Stylianides uttered to emphasize collective efforts from all to save countless lives (Correspondent, 2019). Hence, Bangladesh and other humanitarian communities like UNHCR, UNICEF, MSF, OXFAM, BRAC etc. efforted unitedly to tackle the largest humanitarian crisis. So, the best response was to establish a coordination mechanism (SEG, 2019) between Bangladesh Government and Humanitarian Stakeholders as shown in the Figure 31. The coordination mechanism indicated that there are several sectors like Health, Education, WASH etc. to distribute within humanitarian actors expecting effective operational performance to overcome the crisis.

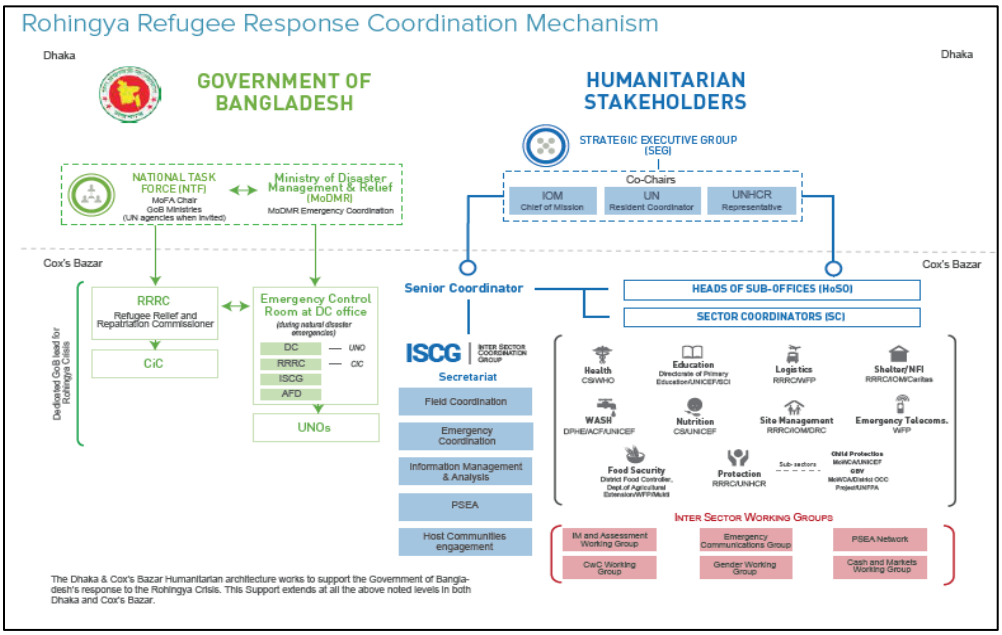


Figure 31: Rohingya Refugee Response Coordination mechanism

SEG (2019) emphasized on an inclusive and more participatory approach to assistance throughout the response satisfactorily addressing the identified needs and enabling refugees to exercise their basic rights. ISCG (2018d) stipulated about a coordinated effort named 'Site Maintenance and Engineering Project' (SMEP) which was a joint venture by UNHCR - IOM - WFP with four principal objectives as:

- Clearing and strengthening primary drainage channels;
- Maintaining vehicular access via maintenance, emergency repair and rehabilitation;

- Materials supply, fabrication, and pre-positioning to facilitate rapid response; and
- Site preparation works

3.3.2 Joint Response Plan 2018 (March-December 2018)

The most crucial and well-recognized document named as 'a solid framework' for ensuring protection, delivering assistance effectively and building community cohesion, as well as the foundation for collaboration, coordination and synergies within the humanitarian community, with development partners and with the Government of Bangladesh is Joint Response Plan (JRP) (SEG, 2018). Hence, all the response strategy and initiatives were focused based on the framework of JRP 2018.

Needs and Challenges identification as primary Responses

The primary challenge of any response is to identify the needs and challenges to overcome. JRP 2018 discerned the needs of the Rohingya refugee and affected people as:

i. Over 16 million litres of safe water were needed per day, from hand-pumps and surface water treatment plants that needed to be constructed and maintained.

ii. 50,000 latrines with more reliable substructures needed to be constructed and maintained, and at least 30 sludge management facilities to process more than 420,000 kilograms of faeces per day.

iii. Decongestion and Relocation initiatives to mitigate protection and safety risks for hundreds of thousands of refugees: More than 150,000 of whom are at risk of direct impact from flood or landslide in the Kutupalong-balukhali expansion Site - including construction of access roads to ensure assistance can be delivered.

iv. Urgent eco-system rehabilitation including reforestation and Asian elephant habitat preservation.

In summary, the baseline assessments and targets were pointed out as the Table 4 below:

Table 4: WASH components as targeted in JRP 2018

Indicator	Baseline (No.)	Target as JRP 2018
Establishment of tube well in Camp area	6,057	Replacement of 1179 disabled shallow tube well.
Establishment of latrine in Camp area	50,180	To replace 9743 disabled latrine.

Similarly, the challenges figured out to meet the needs as:

a. Contaminated water; fecal contamination of drinking water was high
b. Outbreaks; ongoing diphtheria and measles outbreaks remained a concern. Also, there was a high likelihood of Acute watery diarrhoea or other communicable disease outbreak.
c. Climate; early rains, cyclones and monsoons will bring severe risks of casualties. There is urgent need for both preparedness and disaster risk reduction measures.

Below Table 5 showed that 1,052,495 Rohingya refugees had been targeted for JRP 2018 along with 208,245 host community people.

Table 5: WASH target people as JRP 2018

Indicator	Target people
Number of targeted people (disaggregated by sex and age) in settlements benefitting from safe water of agreed standards and meeting demand for domestic purpose	1,052,495
Number of targeted women, men, children in settlements who are benefitting of functional latrines of agreed standards	1,052,495
Number of targeted people (disaggregated by sex and age) in host communities who are benefiting from water services	208,245
Number of targeted households who have received a WASH Hygiene kit and/or a top up kit and/or a voucher in the last three months	1,008,209

3.3.3 Response synergies between WASH Sector and JRP 2018

Initially, the WASH Sector, leaded by Department of Public Health Engineering (DPHE), the agency of GoB responsible for water supply and sanitation almost through the country, had responded to this emergency and the WASH activities were coordinated through WASH Sector Coordination Unit. Moreover, DPHE as Sector focal person directly related to policy level issues.

Importantly, JRP 2018, the WASH Sector and DPHE jointly prioritized life-saving interventions, as well as defining critical technical issues establishing a detailed WASH Sector strategy. The WASH Sector focused on extending, maintaining and upgrading WASH assistance following National and SPHERE guidelines for quantity and quality irrespective of age, gender and diversity providing an enabling environment to adopt safe health-seeking practices which would reduce the public health and protection risks. (SEG, 2018)

3.3.4 Joint Response Plan 2019

It provides the Strategic Executive Group's (SEG) shared understanding of the crisis, including the most pressing humanitarian needs (SEG, 2019). The WASH responses mechanism and other related responses initiated by 2019JRP were discussed herewith.

WASH Target as JRP 2019

More than 1,052,000 affected people were considered as WASH target. As stated in the Figure 32, around 768,000 Rohingya refugees would be provided with WASH facilities whereas around 284,000 host community would be considered for that. The needs were analyzed under the leadership of department of Public Health Engineering (DPHE). The major focused areas of JRP were WASH assistance, resilient building, community engagement, safety, dignity and ownership with specific focus on the consultation and interest of women and girls. Noticeably, services would be ensured to achieve minimum humanitarian standards.

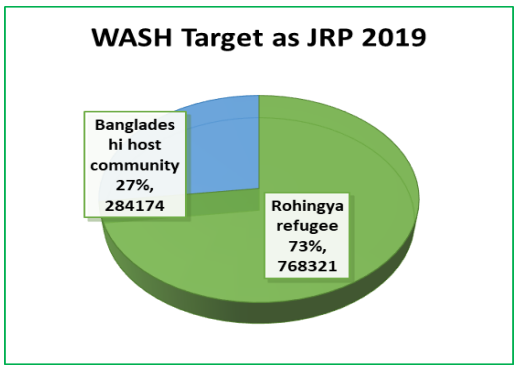


Figure 32: Targeted people for WASH as JRP2019

Major WASH guidance to WASH Sector

- *Water quantity and quality*: The sector would prioritize installation of new deep tube wells and production wells with pipe networks in 140 water distribution zones, small and medium-scale surface water systems with monitoring of aquifers and testing of water quality at source and household levels.
- *Waste management*: Improved sludge management (sewer networks) requiring about 100 acres and on-site fecal sludge treatment options for lower operations burden of latrines. Attention would go to activities that manage solid waste in camps and host communities and assessment of motivational factors to segregate waste at household and disposal sites, operation and maintenance of landfill.
- *Sanitation*: In the host communities, modified Community-Based Total Sanitation approaches would be scaled up to construct household latrines while overall programming would balance service provision with cash-based modalities where feasible. Further investment would be directed towards sustainable, technical and culturally appropriate designs for latrines and bathing facilities.
- *Hygiene*: The sector would support significant capacity building for WASH actors in hygiene promotion; a comprehensive mapping of hygiene promoters at each camp level would identify gaps and ensuring minimum standards are met. In collaboration with CwC and Health, the WASH Sector would design a mechanism for monitoring behavior change, including health seeking behaviors and disease indicators.
- *Climate hazards*: The WASH Sector would integrate mitigation measures against climate and environmental constraints in all design of WASH infrastructure.

Special features of WASH Initiatives in JRP 2019

Community participation

- Community engagement would be integral during design and implementation of any water distribution system.
- The sector would continue to support the Core Facilitators Team as a capacity building modality, training key individuals from WASH actors in topics such as behavior change theories and approaches, community engagement and participation.

Focus on Children, Women and vulnerable people

- Additional capacity building would focus on children and on provision of awareness on menstrual hygiene management.
- The specific needs of children and youth, persons with disabilities, older persons, chronically or severely ill persons, persons living with HIV/AIDS, as well as female-headed households would be given special attention.

Women empowerment

- Empowering women in leadership roles and an inclusive approach, bearing in mind the community included many people with disabilities, mental health issues and other specific needs.
- Mapping and supporting groups for increasing women's participation in decision making at camp level as well as strengthening of feedback and complaints mechanisms would remain integral parts of the response.

Coordination within Sectors

- The WASH Sector would continue its coordination with the Protection Sector and the GBV Sub-sector to improve the responsiveness of WASH actors to protection and gender related issues, including ensuring facilities were improved and adapted to the cultural and protection needs of Rohingya women and girls.
- Efforts would be made to increase camp level coordination on issues surrounding access to and safe use of WASH infrastructures especially for women, girls and people with disabilities.
- In the event of an AWD outbreak, WASH responses would be intensified by all partners in line with the joint WASH and Health AWD preparedness and response plan.

3.3.5 WASH Sector & its response strategy

Cox's Bazar WASH Sector, leaded by DPHE as Government agency and co-chaired by UNICEF and Action Against Hunger, was tasked with the coordination, oversight, monitoring and strategic planning for all WASH-related aspects of the humanitarian response getting control of the Rohingya crisis especially acute water, sanitation and hygiene (WASH) needs (REACH, 2018). Unequivocally, the recent influx of refugee made the camp highly vulnerable for WASH including the pre-existing Rohingya population and surrounding host community. Moreover, the response activities of WASH sector were crucially interrelated with other sectors as stated in Appendix-I,

hence the Responses of WASH Sector were significantly valued. WASH Sector (2018) announced its strategic objectives as:

- Ensuring effective, sufficient and continuous provision of life saving water and sanitation services for targeted men, women, boys and girls
- Ensuring that all targeted women, men, girls and boys have the means and are encouraged to adopt individual and collective measures in order to health seeking behaviors and to mitigate public health risks
- Ensuring that all WASH assistance promotes the protection, safety and dignity of targeted people, and is used equitably to men, women, boys and girls

The WASH Partners were instructed by WASH Sector to go along with thirteen major guiding principles (Appendix C) to bring out its objective (WASH Sector, 2018). Important aspects of the guidelines were to integrate with other sectors, to improve good governance, human rights, gender equality, age appropriateness, and environmental protection in all aspects of WASH program planning, to build long-term capacity, strengthening institutional capacity, emphasizing climate risks hazards etc. Besides the principles, WASH Sector manifested the WASH leader (DPHE) activities (Appendix C2). Hence, the dominant features were to monitor of water resources including ground water and surface water and feasibility assessments of surface and rainwater sources to facilitate sustainable water supply and reduce groundwater depletion. In addition, emphasizing on water quality, WASH Sector established water treatment guidelines indicating that DPHE with the sector partners would support for a rapid water quality assessment.

3.3.6 Planned water network and Fecal sludge management design

WASH Sector and Inter Sector Coordination Group jointly mapped for planned water network (WASH Sector & ISCG, 2018a) and Fecal sludge management (WASH Sector & ISCG, 2018b) for each camp.

3.3.7 Major WASH responses

Continued coordinated efforts of WASH partners helped the Rohingya Refugees to refrain from major health crisis and human dignity. Inter Sector Coordination Group mentioned few WASH interventions (ISCG, 2019) as:

- The number of beneficiaries to access functional latrines operated, maintained and cleaned by the Sector was 748,173 people in camps and 49,900 Bangladeshis in host communities.
- The overall number of functional water points were 6,506.
- A total of 49 partners implementing WASH services within the sector had dedicated geographical areas of operation, providing comprehensive WASH package.
- Sector partners involved in surface water treatment and trucking in the Teknaf camps had surveyed about 8 canals and lakes for potential improvement and increased intake in preparation for the dry season.
- Working with partners, a total of 7 water networks through taps is operational or in final stages of completion.

Inter Sector Coordination Group also added that (ISCG, 2018c):

- 21,959 latrines had been de-sludged.
- 5,732 latrines had been decommissioned.
- Hygiene promotion activities were focused on prevention and symptom recognition of AWD, handwashing with soap at critical times, proper use of Aquatabs and safe water chains.

3.3.8 Natural Disasters and Responses

The easiest mentionable open threat to Rohingya Refugee camp is natural disaster especially monsoon season with heavy rainfall resulting soil erosion, landslides, pollution etc. Hence, some initiatives (ISCG, 2018e) by WASH partners were:

- Response planning and risk mitigation efforts, coordination with Government partners.
- Around 170,000 shelters were upgraded to resist winds up to 40 km/hr.
- 3,400 households had received mid-term and transitional shelters to resist wind speeds of 50 and 80+ km/hr, respectively.

Considering the severity of natural disaster such as flood and landslides, people were relocated to safer places, as mentioned by World Health Organization (WHO, 2018c) in the following Figure 33. It was seen that more than 40 thousand Rohingya refugees were located at 2 august, 2018 which was double considering 19 July 2018. Basically, the periods claimed as monsoon in the region having heavy rainfall and strong wind. Other important disaster responses were as stated by GREEN (2018): a) Enacting disaster-response plans conducted by WHO and UN partners to ensure health services. b) Relocating health facilities vulnerable to flooding.

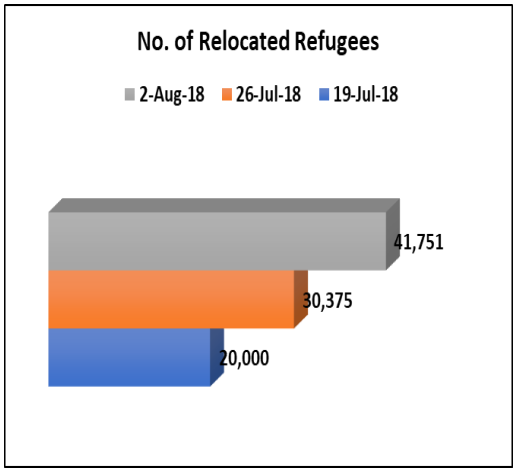


Figure 33: People were relocated considering flood and landslides

3.3.9 Training & Awareness Responses

Necessarily, capacity building by training and widening of awareness of the affected people are the effective interventions for lessening crisis. Reliefweb (2019) revealed that at least 8,400 people had been trained by the Bangladesh Red Crescent Society, supported by IFRC and other Red Cross and Red Crescent partners. More significantly, to help addressing water quality in health facilities, a three day "water and sanitation for health facility improvement tool (WASH-FIT)" training was conducted in September with 20 participants from health sector partners (Singh, et al., 2018). UNICEF also promoted a campaign to raise people's awareness highlighting the issues of severe health risk associated with drinking dirty water and poor sanitation habits such as open defecation. (UNICEF, 2017a)

Special responses for vulnerable women

There are more than 200,000 adult women (Age 18-59) in the Rohingya Refugee camps (SEG, 2019) who are more vulnerable considering humanitarian crisis. Certainly, the pregnant women are further vulnerable regarding necessity of safe water and so, 1142 family water filters were distributed to households with pregnant women (Singh, et al., 2018). Singh & Others (2018) also mentioned that a training of trainers was conducted on the installation, maintenance and safe keep of the water filters, so that partners

could train the pregnant mothers and health providers in the facilities provided with Community water filters.

3.3.10 Volunteer mechanism for response

Inter Sector Coordination Group (ISCG, 2018d) addressed the community volunteers as 'The True Heroes' since they helped others in need especially old people, women, sick and disabled people. The community volunteers also involved in waste management activities helping to reduce environmental pollution, to control spreading vector borne diseases etc. The volunteer refugees were also trained to produce compost from the organic waste. The waste management volunteers cleaned the drains, garbage pits, latrines etc. as the routine activity (Sikder, 2010).

3.3.11 Emergency Multi-Sector Rohingya Crisis Response Project (EMRCRP).

The EMRCRP Project was initiated to provide essential services to overcome Rohingya crisis and as well as strengthening water governance of Bangladesh (GoB, 2019). Hence, the project had been formulated considering Policy, Legal and Regulatory Framework Relevant GOB Policies, Acts, Rules, Strategies and Guidelines include such as National Environmental Policy (1992), National Water Policy (1999), Coastal Zone Policy (CZPo) (2005), Disaster Management Act (2012), Bangladesh Water Act (2013) etc.

Objective and components of EMRCRP

The project development objective was to strengthen the Government of Bangladesh systems to improve access to basic services and build disaster and social resilience of the displaced Rohingya population (DRP).

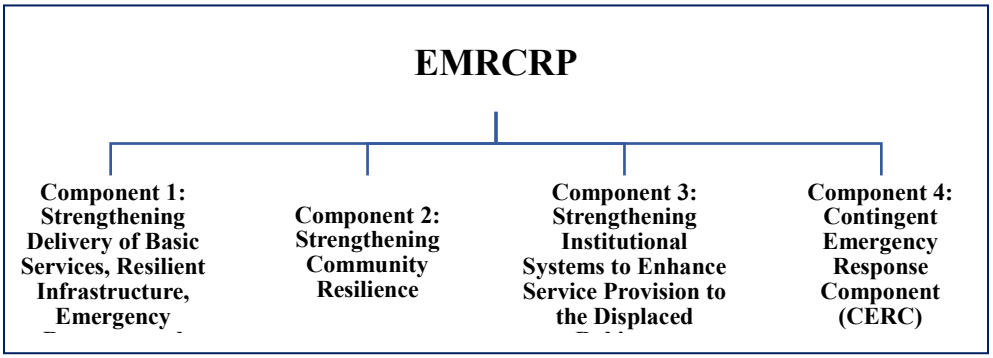


Figure 34: Components of EMRCRP

EMRCRP Project Beneficiaries

Around 900,000 Rohingya people settled in informal camps that are adjacent to previously existing Registered Camps (RCs) would be the Project beneficiaries as shown in the Figure 35. Women and girls were prioritized and child-friendly and disability friendly approaches were promoted by the project. In addition, mobilization of local communities to ensure the participation and inclusion of the most vulnerable groups in formation of water and sanitation committees for O&M also highlighted at EMRCRP.

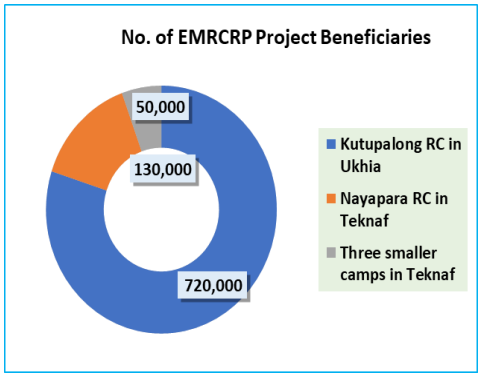


Figure 35: EMRCRP beneficiaries

WASH initiatives of EMRCRP

For water, *EMRCRP* aimed to improve the quality, resilience, and sustainability of services including to reduce water losses for DRP. The prime initiatives were as:

- Resilient mini piped water supply schemes;
- Resilient tube wells;
- Mobile desalination plants in Teknaf;
- Water resource mapping and water quality monitoring including water resource availability considering climate vulnerability and extreme weather conditions; and
- A feasibility study and design for Fecal Sludge and Solid Waste Management System.

Similarly, to improve access to resilient and eco-friendly sustainable sanitation, EMRCRP would execute:

- Climate resilient improved individual and chamber community latrines with resilient superstructure and raised platform to enhance resilience against heavy rainfall and flooding;
- Integrated waste and fecal sludge management systems, co-composting plants and waste collection facility with solar energy system, resilient superstructure, and raised platform.

Hygiene components were as:

- Hygiene promotion;
- Awareness program on sanitation, FSM, and safe water use; and

- Training on Operation and Maintenance (O&M) of the WASH interventions including climate vulnerability and disaster risks.

3.3.12 Emergency Assistant Project for Water Supply and Sanitation at Ukhia and Teknaf Upazillas in Cox's Bazar, Bangladesh (EAPWSS)

EAPWSS would be implemented by WASH Sector lead agency Department of Public Health Engineering (DPHE) aiming to introduce piped water supply system for the 2.0 million affected communities, to develop sanitation system along with solid waste management and fecal sludge management in the refugee camps and to provide women's equitable access to water supply and sanitation through this project. This project also emphasized on effective participation of women and disadvantaged groups in all project-supported activities to establish Effective Gender Mainstreaming, and a Gender Equality and Social inclusion (GESI). (DPHE, 2018)

WASH initiatives through EAPWSS

- Construction of mini piped water supply system with Production Tube well.
- Setting up of Surface Water Treatment Plant for supporting water supply, capacity 350 M3/hour with water intake with transmission or distribution line with delivery line
- Providing of Water carrier for emergency water supply, capacity 3000 liters.
- Ensuring Integrated waste management (both fecal and solid waste) and resource recovery facility with collection system.
- Construction of community bathing facility in camps for 15 females per bathroom.
- Running awareness campaign on use of safe water, sanitation facilities and improved personal hygiene behavior would be carried out to get, optimum benefit from the project.

EAPWSS and SDG of GoB

Bangladesh government is very much committed to achieve its WASH target regarding SDG. Hence, the country has initiated different strategic plans and programs like Seventh Five Year Plan to ensure effective water governance and as well as sustainable socioeconomic development. More specifically, GoB's WASH targets are:

- Attaining 100% coverage of Water Supply & Sanitation services throughout the country including their safe use and effective management;

- Reaching congenial environmental sanitation for overall development of the country in a sustained manner; and
- Obtaining quality water for drinking and domestic purposes.

So, EAPWSS would support improvements in the year-round access to safe water for the DRP and host community. Besides, this project would provide appropriate sanitation technology to create the hygienic environment. Other essential benefits related to socioeconomic development and capacity building were:

- During implementation, there would be opportunity to get temporary and long-term employment. Hence, working efficiency would increase.
- Both service providers and beneficiaries would be trained to develop skill and to enable them to handle the constructed facilities efficiently.
- The project would help to mitigate/control pollution of environment.

3.4 Humanitarian communities and WASH Responses

3.4.1 UNHCR and WASH Responses

All the humanitarian communities were operating with the same WASH objectives to overcome humanitarian crisis of Rohingya refugees under WASH Sector. Hence, UNHCR as UN Refugee agency initiated lots of efforts for safe water supply, improved sanitation and hygiene practices. The following Table 6 mentioned the WASH interventions supported by UNHCR (UNHCR, 2018). Importantly, UNHCR supported other NGOs and INGOs to implement different WASH interventions in the refugee camps.

Table 6: UNHCR WASH activities in Rohingya Refugee Camps

WASH components	As December 2018	Beneficiary
Tube wells installed	674	>156,000 refugees
Latrines constructed	7,691	>125,000 refugees
Hygiene kits distributed	60,203	-
Field staff and volunteers trained in WASH emergency response	677	-

Green Technology and WASH

UNHCR and its partners, to provide safe and clean water to Rohingyas living in the crowded settlements, had been turning to green and non-polluting

technology, including solar power. Five safe water networks jointly completed by UNHCR, MSF, OXFAM and BRAC in the Kutapalong-Balukhali refugee providing safe water to over 40,000 refugees. (UNB, 2019a)

3.4.2 UNICEF and WASH Responses

UNICEF had a specific target namely supplying safe water, sanitation facilities and hygiene supporting activities which was almost half of overall WASH target. From the Figure 36, at the beginning of 2018, UNICEF achieved 49% of its water supply target. At June 2018, the water supply coverage increased insignificantly i.e. only 3% compared to previous coverage. At September and December of 2018, the coverage was 56% and 58% respectively. It could be opined that still there was a big gap between water supply target and achievement. (UNICEF, 2017-'18)

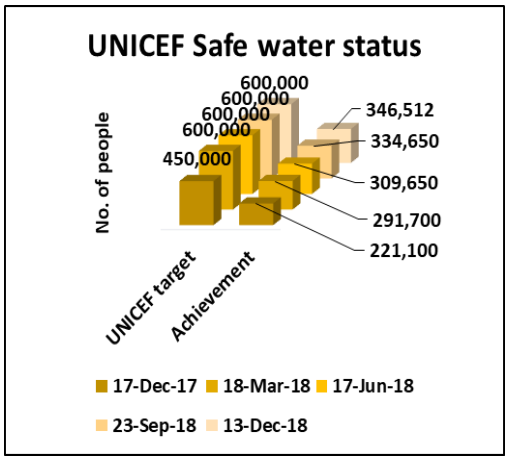


Figure 36: UNICEF safe water status

UNICEF achievement regarding sanitation was praiseworthy, although at the end of 2017, it was around 70%. In the middle of 2018, the overall achievements went down little bit by 4% compared to end of 2017, although the number of people taken sanitation services increased by around 10,000. Overwhelmingly, at September 2018, UNICEF exceeded its target covered by 106%.

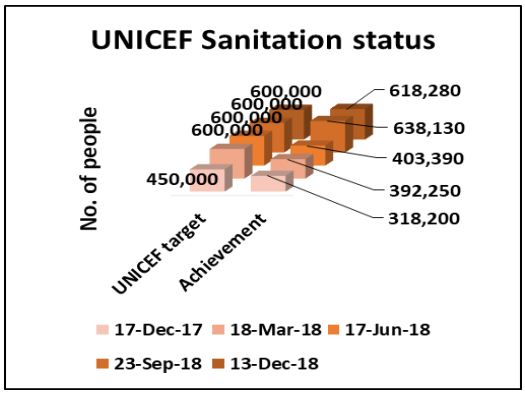


Figure 37: UNICEF's Sanitation target vs Achievement

This achievement continued up to December 2018. Figure 37 showed the details of target and achievement throughout the years. (UNICEF, 2017-'18)

At the end of 2017, UNICEF hygiene target was 450,000 people, but its coverage was around 40%. Later the target increased and reached at 600,000 people. Unfortunately, at March 2018, the coverage went down sharply. Only 16% of 600,000 i.e. around 100,000 people were served by hygiene facilities. Notably, immediately after, the coverage reached at 62% at the month of June 2018. Surprisingly, at September 2018, the achievement super exceeded the target by 41%. The Figure 38 highlighted the overall UNICEF hygiene achievements. (UNICEF, 2017-'18)

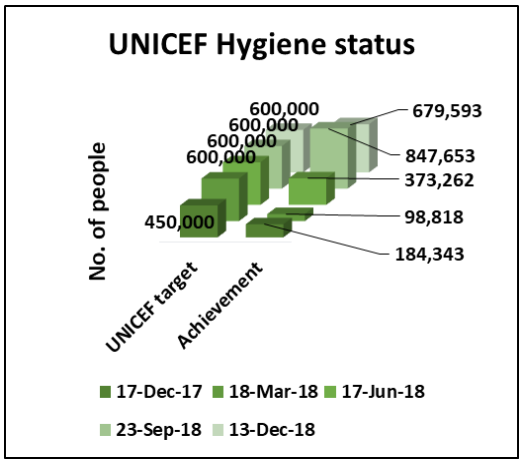


Figure 38: Hygiene status for UNICEF target vs Achievement

3.4.3 OXFAM Responses for Rohingya Refugee

For Rohingya Refugees, Oxfam operated different WASH interventions. For ensuring safe water, Oxfam supplied 385,000 liters of chlorinated water daily in the Teknaf area (OXFAM, 2019c). At Unchiprang camp, Oxfam provided nearly 240,000 liters of safe drinking water per day to 25,500 people and they also installed 726 wells which help to prevent water being contaminated after a heavy rain fall and leading to an outbreak of disease. (OXFAM, 2019b)

For Sanitation and hygiene, Oxfam carried out different initiatives such as:

- Cleaned out and repaired hundreds of latrines.
- Constructed 770 bathing cubicles.
- Distributed more than 21,500 hygiene kits so far.

Besides, as per OXFAM (2019c):

- Oxfam supported people to stay healthy and hygienic by distributing soap and other essentials and
- Oxfam installed **solar-powered lights** around the camps and provided torches and portable solar lanterns so that refugees women felt safer leaving their shelters after dark to reach water points and toilets.

Considering the grave importance of centralized fecal sludge treatment in the refugee camp, Oxfam collaboration with UNHCR and GoB, run a centralized fecal sludge treatment plant. During a visit to Rohingya camp, it was seen that the plant was functioning effectively. There were two different sewage

collection systems, one by Trucking and another by pipeline through pumping. Initially, this plant would work for 50,000 people and later it would be transformed for 100,000 people of the refugee camp (OXFAM, 2019c). Another WASH response was to work with community-based volunteers to highlight the emergency of clean water and good hygiene (OXFAM, 2019a). To operate hygiene sessions on safe water, latrine cleanliness, food hygiene, handwashing, and diphtheria awareness, Oxfam had recruited more than 550 Rohingya volunteers. (OXFAM, 2019b)

3.4.4 BRAC and WASH Responses

Table 7: BRAC-MSF Water network design considerations for Rohingya camp

Network design considerations	Network operations standard
20L treated water/person/day	20 Litres/person/day on average
<125 people per tap	Goal of ensuring repairs are completed within 48 hours
<250m from Household (HH) to ap	Daily quality monitoring conducted at tap stand and HH
Minimum 1 tap stand/block	FRC[1] 0.6-1.00 ppm at tap stand with HH FRC level 0.2-0.3 ppm after 24 hours

Source: BRAC site management office at Rohingya Refugee Camp 1E & 1W

BRAC is one of the renowned NGOs working vigorously to solve WASH crisis of the Rohingya Refugee collaboration with MSF, UNHCR etc. starting a treated water supply system with distribution network to supply safe water for Rohingya people. Understanding the necessity of safe drinking water, improved water infrastructure, water safety planning, controlled monitoring and maintenance for Rohingya Refugee BRAC and MSF-OCA, hereby entered into an agreement to establish a treated water supply and distribution network for over 80,000 Rohingya (18,600 HH) refugees in Camps IE and IW. The network design considerations and operational standards were disclosed in the above Table 7.

[1] Free Residual Chlorine

BRAC, collaboration with UNHCR, managed sanitation facilities considering health impacts and other vulnerable communities like disabled, children and older people. The toilets were comfortable and hygienic to use. Outside the toilets, there was hand washing facilities which inspiring and praiseworthy. There were handrail facilities to hold.

Other Responses for Rohingya Refugees

Others, like Danish Refugee Council (DRC), Norwegian Refugee Council (NRC), Gov. of Canada etc. actively supported to overcome the Humanitarian Crisis of Rohingya Refugee in Bangladesh. DRC had been operating to improve livelihoods of the vulnerable Rohingya refugee and affected host community addressing basic needs (DRC, 2019). Mentioning crowded living conditions and hazardous impediments of monsoon, NRC highlighted the difficulty of responses to ensure water and sanitation, health services etc. in the Rohingya refugee camps. NORCAP[2] deployees mapped potential flood areas searching ways to lessen the effect of rains and aided refugees to upgrade sanitary facilities (Fossvik, 2018). Importantly, NRC had assisted to boost collaboration between agencies and refine the sector response (Fossvik, 2018). Kolstad (2018) also demonstrated that more than 40 relief experts had been deployed by NRC declaring Cox's Bazar as the world's largest refugee settlement, contributing their expertise to areas such as shelter, water and sanitation facilities, education and medical aid. Besides, they were supporting the UN and local authorities' efforts to build latrines.

Canada also assured to lend a hand to revamp the living conditions of the Rohingya Refugees emphasizing to protect human rights and dignity (GoC, 2018). The Canadian government's strategy focused on ensuring women and girls' significant participation in all aspects of program planning, delivery and decision-making processes. Mentioning monsoon, GoC also declared funding for emergency preparedness and assistance for Rohingya refugees and host communities. To magnify more responses, UNHCR special envoy and Hollywood superstar Angelina Jolie had said the world might not turn away from the nearly 1 million Rohingyas who had fled from Myanmar to Bangladesh. (UNB, 2019b)

[2] Norwegian Capacity; the Norwegian Refugee Council's global provider of expertise

Chapter 4

4. Findings and Discussion

4.1 Findings

The findings regarding multidimensional Rohingya Refugee Humanitarian Crises and the Response strategies to overcome the crises from review of WASH Scenario and PSR (Pressures-States-Responses) analysis are depicted in the following description.

4.1.1 Crises and Challenges

The crises, nestled with the Rohingya Refugee and affected community, are simply devastating. More than 500,000 children are living with expansive difficulties in the sense of costing of their future. Lamentable reality is that already twenty months have gone, but still majority of Rohingya refugees are critically struggling within the crises. From analysis and review of WASH scenario, the following crises and concerned challenges are noticed which affecting the vulnerable people more severely:

- The accommodation, acutely sub-standard living spaces, far below the minimum international guidelines for refugees.
- Lack of suitable spaces as well as time due to quick influx created poor site planning, faulty infrastructures, inferior workmanship etc.
- Most of the water points, constructed at the beginning, are malfunctioning due to badly positioned or poorly constructed
- Groundwater insufficiency with saltwater intrusion fabricates the water scarcity.
- Long hours, sometimes even around half of a day, need to collect safe water although the quantity is not enough to meet daily demand of a small family.
- A large number of household's water sources are contaminated with E. coli bacteria
- Numerous latrines are already unusable.
- Latrines without having lighting create safety problem for women and young girls.
- Vulnerable women, around one-third of total refugees, are more endangered due to very poor sanitation.

- Insufficient number of latrines, usually more than 50 people are using a latrine, shapes the crisis critically.
- More than 500,000 Rohingya children stay in the well-congested camps. Although all are vulnerable, but around 350,000 children having ages below 12, are seriously in great peril due to natural disasters.
- The camp area is in 'high risk' cyclone affected areas and earthquake 'zone-II' which highlighting the future uncertainty and severity.
- Heavy rainfall floods toilets, learning centres and health clinics easily.
- Frequent landslides damages facilities and infrastructures putting more than 200,000 refugees in risky.
- A great quantity of deforestation engenders ecological imbalance of the surroundings.
- Dependency on the aid agencies and realization of short-term staying make Rohingya refugees lack of ownership.
- Poor waste disposal system resulting the alarming level of pollution
- Fecal contamination is very common to spread water borne diseases
- Acute watery diarrhea (AWD) is one of the main health concerns as the number of cases increase rapidly.
- Although universally, the displaced and fled Rohingya people are identified as 'Refugee' but GoB couldn't call them as refugee due to Bangladesh is not a party to the 1951 Refugee Convention or its 1967 Protocol.

4.1.2 Responses with synergies within GoB and Humanitarian Community

The response strategy to get a grip of the humanitarian crises, especially the WASH crisis, might be described as well-balanced having a good understanding within water governance system of Bangladesh and Humanitarian communities. Although Bangladesh couldn't handle the Rohingya people as Refugee, the country welcomed them as 'human being' trying to respect their human dignity supporting all facilities within its limits. The main focus of synergies is revealed at the policy level as well as district and camp level. Few response strategies of WASH sector of GoB and Humanitarian communities are disclosed below to perceive the synergies:

a) ***Joint Response Plan 2018 (March-December 2018):*** A framework by Strategic Working Group (SEG) to overcome Rohingya crisis emphasizing collaboration, coordination and synergies within the

humanitarian community and the Government of Bangladesh. The needs and challenges were primarily identified by Joint Response Plan (JRP) 2018.

b) ***Joint Response Plan 2019 (January-December 2019):*** The revised framework of JRP 2018 by SEG. The WASH responses mechanism and other related responses initiated by 2019JRP. WASH Target as JRP 2019 is more than 1,052,000 affected people. Importantly, the needs were analyzed under the leadership of department of Public Health Engineering (DPHE). The major focused areas of JRP were WASH assistance, resilient building, community engagement, safety, dignity and ownership with specific focus on Community participation, Children, Women and vulnerable people, Women empowerment including sincere coordination within Sectors.

c) ***WASH Sector, Cox's Bazar***: WASH Sector, Cox's Bazar is the main synergies platform of Water, Sanitation and Hygiene activities in the Rohingya Refugee camps planning for all WASH-related aspects of the humanitarian response getting control of the Rohingya crisis. DPHE as Government agency leads the WASH Sector, Cox's Bazar and this WASH Sector is co-chaired by UNICEF and Action Against Hunger.

All the Humanitarian communities (UN agencies, Donor agencies/countries, NGOs, INGOs) including GoB follow the strategic WASH objectives initiated by WASH Sector. The WASH crisis, challenges, mitigation measures, disaster preparedness for WASH, future WASH planning etc. are formulated in this platform.

d) ***Emergency Multi-Sector Rohingya Crisis Response Project (EMRCRP):*** EMRCRP is a GoB project assisted by World Bank. The EMRCRP project, based on government water and environmental policies, principally focuses on the issues of water governance by strengthening government systems to enhance access to basic services and build disaster and social resilience of the displaced 900,000 Rohingya population (DRP). The project highlights the sustainability of all water, sanitation and waste management schemes in an integrated way facing the climate risks. It also emphasizes to strengthen the capacity of government agency.

e) ***Emergency Assistant Project for Water Supply and Sanitation at Ukhia and Teknaf Upazillas in Cox's Bazar, Bangladesh***

(EAPWSS): EAPWSS is another GoB Project funded by Asian Development Bank. Aiming to supply safe water to two million Rohingya refugees, to develop sanitation and waste management systems, DPHE starts to implement the project. This EAP also supports to boost effective water governance system in Bangladesh focusing participation of women and disadvantaged groups in all project-supported activities and attaining water supply and sanitation coverage for all.

Besides GoB, UNHCR, UNICEF, WHO, IOM, OXFAM, MSF, BRAC, NRC, DRC etc. all are functioning and collaborating each other to conquer the well-known multidimensional humanitarian crisis such as:

- The centralized fecal sludge treatment plant in the Rohingya Refugee camp, implemented by Oxfam in collaboration with UNHCR and GoB, is designed for 50,000-100,000 people of the refugee camp.
- Five safe water networks, fully powered by solar energy, jointly completed by UNHCR, MSF, OXFAM and BRAC provide safe water to over 40,000 refugees.
- A treated water supply and distribution network, established by BRAC and MSF-OCA, is working properly for over 80,000 Rohingya.

Eventually, the coordinated WASH activities are necessarily more effective for such humanitarian crisis, otherwise the situation would be worst enough to save the Rohingya refugee.

But the crisis yet not over since still a long way to go to keep the light at the end of the tunnel. From the WASH scenario and analysis, it can be easily realized that lots of refugees are still suffering from safe water and sanitation. Enormous AWD cases are there due to drink unsafe water contaminated by E. Coli bacteria. Monsoon damages WASH facilities. Moreover, insufficient coordination, in some cases, creates risks to lessen the crisis which could be explored in the discussion part.

4.2 Discussion

The humanitarian crisis, mainly dilemma of safe water, sanitation, hygiene facilities, food, shelter, education and safety i.e. basic rights of livelihood, of over one million Rohingya refugee is under acute threatening largely due to natural disaster although humanitarian actors are seeking desirable measures collaborating each other to diminish the crisis. DPHE, the WASH sector lead agency as well as vital department of GoB to lead the effective water governance system, along with UN agencies, NGOs, INGOs, Donor agencies are running effortlessly to find out a sustainable solution of the world's largest humanitarian crisis establishing an effective synergies mechanism.

Within the framework of present synergies structure, already a considerable number of response planning had been carried out effectively, helped to save lives of hundreds of thousands vulnerable people. Tube-wells were installed, latrines were constructed, Hygiene facilities were distributed, and awareness programs were carried out to make a comfort of the vulnerable Rohingya community. Nonetheless, since the crisis is multidimensional having enormous challenges, both internal and external, the coordination system would have few gaps affecting the crisis as discussed.

4.2.1 Water, Responses and Limitations

The improvement of safe water supply is notified in the Figure 39. At August 2018, more than 30% of target population were out of reach (ISCG, 2018-'19).

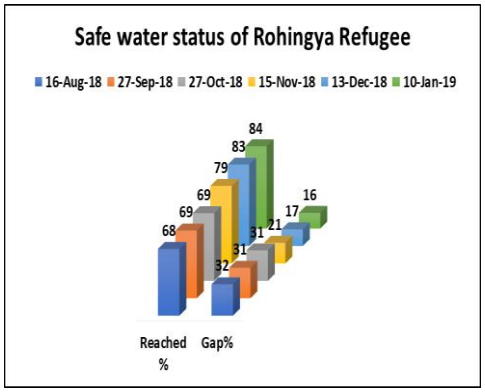


Figure 39: Safe water status of Rohingya refugee camp

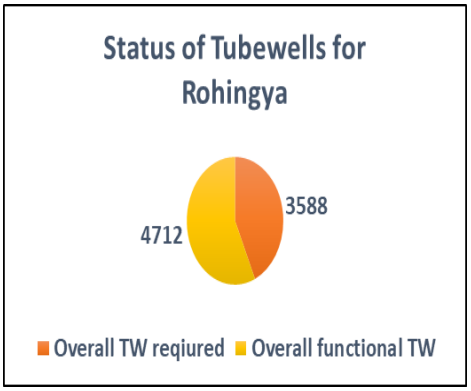


Figure 40: No. of Tube-well in the Rohingya refugee camp

Later, progressively the target reached at 84% in the January 2019 i.e. only 16 % target people were not benefited by the responses although efforts were continuing. Another report from WASH Sector and ISCG (WASH Sector &

ISCG, 2018a), as mentioned in the Figure 40, overall functional tube-wells were in well-above of the tube-wells required in the refugee camp. This information didn't mean any positive synergies responses. To find out any reasons behind this abnormality, related data were scrutinized sincerely and found that there were camps having severe functional tube-well gaps, as well as camps having excess functional tube-wells.

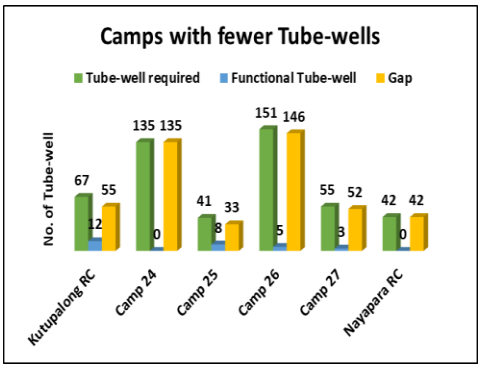


Figure 41: Camps having functional Tube-well gaps ranging 80 to 100%.

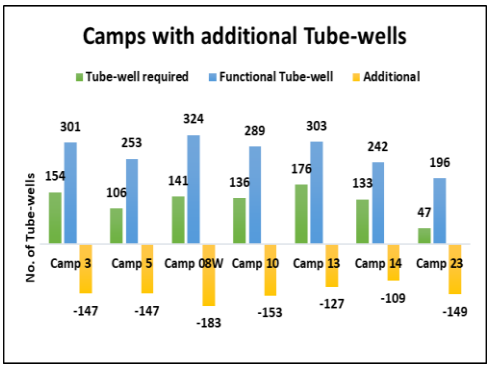


Figure 42: Camps with excess functional Tube-wells ranging 70 to 300%.

The Figure 41 illustrated that camp 24 and Nayapara RC, both had no functional tube-well at all, camp 25 and Kutupalong RC, both had less than 20% functional tube-wells and camp 26 and camp 27, they had only 4-6% functional tube-wells (WASH Sector & ISCG, 2018a). On the contrary, Figure 42 exhibited that there were few camps having plenty functional-tube-wells, excess the requirement. Camp 13 and Camp 14, both had 70-80% additional functional tube-wells, camp 3 and camp 10, they had 95-110 % excess functional tube-wells, camp 5 had around 140% spare functional tube-wells and camp 23 had surprisingly more than 300% additional functional tube-wells (WASH Sector & ISCG, 2018a).

4.2.2 Sanitation, Responses and Limitations

Responses for sanitation were quite difficult also in the Rohingya refugee camps due to geographical location of the camps barely have plain land. But the coordinated efforts of the humanitarian actors made it possible to create a satisfactory progress in the initiatives. Figure 43, indicated that at January

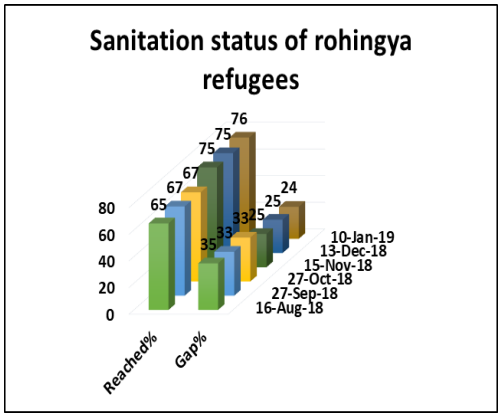


Figure 43: Sanitation status of Rohingya refugee camp

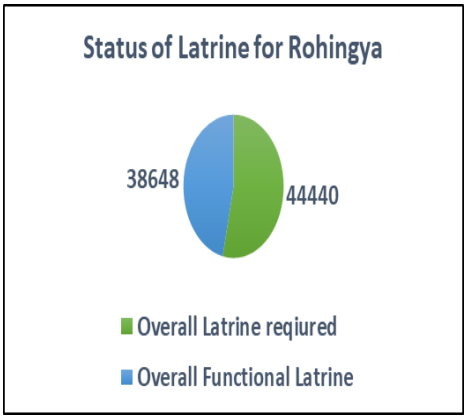


Figure 44: No. of Latrines in the Rohingya refugee camp

2019, more than two-thirds of target population had safe sanitation access in the camps (ISCG, 2018-'19) although the progress was almost static in the last few months. On the other hand, Figure 44 revealed that still around 5,800 more functional latrine needed in the camps i.e. the gaps were only 13%. Here was also some dissimilarity in the results. During detail discussion, it appeared that there were camps having more functional latrines and also camps having less functional latrines compared to their requirements. Figure 45 showed that camp 24 and camp 26, both had functional latrine gap around 50-55% and camp Kutupalong RC, Nayapara RC and camp 02E, all had functional latrine gap around 80-95% (WASH Sector & ISCG, 2018a).

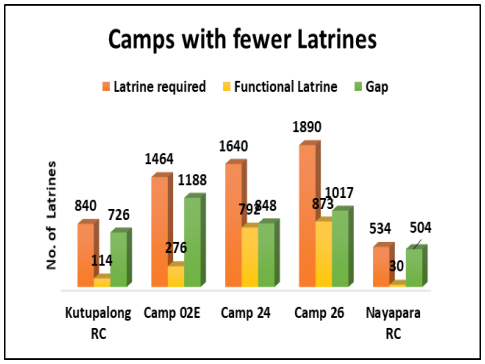


Figure 45: Camps having functional latrine gaps 50 to 95%.

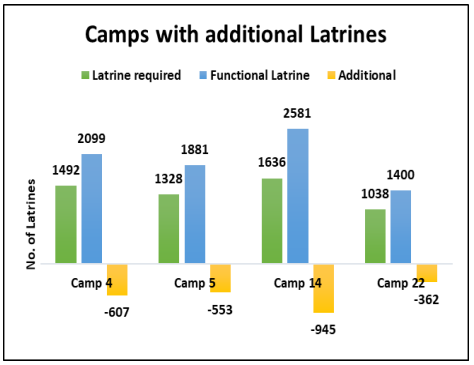


Figure 46: Camps having excess functional latrine 35 to 60%.

On the contrary, from Figure 46, it could be explained that camp 4, 5, 14 and camp 22, all had surplus functional latrines around 35-60%.

4.2.3 Hygiene, Responses and Limitations

Importance of hygiene practices is very much crucial to get rid of from diseases. At the very beginning of influx, the situation was severe, but later, with the vigorous efforts from humanitarian communities, the picture had changed satisfactorily. Washroom with nearby water sources to use after toilet along with hygiene kit or hand washing soap is considered as functional Washroom. Figure 47 indicated that although at August 2018, the hygiene coverage was 77%, it increased up to 96 % at January 2019 (ISCG, 2018-'19).

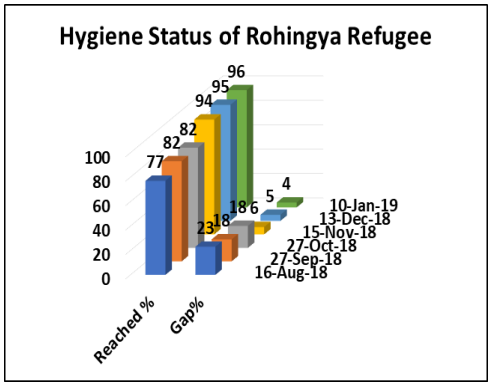


Figure 47: Hygiene status of Rohingya refugee camp

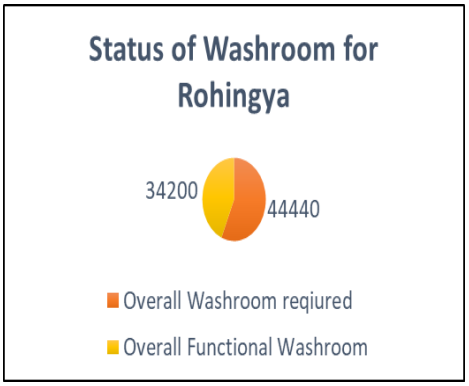


Figure 48: No. of Washrooms in the refugee camp

The increase was very steady. Another report from WASH Sector, revealed that there were still needed more than 10,000 functional Washrooms to attain its target i.e. the coverage was around 77% as Figure 48 (WASH Sector & ISCG, 2018a). The variation of the overall hygiene coverage could be justified with the following discussion. From Figure 49, Camp 02W and camp 7, both were without 88% functional latrines i.e. camp 02W needed 1106 nos. more functional washrooms and camp 7 needed 1715 nos. more to reach the target. Camp 02E and camp 24, they had gaps 91 and 93% respectively, whereas Kutupalong RC and Nayapara RC, they needed 836 nos. and 534 nos. functional washroom respectively (WASH Sector & ISCG, 2018a) i.e. they refugees with these camps were in great danger having higher risk of E. Coli contamination.

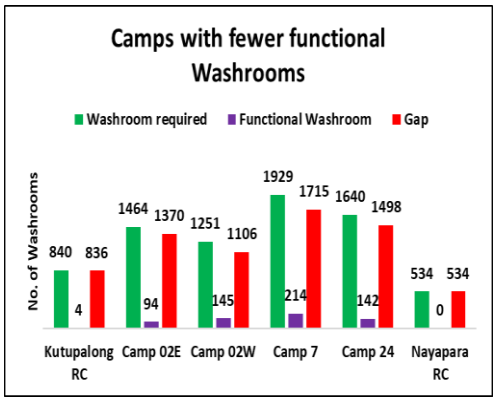


Figure 49: Camps with functional Washroom gaps 85 to 100%.

4.2.4 Water and Waste management: Responses and Risks

WASH Sector and Inter Sector Coordination Group were struggling from the beginning of Rohingya influx to enhance the living conditions of the overcrowded camps. Although well-planned water network and fecal sludge management maps had been proposed, but the execution of such planned structures would be great difficulties facing overall challenges. Humanitarian communities might have to face acute challenges during monsoon to tackles the water contamination. Besides, such poor drainage system could bring difficulties for children of ages <5.

4.2.5 Unplanned water and sanitation structures: Risks to Health

Planned responses by humanitarian communities brought positive outcomes, as well as unplanned initiatives by different sectors piloted adverse effects to the crisis. The distance between water point and soak well of latrine was not adequate. Moreover, water container was handled in an unsafe way. In addition, bad positioned structure might bring severe risks in several ways. Water and environmental pollution, both might take place during rainy season.

4.2.6 Water Quality: Responses and Effects

The repercussions of inadequacy of functional latrines, unplanned water and sanitation structures, poor drainage, adverse effects of monsoon, spreading of human excreta and without having functional washrooms in the refugee camps were understandable in the water quality surveillance results. A report of world Health Organization regarding Water Quality testing results, samples were collected from different camps' water sources revealed that only all the sources of Nayapara RC camp met the standard, camp Leda MS met by 89%, Hakimpara and Shamlapur met by 78 and 71% respectively. Among others Burma para and Jamtoli both met by 58%, whereas the remaining others met the standards by 20-50% of sources as Figure 50 (WHO, 2017)

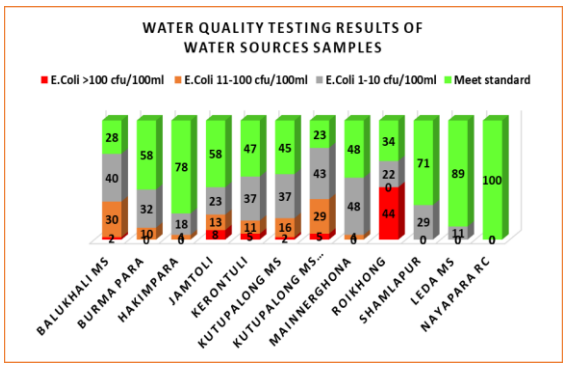


Figure 50: Water Quality Testing Results (in %) of water source samples

The water quality situation was worse considering household water quality surveillance results as depicted in the Figure 51. Out of 12 camps only Nayapara RC met 89% and the 2nd better camp was Leda MS having 49%. Others were devastating since they had households having 4-24% met standards i.e. 76-96% households of these camps were drinking water with E. Coli contaminated. Obviously, the children of these much-affected camps were more vulnerable. (WHO, 2017)

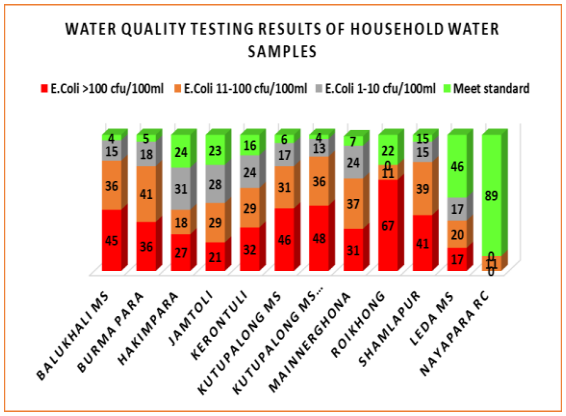


Figure 51: Water Quality Testing Results of household water samples

The situation of E. Coli contamination was increased since the humanitarian actors had taken various response activities such as installing deep tube-wells instead of shallow tube-wells, latrines in vulnerable position were decommissioned, pipe water network initiated, hygiene awareness program conducted etc. to lessen the contamination resulting gradual improvement both in water sources and household levels. Report from World Health Organization (WHO, 2018b) showed that E. Coli contamination both in water

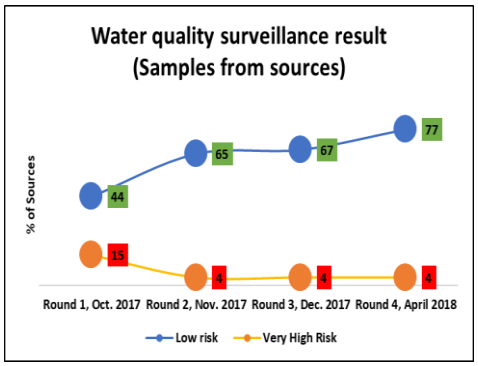


Figure 52: Low risk increasing and very high risk decreasing (Sources)

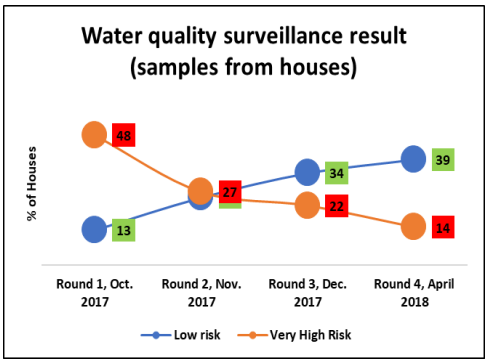


Figure 53: Low risk increasing and very high risk decreasing (Household)

sources and household levels had been improved substantially i.e. number of water sources with very high risk decreased appreciably from 13% to 4% and similarly, number of households with very high risk declined considerably from 48% to 14% as Figure 52 and Figure 53 indicated respectively. The

coordinated responses within the humanitarian communities was the fundamental ground to this improvement.

Essentially, living conditions in the camps had improved. Thousands of Rohingya refugees had a reliable supply of safe water. Unfortunately, in many cases contamination resulted directly from a lack of education. Refugees had bathed, washed, and defecated in drinking water sources without thinking the aftermath. In addition, some people didn't recognize that contamination could also occur during the collection, transportation, and storage of water. Hence, even though a water source was safe, dirty collection containers or unwashed hands could contaminate the water (Porter, 2019). Clearly, WASH education and hygiene practicing might bring more positive outcomes.

4.2.7 Rohingya Children: Responses and Risks

Fifty-five percent of Rohingya people were children which meant more than 500,000. Among them, 370,000 children were ages less than 12 years (SEG, 2019). These children had to pass their most valuable lifetime in a cramped environment. Every day, the children had to struggle for basic needs of life like water, food etc. But every Rohingya child had rights to live in a place having all basic needs like water, sanitation, food, education, shelter etc. Humanitarian actors attempted to mould the situation better providing education facilities. Figure 81 highlighted about children learning which might help to lead the next generations to a bright future (SANT'EGIDIO, 2018) although this was only the beginning of the terrible journey, yet a long way to go. Government of Bangladesh would have the responsibility caring the future of Rohingya children even if they were refugees. There were distinct protocols about children's right to education and care, under the Convention of the Rights of the Child, which had been committed to by Bangladesh (Ahmed, 2019). A little good news was delivered by Abul Kalam Azad (RRRC) was that government had approved the education of Rohingya children up to class three. (The Daily Star, 2019)

Besides education and other basic human needs, children have the rights to be free from climate risks hazards. The United Nations Convention on the Rights of the Child declared children's rights considering climate risks as article 24, 2c: 'Children's right to health is infringed when health-sustaining conditions such as clean water and nutritious food are compromised by climate change' and article 27: 'Right to an adequate standard of living' (UNICEF, 2016b). Hence, GoB as well as humanitarian communities all need to be more cautious to protect 500,000 Rohingya children's rights since refugee camps are more susceptible to weather related events like cyclones, floods etc.

4.2.8 Community Volunteers and self-Adaptation

The initiative of volunteer mechanism by humanitarian communities was an exemplary response. The young adults both male and female were working in the field of waste management, awareness building, reducing environmental pollution etc. for their own community might help to lessen the crisis. Fiona MacGregor, from International Organisation for Migration (IOM) at Cox's Bazar, expressed that humanitarian communities could not mitigate against all disasters in the camp 24/7. He emphasized to be prepared of the Refugees themselves as being the first responders (Crew, 2018). Certainly, this is the real-life scenario of the refugee camp since disaster wouldn't come with notifying always. Moreover, there are other usefulness being a community volunteer, since such activities will supportive for:

- Capacity building
- Creating Responsibility
- Establishing strong bondage within communities
- Feeling of ownership
- Save lives during emergency etc.

4.2.9 Relocating Rohingya Refugees

Bangladesh Government had planned to resettle around 100,000 Rohingya refugees at Bhasan Char, a tiny island in the Bay of Bengal under Noakhali District thinking to reduce the pressures on the world's largest refugee settlement in Cox's Bazar (Adams, 2019). But question arose regarding the safety and sustainability of the new proposed location as Adams (2019) mentioned that part of the Bhasan Char was eroded by the monsoon every year, so pushing the Rohingya refugees to the island meant to face another threat to their survival. Islam (2019) highlighted that certainly any cyclone could wash away the island. The matter is that it is very crucial to relocate the Rohingya refugees to a better place to ensure the basic needs of their livelihoods.

4.2.10 Rohingya Issue and GoB's Thinking

During a visit to Rohingya Refugee camp, the author had an opportunity to have a congenial conversation with the top-level government officials of Bangladesh who were working directly for the Rohingya refugees. The information from the conversation reflected the government thinking regarding this humanitarian issue. (This conversation is published with the permission of the GoB officials without any change)

1st Official:
Mr. Muhammad Mizanur Rahman, Additional RRRC, Cox's Bazar
Place: RRRC office, Cox's Bazar, Bangladesh, Date: 11 March 2019

Author: At present there are more than 1 million Rohingya refugee, so as a government representative, how are you coordinating with other national and international organizations or institutions?

Mr. Rahman: That's a big challenge. In cox's bazar, we have 9 UN agencies, more than 80 INGOs, and more than 100 National NGOs; moreover, we have our government agencies like DPHE, LGED, DC, Military, Police, Civil Surgeons Office etc. to manage the situations. Hence, coordination is a big challenge both vertically and horizontally and RRRC is the focal on behalf of the Bangladesh government in Cox's bazar. RRRC office is working with National and International agencies and institutions creating a coordination platform named as ISCG (Inter Sector Coordination Group). There is a senior coordinator from UN, who is coordinating as an umbrella and RRRC is coordinating horizontally with ISCG and other government agencies. At camp level, there is a CIC (Camp in Charge) who is coordinating with all stakeholders like I-NGOs, N-NGOs and other agencies to manage the situations. To manage this crisis, there are 10 sectors in Cox's bazar like Shelter sector, Health sector, WASH sector etc. and each sector is operated by a lead sector agency. In camp level, each sector has a sector focal to make effective coordination with all. At Dhaka level, MODMR, working with Foreign Ministry, Home Ministry and also Prime Minister's office.

Author: Do you think it is important to involve local stakeholders/political parties/political representatives to overcome the crisis?

Mr. Rahman: Actually, in camp management, they are not directly involved, since camp management are done by national and international agencies. But indirectly they are involved, especially local people are very much engaged in different activities related to camp. Local youth are directly working in NGOs.

Author: Do you have any future plan or strategy to improve the present situation?

Mr. Rahman: Government have taken mid-term solutions to improve the situations since we are thinking that Myanmar will take necessary actions to repatriate the Rohingya people as early as possible. Like in WASH sector, initially we had Shallow TWs, later we turned it into Deep TWs. For latrine, it was single pit latrine with 3-rings, now it is 2-pit latrine with 10 rings each. We are going to initiate pipe water supply system and fecal sludge management process. Actually, situations drive the policy. Hence space is the major constraint. The area was completely reserve forest. It was habitant of wildlife. We destroyed the environment with more than 6000 acres land. But we trying to recover the environmental loss by planting trees. Hence, WB, ADB and GoB's different agencies are working together.

2nd Official:

Engr. Ritthick Chowdhury, Executive Engineer, DPHE
WASH sector lead agency on behalf of Government of Bangladesh
Place: DPHE office, Cox's Bazar, Bangladesh, Date: 11 March 2019

Author: As you know, safe water and sanitation is the human rights as declared by United Nations, so as a sector lead agency how are you facing the Rohingya crisis?

Mr. Chowdhury: Considering SDG and safe water and sanitation for all, we have already installed Deep TWs, some Shallow TWs and presently working for piped water supply system to ensure water for all Rohingyas.

Author: Do you think the existing water policy is enough to overcome this crisis?

Mr. Chowdhury: Basically, government water policy is dedicatedly for host people and we are expecting that Myanmar will shortly return their people, but considering humanitarian situation we, INGOs, NGOs all are working for Rohingya for better livelihood. Government has taken mid-term solutions to support them.

Author: As we heard, more than halve of Rohingyas are women and children, so have you any special program for them?

Mr. Chowdhury: Yes. we have started Hygiene Promotion activities, separate bathing facilities, separate latrine for male and female to avoid gender-based violence. For child and specially for disabled we have ensured special facilities, like commode.

Author: How are you managing fecal sludge of these 1 million people?

Mr. Chowdhury: It's a burning question since to manage huge amount of sludge at this situation is really a difficult task. We provide twin-pit latrines with 10 rings. Other I-NGOs and N-NGOs have also installed fecal sludge units to manage on-site. Presently, we initiate integrated sludge management process which will be very effective. OXFAM is working for this sludge process.

Author: As we know, Cox's Bazar is a risky zone considering heavy rainfall and clones. Have you any special program for the upcoming rainy season?

Mr. Chowdhury: Cox's Bazar is a cyclone prone zone and Rohingyas' are living in an area which was completely restricted forest; so, there is possibility of landslides due to heavy rainfall. We are planning to take necessary actions to avoid the risky condition. We have emergency plan to response quickly.

Author: Do you think piped water supply will be effective?

Mr. Chowdhury: To avoid non-functional TWs and to ensure safe water for all, piped water supply will be more effective. We will provide tap-stands which will be easy to monitor.

End of conversation

Both the conversation was very thoughtful considering synergies within GoB and humanitarian communities as well as WASH initiatives for Rohingya Refugees to diminish the crisis. Around two hundred humanitarian communities were working for the refugees. Certainly, it was a great challenge to maintain coordination within such a huge platform. In addition, for better facilities, technologies were changed, improved initiatives had been taken, emphasized on women and children, highlighted natural disasters and importantly sustainability was considered. Several WASH initiatives had been launched for the Rohingya Refugees. Another fact was that, GoB had taken a mid-term policy about the refugees since the country wished a safe repatriation of the Rohingya Refugees. Hence, considering long-term staying, the humanitarian crisis might be worse.

4.2.11 Challenges to the Humanitarian Crisis

Simply, every crisis itself a challenge. Then, Humanitarian crisis is one of the greatest challenges, undoubtedly. Therefore, Rohingya Refugee humanitarian crisis is such a greatest mess where multidimensional challenges are prevailing worsening the crisis.

First, the camp zone was recognized as 'critical zone' by Rittick, Executive Engineer, DPHE, Cox'S Bazar considering the groundwater vulnerability and salt-water intrusion into the shallow aquifer (SUMAN, 2018). Besides, the Rohingya camp area was identified in the high-risk disaster-prone area of Bangladesh (Osborne, 2018). Floods, windstorms, landslides etc. were very usual in the camp area.

Second, acute difficulties for the refugees living in the area of low land, certainly in a high risk of landslides and soil erosion. Notably, the risk would be more severe due to collapsing of the larine pit by heavy rainfall. Basically, these were not rocky hills, they were soft soil hills. The stability came from the roots of the trees (Vyawahare, 2018). Sad to say, the camps were made after deforestation. Hence, the associated risks could be easily surmised. People in the downhill camps would be more vulnerable.

Third, there are several habitual challenges like open defecation, hand washing after toilet and before eating, polluting environment etc.

Fourth, awful population density, poor WASH facilities, insufficient drainage provision, lack of education etc. are established challenges for the Rohingya Refugees.

Fifth, although GoB and Humanitarian communities are operating simultaneously, there is a substantial lack of humanitarian expertise, capacity and resources to overcome such an acute humanitarian crisis. (Fossvik, 2018)

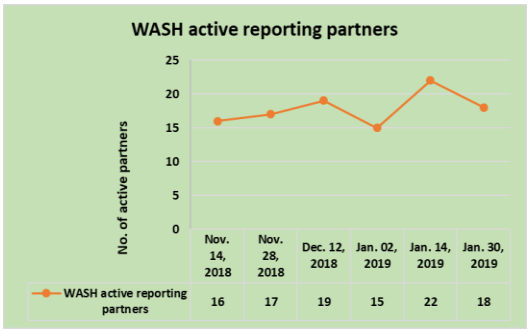


Figure 54: WASH reporting partner variations.

Sixth, defining as 'two-tier' coordination HPN (2018) emphasized on strong collaboration within all humanitarian actors working for Rohingya refugees. Prominently, maintaining balance between strategic and operational coordination in all levels i.e.

national level, district level and field level, a grave challenge. For example, there are camps with fewer functional latrines, whereas many camps having additional functional latrines. This means that the coordination of water and sanitation facilities are far from being ideal. Another case is that, although there are 46 WASH partners in the Rohingya refugee camps, but the active partners are only 26 (WASH Sector & ISCG, 2019b). In addition, the active partners are not regular in reporting as shown in above Figure 54. This indicating a coordination challenge in WASH Sector.

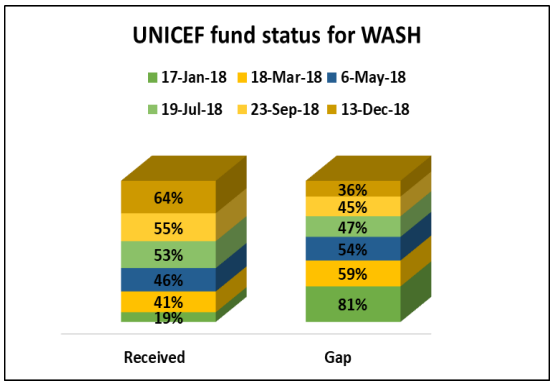


Figure 55: UNICEF fund status

Seventh, underfunding is one of the greatest challenges in this humanitarian crisis. Hundreds of humanitarian workers are struggling to operate the response plans. But adequacy of fund hampering to reach the target. For example, UNICEF as UN agency functioning to improve WASH facilities emphasizing to all of the children, had to face funding crisis. Figure 55 stipulates that at the beginning of 2018, only 19% fund were managed. Happily, there was a gradual improvement of fund collection and at the end of 2018, UNICEF received 64% of required fund for WASH, having 36% gap. (UNICEF, 2018)

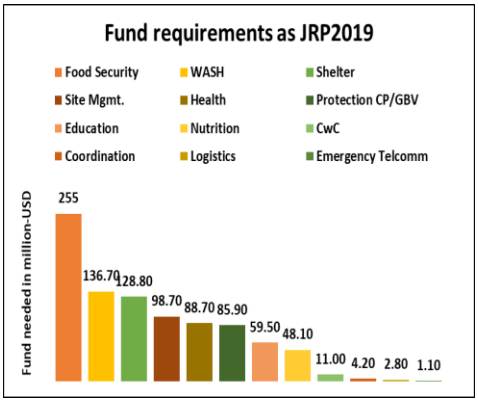


Figure 56: Fund requirement as JRP

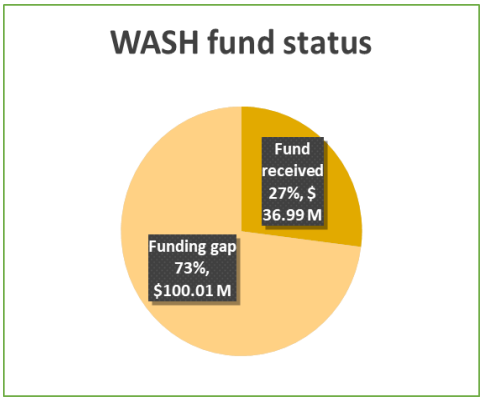


Figure 57: Overall fund status of WASH

According to Joint Response Plan 2019, for WASH response activities the overall fund requires 136.70 million USD (SEG, 2019) as Figure 56. A report of Inter Sector Coordination Group mentions the available fund for WASH as in the Figure 57. Hence, only 27% fund is available, still need around 100 million USD to handle the WASH crisis in the Rohingya refugee camps.

Chapter 5

5. Conclusion and Recommendation

5.1 Conclusion

The analyzation and discussion regarding humanitarian crisis of Rohingya refugees who had been living with grave uncertainty and without basic human needs for the last few years, revealed that the ongoing crisis of safe water, sanitation and hygiene facilities were adversely affected due to lack of hygiene education, unplanned construction of WASH facilities, natural disasters like floods, landslides, windstorms etc., lack of coordination within humanitarian communities and unavailability of fund. The geographical characteristics like shortage of ground water and high groundwater salinity was also responsible to augment the crisis. Hence, the first objective of this study is realized.

Later, getting control of the multidimensional humanitarian crisis, more than two hundred humanitarian groups and Bangladesh Government embraced the vulnerable situation establishing a synergies mechanism within themselves. Essentially, the synergies mechanism was focused at national level, field level and as well as camp level. RRRC, on behalf of Bangladesh Government and Inter Sector Coordination Group as humanitarian coordination platform are functioning in the field level to diminish the crisis. WASH sector, leaded by DPHE and co-chaired by UNICEF and Action Against Hunger established WASH strategy for effective coordination, oversight and monitoring of WASH-related aspects of the humanitarian response to fulfill the target ensuring adequate safe water and sanitation facilities. IOM, UNHCR and UNICEF acted as area focal agency to ameliorate the difficulties of WASH Sector.

Eventually, several response plans had been initiated by the humanitarian communities to bridle the crisis. For example, UNHCR, MSF and BRAC inaugurated water treatment plants using solar energy with piped water supply system. Others as Joint Response Plan by Strategic Executive Group, WASH strategy by WASH Sector, Emergency Multi-Sector Rohingya Crisis Response Project (EMRCRP) and Emergency Assistant Project for Water Supply and Sanitation (EAPWSS) implemented by GoB, funded by World Bank and Asian Development Bank respectively etc. UNICEF, OXFAM etc. also had taken several drives to solve the crisis.

Nonetheless, still the refugee community is surrounded with enormous challenges with shabby living spaces, inferior WASH infrastructures, groundwater depletion, improper waste disposal system, environmental pollution, landslides, fecal contamination, acute watery diarrhea (AWD), lack of effective coordination etc. are fabricating the humanitarian crisis woefully demanding more effective and efficient responses.

5.2 Recommendation

Crisis begins shortly but takes long time to recover it. Presently, Bangladesh Government takes mid-term solution strategy to tackle the difficulty although history utters different since Rohingya influx started decades ago. Observing overall situation very sincerely and wisely, GoB should have to formulate a balance strategy covering its responsibility of fulfilling basic rights of Rohingya refugees as well as country's aim to reach sustainable development goals.

First, emphasizing continuous multilateral discussion with international community highlighting the humanitarian crisis. A special team comprising bureaucrat, humanitarian actors, civil society representatives, Rohingya refugee representatives, political leaders might be formed for effective discussion.

Second, long-term solution of crisis strategy especially for WASH and education, could be initiate to upgrade the humanitarian situation. GoB would take the responsibility ensuring proper collaborating with humanitarian actors to pave the way of regular education facilities for the young children, ages 5-17. These children might bring positive roles for the socio-economic development of Bangladesh as well as for the world also since they have grown up in a challenging environment.

Third, living conditions of the refugees would be refined by strengthening the slopes of hills with state-of-the-art technology such as to avoid possible penetration of water, a cover of a landfill with geomembranes would be constructed armoring with vegetation and managing surface and subsurface drainage system. If Rohingya repatriation process is succeeded, these zones could be used a tourism since Cox's Bazar is the most famous tourist spot in Bangladesh for its largest sea beach in the world.

Fourth, harvesting rainwater could be a sustainable solution considering WASH as well as flooding. Aquifer recharge could also be considered. For these, a scientific research should be initiated immediately.

Fifth, with the help of World Health Organization, Water Safety Plans might be launch. Regular monitoring, water quality testing, maintenance, water handling mechanism etc. have to be included in the safety plans.

Sixth, alternatives of pit latrines would be thought for the overcrowded, congested refugee camps. An innovative sanitation strategy developed and tested in Kakuma refugee camp (Kenya) that "incorporates urine-diverting toilets, which separate urine and faecal waste, and a service-based sanitation system that included weekly waste collection" might be a suitable solution for Rohingya refugees. (Mehta & Kuschminder, 2018)

Seventh, Water Supply, Sanitation and Hygiene Promotion Standards as mentioned by Sphere (Sphere, 2018), would have to be practiced by all humanitarian groups to ensure the basic needs of refugees. Guidelines are added in Appendix H.

Eighth, more studies and research concerning improving the synergies efficiency, capacity building, quick but effective WASH solution, discovering short and long-term challenges with effective and efficient measures, are desperately needed.

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Appendices

Appendix A: List of Camp Focal Agency

No.	Rohingya Refugee Camp, Cox's Bazar, Bangladesh	Camp Focal Agency	No.	Rohingya Refugee Camp, Cox's Bazar, Bangladesh	Camp Focal Agency
1	Kutupalong RC	NGOF	18	Camp 13	WVI
2	Camp 01E	BRAC	19	Camp 14	BRAC
3	Camp 01W	BRAC	20	Camp 15	WVI
4	Camp 02E	ACF	21	Camp 16	DSK
5	Camp 02W	ACF	22	Camp 17	NGOF
6	Camp 03	OXFAM	23	Camp 18	BDRCS
7	Camp 04	OXFAM	24	Camp 19	OXFAM
8	Camp 04 Extension	BRAC	25	Camp 20	IOM
9	Camp 05	NGOF	26	Camp 20 Extension	IOM
10	Camp 06	NGOF	27	Camp 21	SI
11	Camp 07	Tdh	28	Camp 22	OXFAM
12	Camp 08E	WVI	29	Camp 23	IOM
13	Camp 08W	PA	30	Camp 24	IOM-SI
14	Camp 09	BRAC	31	Camp 25	SI
15	Camp 10	ACF	32	Camp 26	NGOF
16	Camp 11	ACF	33	Camp 27	SI
17	Camp 12	OXFAM	34	Nayapara RC	NGOF

Appendix B: The Long-Term Climate Risk Index (CRI) from 1997 to 2016

CRI	Country	CRI score	Death toll	Deaths per 100,000 inhabitants	Total losses in million US$ (PPP)	Losses per unit GDP in %	Number of events (total 1997–2016)
1	Honduras	12.17	301.65	4.28	561.11	1.968	62
2	Haiti	13.50	280.40	2.96	418.77	2.730	72
3	Myanmar	14.00	7 097.75	14.55	1 277.86	0.694	43
4	Nicaragua	19.33	162.45	2.96	234.60	1.127	44
5	Philippines	20.17	859.55	0.98	2 893.41	0.611	289
6	*Bangladesh*	*26.50*	*641.55*	*0.44*	*2 311.07*	*0.678*	*187*
7	Pakistan	30.50	523.10	0.33	3 816.82	0.605	141
8	Vietnam	31.83	312.60	0.37	2 029.80	0.549	216
9	Thailand	33.83	139.60	0.21	7 696.59	0.967	137
10	Dominican Republic	34.00	210.90	2.32	243.53	0.262	49

Appendix C1: Major Guiding Principles of WASH sector strategy

1	WASH partners respect Humanitarian Principles, the Core Humanitarian Standard and the 'do no harm' approach, in their interventions.
2	WASH partners adhere to national WASH operational guidelines for WASH in emergencies, where adaptation to local realities is required, as decided by the sector.
3	WASH partner interventions will address the 'three prongs' of WASH (Water, Sanitation, and Hygiene), either as an integrated program, or in collaboration with other partners.
4	WASH partners will take responsibility for the operation and maintenance of all facilities provided by them or ensure their handing over to a competent authority or another humanitarian organization working in the same area until such time as the community is prepared to undertake it.
5	WASH partner interventions will integrate with the strategic and operational approaches of other sectors, particularly Shelter, Camp Coordination and Camp Management, Health, Nutrition, Protection, including GBV and Child Protection & Livelihoods.
6	WASH partner interventions will seek to improve good governance, human rights, gender equality, age appropriateness, and environmental protection in all aspects of WASH program planning.
7	WASH partners will do their utmost to ensure the equitable provision of services between Rohingyas in camps and Rohingyas in host communities as well as with the host communities themselves.
8	All activities/implementation need to be gender/age/disability sensitive
9	Building Long-term Capacity and Reducing Environmental Risks
10	By developing tools to monitor the desludging and fecal management system with a coding system for latrines that must be desludged.
11	By building institutional Capacity, providing Awareness and Orientation of Sector partners on coding systems, surveillance and monitoring of water quality and quality of construction, water treatment procedures and use of harmonized certification checklists to improve quality of water supply facilities provided.
12	Climate and other hazard resilience measures will be incorporated in all water infrastructures (tanks, reservoirs, dams, pipe-networks) for flood/landslides and other hazards and or mitigated alternatives in case of any breakdown.
13	Design and development of surface and rainwater harvesting infrastructure (dams, reservoir, etc.) should include adaptation & seasonal rehabilitation (e.g. rebuilding the dam at the start of dry season and lowering spillway or progressive collapse during rainy season. Erosion control, land protection, adaptable maintenance and water sharing for production & farming is integrated.

Appendix C2: WASH leader activities

Considering the major increase of population in this area and the known fragility of the second aquifer, the WASH sector under the leadership of the Department of Public health (DPHE) will ensure that:	
1	A comprehensive study and monitoring of water resources including ground water and surface water is undertaken
2	A coordinated effort is undertaken to compile all relevant past and ongoing geophysical and hydrogeological studies conducted in the area
3	Geophysical and hydrogeological surveys are harmonized and used. A proposal from IWM is under consideration to model the hydrogeology of the area.
4	A comprehensive mathematical water resource modelling is developed and includes ground water vulnerability and alternative to ground water such as rain and surface water feasibility.
5	Surveys and feasibility assessments of surface and rainwater sources to facilitate sustainable water supply and reduce groundwater depletion are undertaken. It will help to define the need to have rainwater catchment (dams) to help on the recharge of aquifer and/or use for water supply

Popular Science Summary

The number of displaced people around the world is gradually increasing as a survey from UNHCR shows that in 2007, it was 42.7 million which reached at 68.5 million in 2017. Like other parts of world, Bangladesh is now a address of around 1 million Rohingya refugee, 55% are children mostly living in Ukhia, sub-district of Bangladesh, having a population density 3,468 per km2 after Rohingya influx. Study reveals that around 69% refugees have been staying in the Kutupalong-Balukhali Expansion camp which make it one of the largest refugee camps in the world.

30% of the 5,338 handpumps installed in the camps had become non-functional mostly due to a drop in the underground water level and a lack of proper maintenance. During summer, 42 % of individuals having less than 3 liters of clean drinking water daily. More than 90 percent of household water sources in the camps were contaminated with E. coli bacteria. Almost 95 per cent of toilets were close to water points which ultimately degraded the water quality. Monsoon drives around 2.5 meters of rainfall in three months, turning camps into unhealthy swamps. Around 200,000 people in the camps were at risk, including 25,000 in extremely high-risk areas due to landslides. Hence the above picture showed that several internal and external factors exacerbating the crisis. Therefore, the main objectives of this study are a) to find out the factors exacerbating the Rohingya Humanitarian crisis; b) assessing synergies mechanisms within Bangladesh Government and Humanitarian Communities and c) analyzing response activities regarding Rohingya crisis. Information had been collected through discussion with concerning government officials, field visit, journal articles and reports published in the electronic and print media. For the analysis Pressure-State-Response framework was used.

The findings revealed that the ongoing crisis of safe water, sanitation and hygiene facilities were adversely affected due to lack of hygiene education, unplanned construction of WASH facilities, natural disasters like floods, landslides, windstorms etc., lack of coordination within humanitarian communities and unavailability of fund. The geographical characteristics like shortage of ground water and high groundwater salinity was also responsible to augment the crisis.

To overcome the multidimensional humanitarian crisis, more than 200 humanitarian groups and Bangladesh Government embraced the vulnerable situation establishing a synergies mechanism within themselves. RRRC, on

behalf of Bangladesh Government and Inter Sector Coordination Group as humanitarian coordination platform are functioning in the field level. WASH sector, leaded by DPHE and co-chaired by UNICEF and Action Against Hunger established WASH strategy for effective coordination. 46 WASH partners are working in the camps. The number of beneficiaries to access functional latrines operated, maintained and cleaned by the Sector was 748,173 people in camps and 49,900 Bangladeshis in host communities. Working with partners, a total of 7 water networks through taps is operational or in final stages of completion. 21,959 latrines had been de-sludged. 5,732 latrines had been decommissioned. Up to December 2018, UNICEF had provided safe water to 346,512 target people, sanitation for 618,280 and Hygiene facilities to 679, 593 target people. BRAC and MSF-OCA established a treated water supply and distribution network for over 80,000 Rohingya (18,600 HH) refugees in Camps IE and IW.

Yet the Rohingya refugee is nestled with enormous challenges demanding more effective initiatives such as continuous multilateral discussion with international communities, long-term solution of crisis strategy, strengthening the slopes of hills covering with geomembranes, harvesting rainwater, initiating Water Safety Plans, innovative sanitation strategy like incorporating urine-diverting toilets and lastly more studies and research to improve the synergies efficiency.