



A market in Thangkhal camp in Bangladesh. Photo by Mahmud Rahman for CRS/Caritas Bangladesh

Strategic Recommendations for Shelter Upgrade in Response to the Rohingya Humanitarian Crisis

FINDINGS AND RESULTS OF THE EMERGENCY MARKET MAPPING ANALYSIS (EMMA) ON BAMBOO AND TIMBER MARKET CHAINS IN COX'S BAZAR DISTRICT, BANGLADESH

DECEMBER 2017

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ACKNOWLEDGMENT

We are very grateful for the support of all agencies and individuals involved in this joint-assessment, particularly:

- Graham Eastmond (Shelter/NFI Sector Bangladesh), Victoria Bannon (National Shelter Cluster Bangladesh) and Jimena Peroni (Cash Working Group Bangladesh) for the coordination to make this joint assessment possible as well as for the very productive brainstorming to help with the analysis.
- Tapan Mahapatra (ECHO) and Quinten Dengerink (Shelter Cluster Bangladesh), Krishna Drong (Caritas Bangladesh), Shaheen Kamruzzaman (Caritas Bangladesh) and Keerthana Thanikal (CRS India) for their tireless technical support provided during the assessment.
- Bijoy K. Barua (Shelter/NFI Sector Bangladesh) and Kamrul Hassan (Handicap International) for their lead to collect data on the field.
- IOM, Caritas Bangladesh, UNHCR, Christian Aid, Save the Children for their very competent enumerators who helped us collecting data in the field

LIST OF ABBREVIATIONS

CfW	Cash for Work
CGI	Corrugated Iron Sheet
CRS	Catholic Relief Services
ECHO	European Civil Protection and Humanitarian Aid Operations
EMMA	Emergency Market Mapping and Analysis
ESK	Emergency Shelter Kit
KII	Key Informant Interview
FGD	Focus Group
GoB	Government of Bangladesh
GSC	Global Shelter Cluster
HEA	Household Economic Assessment
HLP	Housing, Land and Property
HRP	Humanitarian Response Plan
IASC	Inter-Agency Standing Committee
ICT	Information and Communication Technology
ICT4D	Information and Communication Technology for Development
IFRC	International Federation of the Red Cross
IM	Information Manager
IOM	International Organization for Migration
ISCG	Inter Sector Coordination Group
LRP	Local and Regional Purchase
MEAL	Monitoring, Evaluation, Assessment and Learning
NGO	Non-governmental organization
NFI	Non-Food Items
RRRC	Refugee Relief and Repatriation Commission
UN	United Nations
UNHCR	United Nations High Commission for Refugees
USK	Upgrade Shelter Kit
VCA	Value Chain Analysis
WASH	Water, Sanitation and Hygiene
WHS	World Humanitarian Summit
USCCB	United States Conference of Catholic Bishops

EXECUTIVE SUMMARY

BACKGROUND

Bangladesh is experiencing one of the worst humanitarian crises in its history due to an unprecedented influx of refugees from Myanmar. As of December 2017, the Inter Sector Coordination Group (ISCG) estimates that 623,969 refugees have arrived in Bangladesh since August 2017. These 623,969 refugees have joined 212,518 that have fled in earlier waves of displacement, for a total refugee population of 836,487¹. Although the Rohingya meets the criteria of refugee hood and statelessness, because Bangladesh nor Myanmar signed the 1951 Convention Relating to the Status of Refugees (the Refugee Convention) and its 1967 Protocol (the Refugee Protocol), the Rohingya displaced in Bangladesh are denied their rights as refugees and/or are stateless.

In response to the crisis, the humanitarian community developed a Humanitarian Response Plan (HRP). The Government of Bangladesh (GoB) restricted the construction of semi-permanent and permanent structures in both refugee camps and makeshift camps². Poor shelter conditions have further exposed the Rohingya population to risks of floods, cyclones and landslides.

The target of shelter support within the HRP is to meet 100 percent of people's shelter needs. This translates into safe shelter for 949,000 people, or 180,000 households.

The initial stage (called phase 1) of the Rohingya crises involved rapid, mass displacement of populations, during which shelter needs focused on access to adequate shelter for survival and dignity. Various humanitarian actors provided emergency shelter kits (ESK) for essential security and personal safety, protection from the climate and enhanced resistance to disease and ill health. ESK developed by the shelter sector included tarps, rope and bamboo. However, in the initial response, most agencies provided an acute version

of these items, which excluded bamboo. In most cases, the refugee families procured some bamboo themselves, or foraged for sticks and timber in the surrounding forest to construct rudimentary makeshift shelters.

Given that shelters had already been constructed but were far below standards in terms of living conditions and structural integrity, rather than using bamboo in the emergency kits the sector developed and promoted the shelter *upgrade* kit (USK), or phase 2. This kit consists of tarps, bamboo, fixings, tools and technical assistance with the aim of improving living conditions (with site improvements contributing to the effort) and shelter structural stability to better withstand climatic conditions. Because of the scale of the crisis and the urgency to respond before the monsoon season, the Shelter and NFI Sector decided in November to reorient whatever was already in the pipeline for ESK, toward the USK. The ESK had included four bamboo Borak and 55 Bamboo Mulli, whereas the USK includes four bamboo Borak and 60 bamboo Mulli per household.

MARKET ASSESSMENT

The Shelter and NFI Sector (led by IOM), National Shelter Cluster, IOM, Caritas Bangladesh, CRS, UNHCR, Christian Aid, Save the Children, Handicap International and ECHO conducted a joint-Emergency Market Mapping and Analysis (EMMA) between October 30, 2017 and November 22, 2017. The EMMA sought to answer the following questions:

1. What is the capacity of markets to supply Bamboo/Timber for the Shelter upgrade to 100% of the target population?
2. Is a market-based response appropriate for the Shelter upgrade response?
3. Are there risks associated with market-based response options for Shelter upgrade?

ASSESSMENT RESULTS

As of November 16, 2017—or 2.5 months after the start of massive displacement—only 31% of households targeted had been covered with the bamboo Borak, while materials were in the pipeline for the remaining 24% of the target population and had yet to be distributed. In the same period, 19% households target had received the Bamboo Borak, and 11% had received the Bamboo Mulli with the ESK.

¹ [ISCG Report](#), 26/11/2017.

² According to UNHCR, there was an abandoned plan to build more permanent shelters in the registered refugee camp. We believe that there are restrictions on certain building practices (CGI roofing) but as of now, no further clarification from the GoB.



Monyaghonar camp in Bangladesh. Photo by Mahmud Rahman for CRS/Caritas Bangladesh

Because the reports of bamboo distributed do not match field observations for meeting the needs of the ESK, and with ESK materials already in the pipeline now being redirected toward USK, it is difficult to estimate the gap for covering 100% of the needs of the USK without double counting what is already distributed or in the pipeline. However, if we plan to meet 100% of the USK needs, 720,000 Bamboo Borak and 10,800,000 Bamboo Mulli are needed.

KEY FINDINGS

- The bamboo supply is available, but it can take an average of 30 days and up to three months to complete bulk order;
- The bamboo demand for emergency shelter (phase 1) is satisfied despite the slow progress on meeting ESK targets, since many refugees personally found and brought back bamboo from nearby forest or markets;
- A big market or demand for timber doesn't exist since the need for emergency shelter is mostly met. Also, the purchasing power of Rohingya

refugees is limited due to the restriction of movement enforced by the GoB, and because bamboo Mulli is less costly than timber for families building their own emergency shelters;

- 80% of vendors surveyed sell only bamboo, and 3.49% sell only timber;
- Prices for bamboo Borak have significantly inflated (by more than 24%), while Bamboo Mulli has had limited inflation (+6%) and timber has had almost no inflation (=+1%). However, timber is considerably more expensive (at least three times more than Bamboo Mulli) and less in demand;
- Markets in the area of intervention are poorly integrated;
- 34% of vendors surveyed are opportunistic, 96.51% of vendors surveyed have mobile phones and 38.37% accept mobile phone payments;
- Severe deforestation is happening at regional and local levels to satisfy demand within the mega camp of Kuthapalong and Balukhali: the equivalent of enough trees to cover the surface of 1,000 soccer fields are needed every year for firewood.

RECOMMENDED RESPONSE

Recommendations for shelter upgrades for 180,000 households before the pre-monsoon season in April 2018 include the following:

1. **Redirect on-going in-kind ESK distributions toward Shelter upgrades** (except for new arrivals) and change 4W reporting (a report of Who, What, Where, When) for dynamic reporting to better measure progress to target. The 4W approach is a critical element to help coordination of relief efforts during any humanitarian crisis. Such information can help to alleviate duplications, identify possible gaps, better inform decision makers, and allow everyone to ask better questions;
2. For in-kind distributions planned but not yet purchased, **switch from local to regional/international purchases with treated bamboo** to decrease pressure on local and regional forests, while at the same time increasing the shelter longevity.
3. Because of delays with delivery, poor market integration, and diversity of family needs, **organize e-voucher shelter fairs** at the border of camps so that refugees can more easily access USK materials. Shelter fairs should last multiple days or even weeks due to the cost of set up and the continuous influx of refugees. The use of electronic voucher would facilitate purchases at this scale, and allow for the inclusion of cash voucher options when needed, using the same pipeline.
4. **Distribute complementary, targeted, one-off, conditional cash for shelter upgrades, or unconditional cash for the extremely vulnerable.** These cash distributions would help extremely vulnerable families or individuals to cover part of the transport and labor costs that are often needed to access humanitarian assistance (especially given the size and rugged terrain of the camps). If conditional cash is preferred by humanitarian organizations, cost-effectiveness should be compared with the impact of unconditional one-off cash distributions for most successfully reaching the shelter upgrade objectives;
5. Improve market integration, acceptance with the local population, and people's purchasing power through **Cash for Work (CfW) activities to build market roads and market places** within the camps in priority, and then outside the camps. Before implementation of CfW, humanitarian actors should harmonize daily labor rates, and conduct a quick labor analysis to identify local skills and available labor. For a Shelter phase 3, consider doing a Value Chain Analysis (VCA) of construction labor as it requires more skilled labor.
6. In collaboration with GoB, **support local forestry programs** to improve forest renewal and protection, and improve income generating activities among members of the host community who are more affected by the influx and presence of the Rohingya refugees;
7. Provide **shelter upgrades and site planning technical assistance** to meet SPHERE minimum and Building Back Better Standards (BBBS), as well as **technical assistance and pilots for alternative and sustainable sources to bamboo for the shelter upgrades** (such as multi-story shelter made of timber piloted by CRS);
8. **Monitor and provide shelter material price information** in a limited number of markets. We recommend adapting the MarKIT methodology³ and monitoring bi-weekly the critical shelter material prices in: two markets per area of intervention (per camps), two control market outside each area of intervention, and one regional market (Chittagong).
9. **Advocate for the recognition of freedom of movement as a human right, with the objective of better market integration** benefitting both the host community and refugee populations. If it's not possible to negotiate freedom of movement in the whole country, as per Refugee Conventions and Protocols, the humanitarian community should **negotiate provisory solutions to ease movement, such as pushing military cordon further to allow full freedom of movement to Rohingya refugees in the Cox's Bazar District.** This would allow refugee to access shelter material and other commodities beyond the camps, such as in the Ukhyia market,

³ <https://www.crs.org/our-work-overseas/research-publications/markit>

while still providing the GoB the benefit of controlling Rohingya circulation.

10. Pilot conditional community grants for community infrastructure or “**for vulnerable individuals who are not benefiting from the humanitarian programs.** Such infrastructure support could include safe havens for vulnerable women, repair or upgrade of latrines, or community income generating infrastructure, like a bamboo treatment center or small business nursery.

I. EMERGENCY CONTEXT

Bangladesh is experiencing one of the worst humanitarian crises in its history due to an unprecedented influx of refugees from Myanmar. The Inter Sector Coordination Group (ISCG) estimates that, as of December 2017, **623,969 refugees have arrived in Bangladesh since August 25th, 2017.** These 623,969 refugees have joined 212,518 that have fled in earlier waves of displacement, for a total refugee population of 836,487⁴.

The refugees arrive in Bangladesh with very few possessions. Many have used their savings on transportation and constructing a shelter, and are now living in extremely difficult conditions. They are reliant on humanitarian assistance for food and other lifesaving needs. Many have experienced severe trauma. Children (who represent 55% of the Rohingya refugees⁵) are highly vulnerable. Many families have lost members which has unsettled the family's structure. Around 16% are estimated to be female-headed households, and an estimated 7,771 children have been identified as separated or unaccompanied⁶.

With the continuing influx of refugees, pre-existing camps have expanded into informal (makeshift) camps and spontaneous settlements. Most new arrivals (578,000 people) are reportedly living in makeshift or new spontaneous settlements, while 46,000 are staying with host communities. The makeshift, spontaneous settlements are sprawling and crowded, and lack the adequate facilities and infrastructure needed to support the essential living needs of such a large, vulnerable population. In an

attempt to improve the situation and control the flow of refugees, the Government of Bangladesh has allocated areas for new refugees to settle. The United Nations High Commission for Refugees (UNHCR) and the International Organization for Migration (IOM) have been designated to facilitate this process.

In response to the crisis, the humanitarian community elaborated a Humanitarian Response Plan (HRP). This plan revises the preliminary response plan released on September 7, 2017. The plan covers six months, from September 2017 to February 2018, and focuses on meeting the life-saving needs of all Rohingya refugees in Cox's Bazar as well as their hosting communities, ensuring equity and conflict sensitivity.

The second strategic objective of the plan focuses on shelter needs, and seeks “to improve conditions and management of both existing and new settlements, including infrastructure and site planning.”

The Shelter component is detailed in 3 sub-objectives:

1. Provide lifesaving emergency shelter and Non-Food Items (NFI) to refugee households in makeshift, spontaneous and formal refugee settlements, in line with the sector recommended kits;
2. Promote complementary support that will enable refugee households to build and upgrade shelters to better resist the monsoon and cyclone seasons, and promote better, safer living conditions in the settlements;
3. Provide shelter and NFI assistance to Bangladeshi host families to promote better, safer living conditions in line with their needs.

Bamboo and plastic sheeting have been used to build shelters due to **restrictions from the GoB to build semi-permanent and permanent structures in both refugee camps and makeshift camps. Poor shelter conditions have further exposed the Rohingya population to floods, cyclones and landslides.**

Though the GoB continues to discourage the provision of permanent shelter or WASH infrastructure outside the designated areas, a return to Myanmar seems increasingly unlikely in the short term. Therefore, there is an urgent need to prepare for a protracted displacement, especially as this large influx of refugees is putting an immense strain

4 [ISCG Report](#), 26/11/2017.

5 GoB RRRC and UNHCR Family Counting exercise, 25 November 2017

6 [ISCG Report](#), 26/11/2017.

on infrastructure, services and host populations. Cox's Bazar district, where these settlements are situated, is already one of Bangladesh's poorest and most vulnerable areas. Without appropriate assistance, this crisis is likely to further affect the local community. Discontent is already growing among the local population⁷.

The United Nations (UN) and its partners have started discussing a one-year plan from March 1, 2018 to February 28, 2019. Several rounds of discussions will take place to finalize the plan, including resource needs.

II. A MARKET TECHNICAL ADVISOR SECONDED TO THE SHELTER AND NFI SECTOR

The Global Shelter Cluster (GSC) is an Inter-Agency Standing Committee (IASC) coordination mechanism that supports people affected by natural disasters and internally displaced people affected by conflict with the means to live in safe, dignified and appropriate shelter. The GSC enables better coordination among all shelter actors, including local and national governments, so that people who need shelter assistance get help faster and receive the right kind of support⁸.

The GSC is a public platform co-chaired by the International Federation of the Red Cross (IFRC) and UNHCR at the global level. Its 44 partners participate on a regular basis. IFRC is convener of the Shelter Cluster in natural disasters while UNHCR leads the Shelter Cluster in conflict situations.

After the successful implementation of the 2013-2014 and 2015-2016 European Civil Protection and Humanitarian Aid Operations (ECHO) grants, the GSC received confirmation on ECHO's interest to continue to support the GSC in the coming two years.

The project helps to more effectively meet the sheltering needs of populations affected by humanitarian crises, and plans to achieve the following specific objective: **to strengthen the shelter response of humanitarian actors by**



Many refugee families can be seen building their shelters with bamboo in Thangkali camp. Photo by Mahmud Rahman for CRS/Caritas Bangladesh

improving country-level shelter clusters and the GSC in line with the commitments from World Humanitarian Summit (WHS) and Habitat III.

Specifically, the project aims to:

- Strengthen the linkages among global and local coordination of shelter response efforts in emergencies and protracted crises, through improved immediate and medium-term surge capacity;
- Pilot innovative approaches to address recent commitments made at the international level—such as those from the World Humanitarian Summit and HABITAT III—including localization of coordination, Cash Champions, Housing, Land and Property (HLP) and Shelter; and
- Provide operational analysis in order to inform improved practices, and foster innovation through an integrated system.

Catholic Relief Services (CRS) has been selected for this two-year project, which includes four deployments to second the GSC in country. CRS carries out the commitment of the United States Conference of Catholic Bishops (USCCB) to assist the poor and vulnerable overseas. CRS' Catholic identity is at the heart of its mission and operations. CRS welcome as a part of their staff and as partners people of all faiths and secular traditions who share CRS' values and commitment to serving those in

⁷ Caritas Bangladesh rapid assessment, 10/2017.

⁸ www.sheltercluster.org

need. CRS support is provided solely on the basis of need, regardless of race, creed or nationality.

Although the Rohingya meets the criteria of refugee hood and statelessness, because Bangladesh nor Myanmar signed the 1951 Convention Relating to the Status of Refugees (the Refugee Convention) and its 1967 Protocol (the Refugee Protocol)⁹, the Rohingya displaced in Bangladesh are denied their rights as refugees and are stateless. Consequently, the IOM is mandated to coordinate the Rohingya response, the shelter for which falls under the umbrella of the Shelter and NFI sector.

For the first of the four GSC deployments, CRS seconded a Market Technical Adviser for the Shelter and NFI sector to support the Sector Coordinator in fulfilling the Shelter/NFI Sector mission. The focus of this deployment includes:

- Providing technical support to advise the Shelter and NFI Sector on the appropriate use of cash-based interventions and market-based approaches in emergency and crisis preparedness, response and recovery to meet shelter needs;
- Ensuring evidence-based actions, gap-filling and sound coordination; and
- Enhancing the accountability, predictability and effectiveness of market-based approaches in shelter activities.

III. EMMA METHODOLOGY

The Shelter and NFI Sector (led by IOM), National Shelter Cluster, IOM, Caritas Bangladesh, CRS, UNHCR, Christian Aid, Save the Children, Handicap International and ECHO conducted a joint-Emergency Market Mapping and Analysis (EMMA) between October 30, 2017 and November 22, 2017.

The EMMA is a rapid market analysis designed to be used in the first 2-3 weeks of a sudden onset crisis. Its rationale is that a better understanding of the most critical markets in a humanitarian emergency enables decision makers (donors, NGOs, the government, and other humanitarian actors) to consider a broader range of responses. It is intended to be neither statistically significant nor to replace



A mother and grandson rest at one of the entrances to Thangkhal Camp. Photo by Mahmud Rahman for CRS/Caritas Bangladesh

existing emergency assessments or more thorough household and economic analyses, such as the Household Economic Assessment (HEA). Instead, it should add to the body of knowledge after a crisis.

The EMMA joint assessment team consulted the Shelter and NFI Sectors and the National Shelter Cluster (led by IFRC) in Bangladesh for the final selection of the critical market chains. Among the market chains considered were: bamboo, timber, labor, rope, cement, plastic sheeting, CGI and firewood. **Critical markets chains selected for the EMMA were the bamboo (Borak and Mulli) and timber poles.** In addition to these two groups, the teams discussed and validated the EMMA preliminary results and strategic recommendation for shelter upgrades with the Cash Working Group in Cox's Bazar.

Participants of the EMMA included: the Shelter and NFI Sector (led by IOM), National Shelter Cluster, IOM, Caritas Bangladesh, CRS, UNHCR, Christian Aid, Save the Children, Handicap International and ECHO. The EMMA team was made up of 18 enumerators, 3 team leaders, 1 Monitoring, Evaluation, Assessment and Learning (MEAL) officer, 1 Information Communication and Technology for Development officer (ICT4D), 1 Information Manager (IM), and 3 drivers.

The EMMA joint assessment team provided training on the EMMA methodology to key participants on November 8 and 9th. First-hand data collection took place from November 11 to November 16. Data was

⁹ www.unhcr.org/en-us/about-us/background/4ec262df9/1951-convention-relating-status-refugees-its-1967-protocol.html

cleaned and analyzed between November 17 and 31. Secondary sources and desk-based research helped to maximize the use of available information prior to and after the data collection.

The joint assessment team conducted EMMA mainly in Cox's Bazar district and to some extent to Dhaka and Bandarban districts. Data collection included:

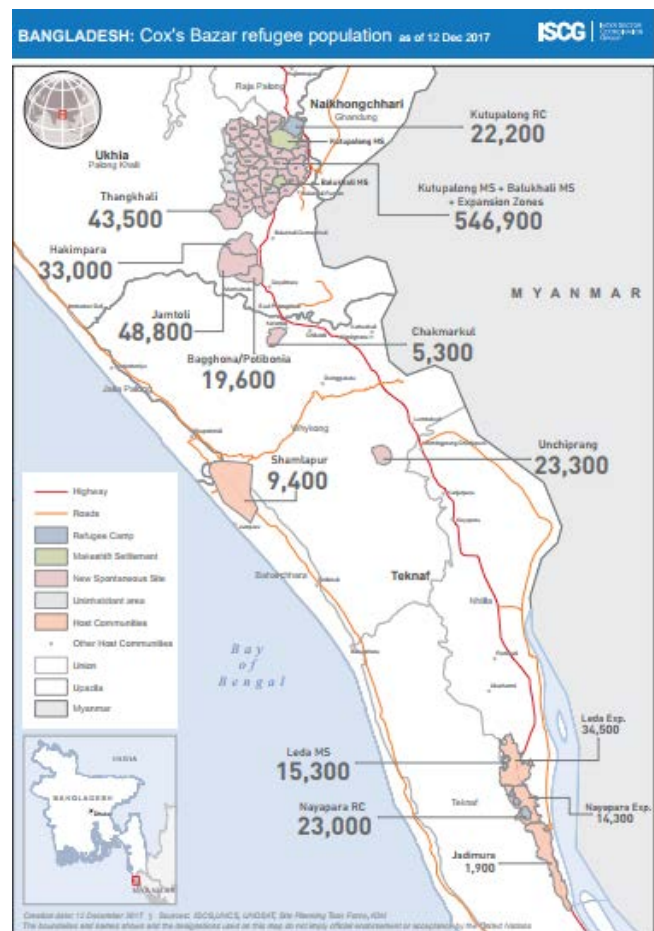
- 92 vendors questionnaires in 19 markets places in 8 upazillas¹⁰. The final data analysis relied on 86 interviews after data cleaning¹¹;
- 8 gender and status disaggregated Focus Group Discussions (FGD): male and female; in formal and makeshift camps; and in the host-population;
- 8 key informant interviews (KII) with local authorities, community leaders, and humanitarian organization representatives.

The EMMA teams used an Information Communication and Technology (ICT) solution to collect data, and tablets using [CommCare](#) to collect vendor responses. Information provided by FGDs and KIIs was noted on paper. The team also used observations and held a daily debrief meeting after data collection to compile quantitative and qualitative information from the different tools used, and to update the seasonal calendar and market system mapping.

IV. THE TARGET POPULATION

The ISCG estimates that, as of December 2017, **623,969 refugees have arrived in Bangladesh since August 2017**. These 623,969 refugees have joined 212,518 that have fled in earlier waves of displacement, for a total refugee population of 836,487¹².

The target of the **shelter response is to meet 100% of the shelter needs. This represents approximately 949,000 people, or 180,000 households**. The target population includes the refugees who have arrived since August, as well as the new arrivals crossing border daily, and extremely vulnerable people in the host community who have been affected by the crisis. **Out of the of 2**



million total Rohingya population in the world, it is estimated that less than half a million remain in Myanmar now.

The refugee population in Bangladesh is distributed as follows: 547,000 live in mega refugee camp of Kutupalong-Balukhali expansion site; 234,000 live in other settlements and camps; and 78,000 live in host communities.

A majority of the target population in the areas of intervention is highly vulnerable. According to a vulnerability assessment carried out in four settlements¹³, **“significant vulnerability was evident with a total 24% living in high risk and 51% in medium risk for different vulnerabilities.”**

The major vulnerabilities identified included: a serious medical condition (59%); specific legal and physical protection needs (38%); people at risk of trafficking (20%); and children at risk (16%).

¹⁰ Alikadam, Chaukoria, Cox's Bazar Sadar, Lama, Maheshkhali, Ramu, Teknaf, Ukhiya

¹¹ Full clean data set of vendors questionnaires, including vendors contacts, available at Annex 2.

¹² ISCG Report, 26/11/2017

¹³ Vulnerability Assessment in the Four UMN's Settlements in Ukhiya and Teknaf Upazillas under Cox's Bazar District, The Nielsen Company (Bangladesh) Limited, Oct. 4 2017.

The major needs identified by the participating refugees are: food (59%), health care services (47%), education (14%) and accommodation (5%).

According to the HRP¹⁴, the categories for most vulnerable population are:

- **New arrivals.** They have limited access to, or have yet to even access, humanitarian assistance. Upon their arrival, they are depleted emotionally, physically and financially. A majority have lost their assets and have experienced extremely stressful, if not traumatic, attacks or conditions that forced them to flee. The number of arrivals varies daily due to scheduled border closures. New arrivals have the immediate need of Emergency Shelter Kits (ESK), especially with the approaching pre-monsoon season. They will quickly need to upgrade their shelter.
- **Women and female headed households.** Women and girls represents 65% of the refugee population who have arrived since August. Prior to the August 2017 influx, an estimated 19% of the families were believed to be living in female-headed households¹⁵. These families are particularly vulnerable and face serious protection concerns, including the access to lifesaving assistance, due to security and cultural constraints. Access to shelter kits requires either labor or money to carry shelter materials from the distribution sites to their shelters, often deep inside a sprawling camp across a rugged terrain. Also, they need construction knowledge to build the shelter infrastructure, which is usually done by men. Additionally, prior to August, 9% of women were believed to be pregnant or breastfeeding¹⁶. We can project at least the same number of women to be pregnant or breastfeeding within the refugee population, which increases their vulnerability in term of access to health and hygiene needs (especially for new deliveries) and safe shelter.
- Read this story of a midwife and newborns in the camps: <https://www.crs.org/stories/rohingya-refugees-new-life-last-rites-bangladesh>
- **Children.** More than half of the Rohingya population are children. Prior to this latest crisis,



Recently arrived Rohingya refugees find shelter inside drainage pipes at a reception area in southern Bangladesh. Photo courtesy of Tommy Trenchard/Caritas Bangladesh

5% of households were headed by children¹⁷.

According to the Multi Sector Rapid Assessment, unaccompanied and separated children were reported at all sites that were assessed¹⁸.

- **People with disabilities, and the elderly.** People with physical disabilities are struggling to access aid due to the challenges of access, and safety and security risks. Services and shelters are also not suitable for their needs, and place them at risk. Similar risks also face elderly households, which constituted 11 per cent of all households prior to August 23.

According to the Household Economic Assessment (HEA)¹⁹, prior to August 25, the general population of Rohingya refugee was also extremely vulnerable.

In makeshift camps, 25% of the refugee population was identified as poor, and 52% considered very poor. The poverty among the refugee population is relatively homogeneous: annual cash income varies from 67,500 taka (\$806 USD) for the poorest to 133,500 taka (\$1606 USD) for the better-off. As a comparison, among the local population, the annual cash income is 91,900 taka (\$1105 USD) for the poorest, and up to 622,600 taka (\$7489 USD) for the better off. Even the better-off Rohingya are poor

14 https://reliefweb.int/sites/reliefweb.int/files/resources/2017_HRP_Bangladesh_041017_2.pdf

15 Needs and Population Monitoring, July 2017

16 Needs and Population Monitoring, July 2017

17 Needs and Population Monitoring, July 2017

18 As of 16 September, humanitarian partners had identified almost 1,300 unaccompanied and separated children who are highly vulnerable to protection concerns and need immediate life-saving support.

19 Livelihoods in the Teknaf-Ukhia Peninsula, Baseline Study, FEG, July 2017



Rohingya refugees compile wood they've gathered outside Thangkhali Camp. Photo by Mahmud Rahman for CRS/Caritas Bangladesh

in comparison with local standards. The Rohingya's annual expenditure for home improvement varies between 5,844 taka (\$70 USD) to 29,156 taka (\$350 USD), compared with 12,558 taka (\$151 USD) to 54,966 taka (\$661 USD) for the host population. There is no change after August 25 that would indicate an improvement of people's socio-economic conditions. It is probably the same, if not worst, as the resilience of Rohingya refugee is potentially severely impaired because of the denial of their basic human and refugee rights as described in the FGDs.

In fact, prior to August 25, the Rohingya refugee-generated income relied exclusively on the occasional sale of their unskilled labor in the local economy (up to 3 days a week, at a rate of 300 to 350 taka per day), the sale of firewood eight months out of the year, and small petty trade²⁰.

Because of the Rohingya's restriction of movement enforced by the GoB, these income-generating opportunities are now limited to purchasing power and job market within the camp. The sudden, significant increase of the refugee population also increased competition for the few available income-generating activities rather than created

opportunity—due to the restriction of people's movement. This has resulted in **negative and even harmful coping mechanisms**, such as survival sex and reduction of food intake, as well as the re-sale of humanitarian assistance and borrowing in order to access more diverse food and other essential items²¹.

Although the **host population** has more economic opportunities and is better-off than the Rohingya population, **some categories could be considered vulnerable**. The Cox's Bazar district population has increased by 30% after August 25, resulting in additional pressures on local infrastructure, natural resources, and the economy in an area that was already impoverished. An estimated 30% to 35% of the host population is experiencing a food security crisis (IPC Phase 3), with 38 per cent of children under-weight²².

Particularly, the physical presence of refugees to set up their shelters, and their use of firewood, directly affects 1,500 local households participating in community forestry programs, according to KII with the forestry department. Because of the deforestation, participants of the

20 IOM, ASSESSMENT OF COPING STRATEGIES OF ROHINGYAS IN TWO UPAZILAS IN COX'S BAZAAR DISTRICT, BANGLADESH July-August, 2017 Dhaka, Bangladesh

21 OXFAM, Rapid Protection, Food Security and Market Assessment Cox's Bazar, Bangladesh November 2017

22 Humanitarian Response Plan September 2017- February 2018, draft version, October 2017

community forestry program won't benefit from this critical source of income. Since its start in 2003, the community forestry program set the standard that, every 10 years, timber would be collected and revenues are divided as follow: 45% as governmental tax, 45% as incomes for participants, 10% as reinvestment into the community forestry program. Participants are usually the poor and vulnerable of the host population that are targeted to create an economic incentive to protect the national forest.

V. CRITICAL MARKET SYSTEM




Critical market systems in an emergency context are those that “played, play, or could play a major role in ensuring survival and/or protecting the livelihoods of the target population.” To be selected, market systems had to meet the follow criteria: relate to significant or urgent need; were affected by the emergency; fit the agency mandate well; meet seasonal factors, with appropriate timing; are consistent with government or donor plans; and have response options that appear to be feasible.

Based on these criteria, the EMMA joint assessment team consulted the Shelter and NFI Sector and the GSC in Bangladesh for the final selection of the critical market chains. Among the market chains considered were: bamboo, timber, unskilled

construction labor, rope, cement, plastic sheeting, CGI, and firewood. Final critical markets chains selected for the EMMA were bamboo (Borak and Mulli) because it meets all criteria. Timber was also considered because of its potential as an alternate to bamboo. People's needs for bamboo and timber in their shelter upgrades have been largely unmet, and are time-sensitive giving the approaching monsoon season. Bamboo and timber are already in the pipeline for humanitarian distributions, but a major uncertainty exists regarding the supply chain, delivery mechanisms, and the impact on local markets and the environment.

The timing of the EMMA was critical to inform a shelter response that could include a market-based approach. Other market chains were also critical but did not necessarily require an EMMA, and some of them were already under assessment (a rapid market assessment methodology or similar). An EMMA for bamboo and timber would determine whether a market-based approach could be a feasible alternative to address the cost-effectiveness and logistical challenges of traditional bamboo and timber distribution approaches. Because of these issues, an EMMA was expected to be more useful in informing decisions regarding response options for shelter.

BAMBOO AND TIMBER PURPOSE- TO CREATE/STRENGTHEN SHELTER FRAMEWORK (SOURCE SHELTER AND NFI SECTOR)

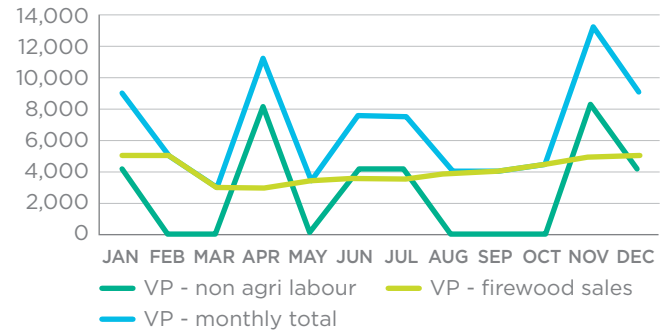
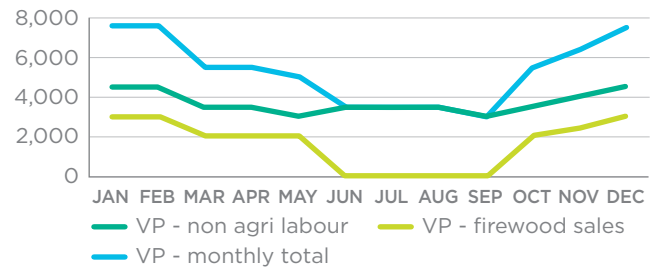
Item	Unit	# needed	Price per piece in taka	Total price	Specifications	Picture	Priority
Bamboo (Borak)	piece	4	260	520	Min 25 feet long; At least 8" (eight inch) perimeter measurement at 1/3 length from the toe of the Barak Bamboo. No insect defect in the circumstances of the Barak Bamboo		Essential
Bamboo (Mulli)	piece	60	40	800	Min 20 feet long. Circumference 2" nominal or 3" nominal. Mix of sizes recommended		Essential
Timber pole	ft	4	135	270	Min 8 foot long At least 8" (eight inch) perimeter measurement at 1/3 length from the toe of the timber		Optional

VI. SEASONALITY

The seasonal calendar below shows the seasonal variation of the two critical market chains selected. There is no difference between the two varieties of bamboo, and the influx of refugee does not affect the seasonality of the market chains. However, it is worth noting the timing of the pre-monsoon season for the Upgrade Shelter Kit (USK) distribution. Although the monsoon starts in May-June every year, the pre-monsoon—which accounts for 25% of the total rainfall—starts in April. Consequently, it is **highly recommended to deliver the USKs in the next four months to meet intended shelter objectives**. April-May is also prone to hurricanes.

While the production of bamboo and timber is year-round, bamboo harvested during the monsoon season will be of better quality for construction (due to its dryness and resistance to insects).

The construction season is during the “dry season”—from October to March-April—depending of the start of the pre-monsoon and hurricanes seasons. Because of the higher demand during the construction season, and the potential surge of demand after hurricanes, bamboo and timber prices tend to increase.



Income calendar for very poor (VP) and poor (P) Rohingya in makeshift camps, HEA baseline, FEG, July 2017

According to the HEA, the Rohingya income calendar indicates their highest incomes between October and April (which correspond to the harvest and dry seasons), and their lowest incomes between May and September-October (which correspond to monsoon season).

SEASONAL CALENDAR FOR BAMBOO (BURAK/MULLI) AND TIMBER POLES

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
Price Bamboo	High							Low				
Price Timber	High							Low				
Production												
Construction season												
Hurricane	Potential demand surge							Potential demand surge				
Monsoon							Pre-monsoon (25% of rainfall)	Monsoon (75% of rainfall)				
Harvesting (optimal quality)												

VII. KEY FINDINGS: RESULTS OF THE GAPS AND MARKET ANALYSIS

The EMMA aimed to formulate strategic recommendations for shelter upgrades in response to the Rohingya Humanitarian Crisis. The research questions that the EMMA intend to answer are:

1. What is the capacity of markets to supply Bamboo/Timber for the Shelter upgrade to 100% of the target population?
2. Is a market-based response appropriate for the Shelter upgrade response?
3. Are there risks associated with market-based response options for Shelter upgrade?

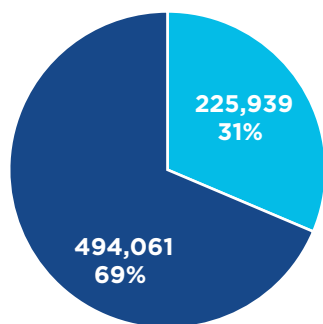
A. RESULTS OF THE GAP ANALYSIS

The initial stage (called phase 1) of the Rohingya crises involved rapid, mass displacement of populations, during which shelter needs focused on access to adequate shelter for survival and dignity. Various humanitarian actors provided emergency shelter kits (ESK) for essential security and personal safety, protection from the climate and enhanced resistance to disease and ill health. ESK developed by the shelter sector included tarps, rope and bamboo. However, in the initial response, most agencies provided an acute version of these items, which excluded bamboo. In most cases, the refugee families procured some bamboo themselves, or

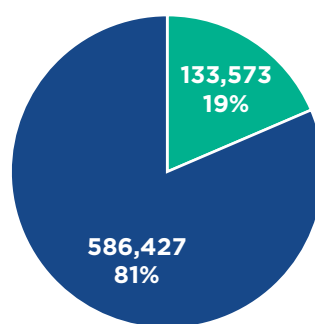
foraged for sticks and timber in the surrounding forest to construct rudimentary makeshift shelters.

Given that shelters had already been constructed but were far below standards in terms of living conditions and structural integrity, rather than using bamboo in the emergency kits the sector developed and promoted the shelter *upgrade* kit (USK), or phase 2. This kit consists of tarps, bamboo, fixings, tools and technical assistance with the aim of improving living conditions (with site improvements contributing to the effort) and shelter structural stability to better withstand climatic conditions. Because of the scale of the crisis and the urgency to respond before the monsoon season, the Shelter and NFI Sector decided in November to reorient whatever was already in the pipeline for ESK, toward the USK. This is an incremental approach with limited land available for the average household to expand, therefore the kit is designed accordingly. Further upgrades and more comprehensive shelter interventions may follow according to the context. For full description of the USK, see annex 1. The ESK had included four bamboo Borak and 55 Bamboo Mulli, whereas the USK includes four bamboo Borak and 60 bamboo Mulli per household. Database used for calculation of the gap is the Shelter and NFI 4W as of November 16²³ where 6 organizations reported planned distribution or distribution of bamboo Borak and/or Mulli. No organization reported distribution of timber on the 4W.

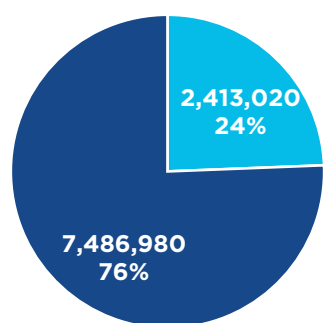
GAP ESK Analysis Borak Planned



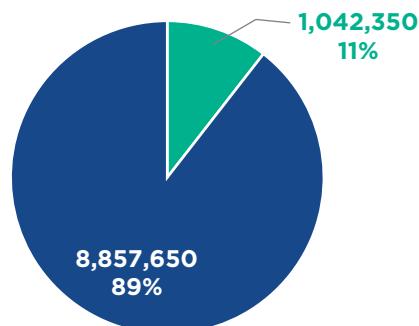
GAP ESK Analysis Borak Reached



GAP ESK Analysis Mulli Planned



GAP ESK Analysis Mulli Reached



● Planned ● Reached ● Remaining

²³ <https://www.humanitarianresponse.info/en/operations/bangladesh/document/shelter-nfis-4-ws>

As of November 16, 2017—or 2.5 months after the start of massive displacement—only 31% of households targeted had been covered with the bamboo Borak, with materials in the pipeline for 24% of the targeted households. In the same period, 19% households target had received the Bamboo Borak, and 11% had received the Bamboo Mulli with the ESK.

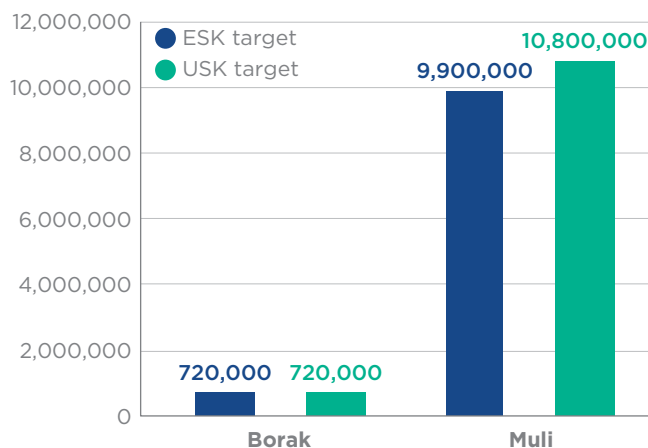
This number does not mean that the needs have not been covered on site, especially as it does not match our field observations. Rather, it reflects the coverage of beneficiaries needed by the six organizations reporting on Bamboo distribution for ESK. We know these figures are **underreported**, as some big and well-known organizations are distributing large amount of Bamboo but are not reporting as such to the 4W.

Furthermore, some of the bamboo was **procured by refugees themselves**, either with the savings they were able to bring with them, or with **money distributed by Muluvis**²⁴. According to FDGs, some refugee households received between 500 taka to 6,000 takas. Some families received money distributed by Muluvis up to six times in the first 10 week after the crisis. It is difficult to know how much in total was distributed by the Muluvis, as there is not track record nor was there coordination with other humanitarian coordination bodies.

Another explanation for the bamboo need met for ESK is that **some households reported to have sold or bartered part or all the humanitarian assistance** for other commodities needed.

According to KII with humanitarian organizations making big bulk bamboo purchase (100,000 bamboo poles or more) or their suppliers, **the delivery time to complete such big orders can take up to two months**. This delivery time varied from response collected by the vendors. **Vendors surveyed indicate that, depending of the order, demand is met immediately and up to 3 months depending of the volume ordered, with an average time of completion of order of 30 days**.

Because the reports of bamboo distributed do not match field observations for meeting the needs of the ESK, and with ESK materials already in the pipeline now being redirected toward USK, it is difficult to estimate the gap for covering 100% of the needs of the USK without double counting what is already



Estimate of total needs of bamboo Borak and Mulli for ESK and USK (in number of bamboo sticks)

distributed or in the pipeline. However, if we plan to meet 100% of the USK needs, 720,000 Bamboo Borak and 10,800,000 Bamboo Mulli are needed.

In order to estimate the potential gap, we also looked at the national production capacity to anticipate any shortage to meet the total needs of ESK and/or USK. The data on bamboo production that is available at the national level is not disaggregated by region or bamboo species, and, more importantly, is outdated. The latest data is from 2005, with only a projection from previous survey done in the late '90s. Based on these data, **the projected demand cumulated for both bamboo Borak and Mulli for ESK and USK represents a total 3.16% of the national production—or 1.5% if we consider ESK only, and 1.6% if we consider USK only**.

According to KII with local department forestry authorities and UNHCR environmental experts, **it seems the additional surge of demand on bamboo from the Rohingya crisis can be easily met by the national production. However, sourcing should be diversified to limit impact on local environment**, and delivery time should be considered in the selection of response options to meet shelter phase 2 objectives prior to the monsoon season. It is worth noting that none of the bamboo produced and delivered to the Rohingya is treated against insects. (Options for treatment include brushing the bamboo with engine oil, or dipping the bamboo into a saline solution.)

However, the quality is relatively consistent and homogeneous, and the field observations of locally available bamboo met specifications described by the Shelter and NFI sectors. Nonetheless, field teams are starting to observe more and more greener bamboo in the area of intervention being sold. Greener bamboo indicates that it does not meet quality standard of dryness to extend its longevity (dry bamboo is more resistant to weather and insects).

²⁴ Muluvis are Islamic scholars that have completed full studies in Islamic school or seminary. They either helped Rohingya as individuals or representative of Muslims organization from Bangladesh or foreign countries at distributions organized by the GoB army or directly in camps.

Target group	Hh in need	Hh shortfall	Other aid	Total gap target population	Likely gap duration	Preference for help
180,000 Rohingya refugee households (or 949,000 individuals) who received ESK or not, in formal camp, makeshift camp or in host community in Cox's Bazar District	100% of the households/ individuals with priority for those who just arrived or have not received any ESK at their arrival	Average of 4 bamboo borak and 60 bamboo muli per households for USK	USK is not sufficient for projected length of stay or respect of SPHERE minimum standards due to land availability (overcrowding). Relocation, multistory building and phase 3 Shelter (transitional Shelter with CGI sheets) should be consider	Indicative gap for total population: 596,427 bamboo borak and 9,757,650 bamboo muli	3-6 months depending of USK delivery mechanism	Multimodal response including commodity e-vouchers and distribution in-kind

B. MARKET ANALYSIS RESULTS

The following describes the market stakeholders:

- Cutters/collectors** are cutting bamboo on site of production, in the village or national forests, and transporting it to the lessee/concessionaire. According to KII, an average of 15 cutters/collectors work per lessee/concessionaire. We estimate 300,000 individuals in Bangladesh generate their income from this activity. Cutters/collectors are paid 1 taka per bamboo stick cut. Most of the bamboo for the Cox's Bazar district is sourced and originated from the national forest in the Chittagong Hills Tracts, while some (less than 10%) comes from Myanmar. Bamboo poaching from India (Tripura region) has been reported anecdotally. No major bamboo production exists in the area of intervention.
 - Lessee/concessionaire.** According to secondary data available, two-thirds of the bamboo produced in Bangladesh is from the village forest, while one-third is produced from national forest. Land where bamboo is produced is public, but entails different land use rights. The GoB allows concession to the highest secret bid renewed yearly for national forest, or leases the village forests for 99 years. The assessment team met with one of the concessionaires in Alikadom who was assigned a year concession for 2.2 million bamboos in the national forest in Alikadom, Bardaban district, starting September 2017. The concessionaire was part of a cooperative of 40 Bamboo producers. It is unclear if the concession is used exclusively by this man or by the entire cooperative. For the 99 year lease, it seems that the lease is for the village forest where bamboo is used mostly for self-consumption (construction). In the literature reviewed, no data was available on the number of concessionaire or lessees in Bangladesh.
 - Enterprise** are bamboo processors for bamboo use other than construction. Its includes bamboo for handicraft or papermills in Chittagong area.
- 
- 50,000 bamboos transported by river to feed Rohingya refugee camp demand, Alikadom, Bangladesh, November 15, 2017
- Most of the bamboo processed is for domestic consumption, and a nominal volume of bamboo is processed for export. At least 21 varieties of Bamboo exist in Bangladesh. Bamboo used by enterprises is different from the Bamboo Borak and Mulli used for construction. There is an estimated 45,000 enterprises processing bamboo in Bangladesh.
 - Middlemen** are the intermediaries in bamboo markets hubs between the region of production and the final markets. No data is available on the number of middlemen in Bangladesh, but we estimate anywhere from 100 to 500 middlemen for construction bamboo. For Cox's Bazar district final consumers, markets hubs where middlemen are purchasing exist mostly in Chaukoria (Borak) and Kaptai (Mulli), in the nearby Bardaban district.
 - Transporters** and transportation mode varies depending of context along the market chain.
 - For the Rohingya crisis, **most of the bamboo is transported by river, by bulk of 50,000 sticks from the area of production to Chaukoria and Kaptai.** It takes four days and four men for bamboo to reach market hubs by river. Bamboo coming from Myanmar comes by the Naf river.

- **From the market hubs to the final markets, bamboo is transported by truck.** Capacity per truck is 7,500 Bamboo Mulli or 675 bamboo Borak. It takes one to three days to travel from Chaukoria and Kaptai to the final market in Cox's Bazar district. Since the onset of the Rohingya humanitarian crisis, hundreds of trucks are doing the trip overnight. Trucks are either owned or rented. Most of the opportunistic traders rent trucks and are not restocking after one trip. Renting a truck costs anywhere from 12,337 taka to 17,550 taka, depending of the amount of bamboo transported, and the labor needed to load and unload the truck.

- Because of the **inability of trucks to enter the camps** (trucks are too wide and large for the main road in camps, and access is not allowed by GoB), **daily labor is used to hand-carry the bamboo. It costs 350 taka per half day or 500 taka per day.**

- **Vendors.** The team interviewed 92 vendors and selected the response of 86 vendors after the data cleaning. The vendors represented business of diverse sizes in Cox's Bazar District. Vendors profiled include the following:

- **Wholesalers/semi-wholesalers.** Although there are not really wholesalers (selling exclusively to retailers) in the area of intervention, some of them self-declare to be wholesalers, when, in reality, they are semi-wholesalers—selling to retailers and individuals with various supply capacity. We surveyed 64 such vendors in the area of intervention, or about 50 percent of the vendors surveyed.

- **Retailers** are selling a majority of their products to individuals. The team surveyed 22 retailers, mostly out of camps. Most of the retailers are out of the camps and most of them have been surveyed. There are not many retailers of bamboo and timber within the camps. Our hypothesis to explain why there are few retailers in the camps is because of limited business opportunity due to solvable demand, survival needs are met and limited options to expand existing shelter or relocate (lack of land and GoB's restrictions of movement)

- **Opportunistic traders** are vendors established less than a year ago, particularly after the onset of the crisis in August 2017. This group makes up 34% (29 individuals) of the traders



Semi-wholesalers bamboo storage in Teknaf, November 2017

% of vendors who sell bamboo only	80.23%
% of vendors who sell bamboo & timber	15.12%
% of vendors who sell timber only	3.49%
% Wholesalers/semi-wholesalers	74.40%
% retailers	25.60%
% of vendors having mobile phone	96.51%
% of vendors having internet	9.30%
% of vendors using mobile payment	38.37%
% of vendors who own their shop	33.00%
% of vendor who rent their shop	55.00%
% of vendors with bank account ownership	57.00%
% of vendors with credit line from a bank	10.50%
% of vendors with credit line from a supplier	47.70%
% of vendors with credit to customer	54.65%

surveyed. They vary in supply capacity, and are both retailer or semi-wholesaler. For the biggest of them, they had previous business in the area, and rented a truck to procure bamboo in Kaptai or Chaukoria for selling in the area of intervention. Sometimes, they have resupplied multiple times, sometimes not.

- **The Forestry department** is managing forests, collect related taxes for extraction and transportation, and enforces the country's forestry laws. For extraction, taxes are 7 taka per bamboo stick, and the permit to transport bamboo (which is valid for three days) costs approximately 1.1 taka per bamboo. Law enforcement is checking the volume of bamboo at the supply point of the river, and collects taxes at river transit points. Cox's Bazar district is divided in two division

managed by two different forestry department teams, each made up of 250 individuals. They are strictly enforcing taxes and permits for timber, but waiving locally-produced bamboo taxes and permits needed for humanitarian purposes. The forestry department of Cox's Bazar manages 43,000 acres of forest, of which nearly 3,000 acres is occupied by the Rohingya refugees.

• Consumers

- Self-consumption. According to secondary data available, most bamboo produced in Bangladesh is from village forest and for self-consumption (approximatively two-thirds of the 700 million sticks annually produced per year).
- The rest of the bamboo is sold for construction. Construction companies use it to make scaffolding, and communities use it for family homes or community infrastructures. Use of other species of bamboo are for handicraft and other industries, such as agriculture or fishing.
- The massive arrival of Rohingya refugees since August 2017 created a surge in demand for bamboo. Refugees procure bamboo either directly from vendors at the edge of camps, or via humanitarian distributions.
- Humanitarian organizations are procuring bamboo as part of Phase 1 and Phase 2 of the shelter strategy in the emergency response. CRS is purchasing timber to pilot multi-story buildings because of the limited availability of land in camps. To date, the amount of timber purchased by CRS is anecdotal.

The EMMA joint assessment team is focusing the pre- and post-crisis mapping on bamboo Borak and Mulli, rather than timber, because a market for timber does not yet exist. Moreover, what is sold locally is mostly salvaged or produced locally. Therefore, the timber market is very restricted, and not yet driven by demand. The team has yet to distinguish the supply chain for bamboo Borak and Mulli, as supply and market chains have similarities. The differences are indicated when they occur. Whenever possible, the team indicates the estimated number of stakeholders, volume of bamboo across supply chain links, and the price of bamboo. The quantity of stock movement informs decision-making around the capacity of market systems to respond to the bamboo demand in post-crisis. The numbers provided relied on traders' response to the questionnaire, with an average confidence of

quality response of 4.2 out of 5 and secondary data. However, these numbers are not always accurate, and could be outdated. More rigorous research would be needed to get accurate and updated data.

C. PRE-ROHINGYA CRISIS MARKET SYSTEM

In general, doing business is complicated in Bangladesh: The country **ranked 177 out of 190 countries in Doing Business report**²⁵. The population of Cox's Bazar district is 2.3 million, and the drivers of the local economy are domestic tourism and the fish industries. Timber is produced locally, but not bamboo. Because of the proximity with the Golden Triangle, reports exist of illicit trade in the district or near-by district. The Infrastructure like roads, wharfs, phone and internet connectivity are available. Financial services are available, including banks and mobile money (BKash and Rocket). Cox's Bazar district and its nearby districts have protected forests with endangered wildlife species. The forest is managed by the forestry department directly or through community forestry programs.

Prior to the crisis, bamboo was sourced mostly in the Chittagong Hills Tracts area, and to some extent from North Bengal and Myanmar. **Most of the bamboo transited through Chittagong, a regional market hub. Timber is produced locally, and some of it was transported to Chittagong**, but no data are available. Prices, in taka, for bamboo and timber prior to the crisis are as noted below:

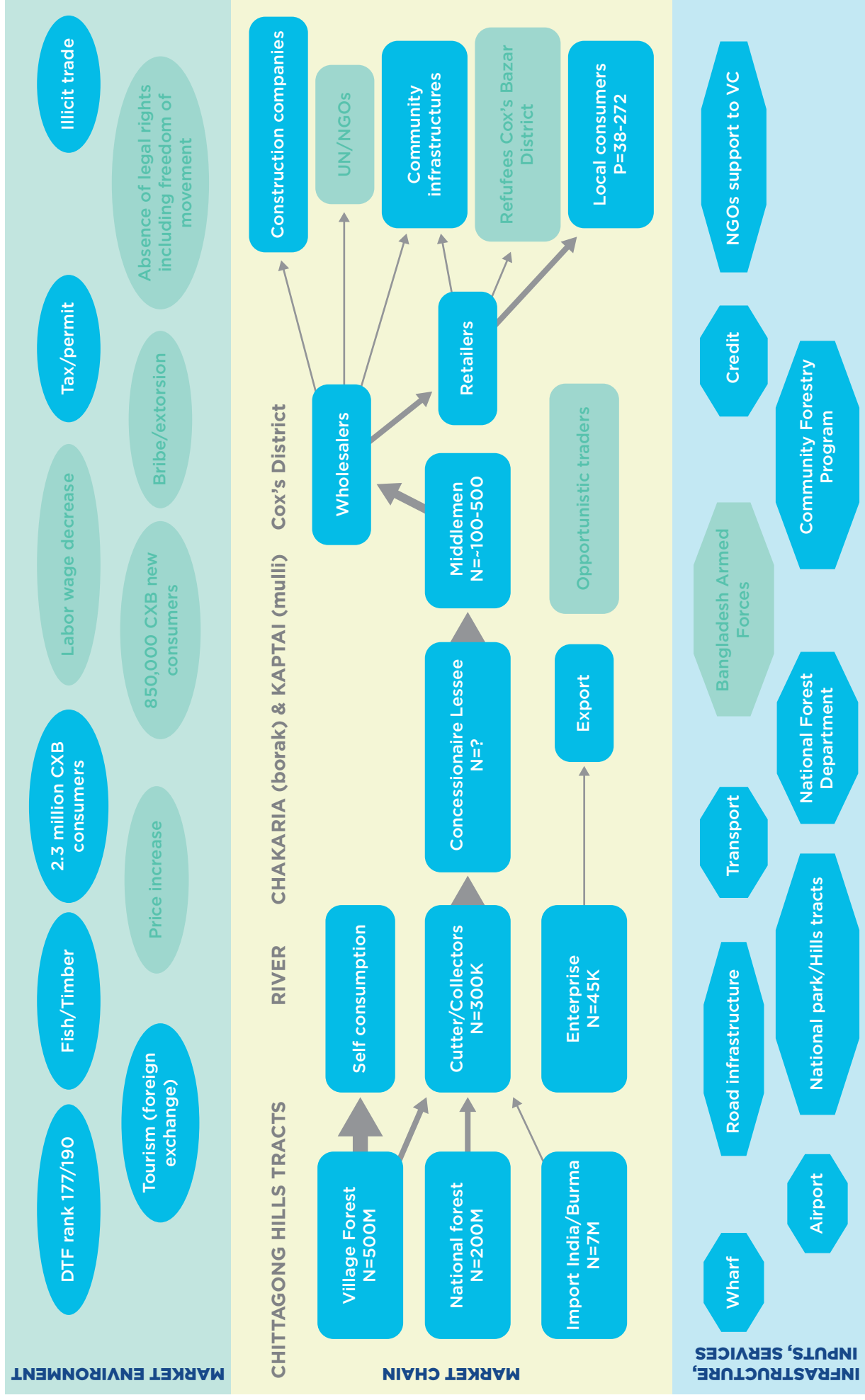
Average min. price before crisis Borak (in taka)	248
Average min. price before crisis Mulli (in taka)	34
Average min. price before crisis Timber (in taka)	127
Average max. price before crisis Borak (in taka)	295
Average max. price before crisis Mulli (in taka)	41
Average max. price before crisis Timber (in taka)	140
Average price before crisis Borak (in taka)	272
Average price before crisis Mulli (in taka)	38
Average price before crisis Timber (in taka)	133

The average cost of transportation per truck was 12,337 taka for bamboo Borak, 16,176 taka for bamboo Mulli and 10,663 taka for timber, which can include permits of transportation and/or labor for loading/unloading.

²⁵ www.doingbusiness.org/data/exploreeconomies/bangladesh

Market Mapping Bamboo

/ Partial disruption
 X Major disruption
 ! Critical disruption
 BASELINE
 POST AUG. 25



D. HOW HAS THE BAMBOO AND TIMBER MARKET CHANGED SINCE THE ROHINGYA CRISIS?

Firstly, the critical disruption that affected the bamboo and timber markets was the massive influx of Rohingya refugee after August 25, 2017. **The population in the area increased by 30%—from 2.3 million people living in Cox’s bazar district to close to 3 million with the new arrivals.**

Although this **new demand for Bamboo did not affect national production (theoretically, it only represents 3.16% of national production) nor the overall supply, it has had a significant impact on the local economy, and potentially the local eco-system.**

The population surge concentrated in the south of Cox’s Bazar peninsula has strained the local infrastructure, as it wasn’t designed for this size. FGDs within the host population reported an increased hostility from local community members towards new arrival because of **the increase in traffic, decrease in access to land, decrease of unskilled daily labor wages, and increase in costs of living.** Moreover, the movement of the Rohingya refugee population is restricted by the GoB, which limits their purchasing power. Therefore, the perception within the local population is that the Rohingya presence brings more costs than benefits. The Buddhist minority are also of concern, with regard to the risk of intercommunity violence (retaliation of Rohingya against Bangladeshi Buddhists).

Nevertheless, the increased demand represented a huge economic opportunity, **with 34% (22**

individuals) of the bamboo and/or timber traders are opportunistic vendors who have never sold bamboo or timber before.

Regarding bamboo and timber prices, the EMMA joint assessment team observed **significant price inflation for bamboo Borak (+24%), limited inflation for Bamboo Mulli (+6%) and almost no inflation for timber (=+1%).** We can explain the inflation of bamboo Borak because of less availability as well as its slow renewal (it needs more time to grow); less Borak can be transported at a time than Mulli. Price inflation is definitely the result of markets being poorly integrated: The movement of refugees are restricted by the Bangladeshi army, the goods aren’t circulating properly into the camps due to the poor road infrastructure, and price information is not circulating properly, too. For timber, we can explain the stability because of the low demand, local availability and the possibility for refugee to salvage it from nearby forests.

Change in average min. price crisis Borak	112%
Change in average min. price crisis Mulli	104%
Change in average min. price crisis Timber	97%
Change in average max. price crisis Borak	134%
Change in average max. price crisis Mulli	108%
Change in average max. price crisis Timber	104%
Change in average price crisis Borak	124%
Change in average price crisis Mulli	106%
Change in average price crisis Timber	101%

EXAMPLE OF VALUE CHAIN ANALYSIS OF BAMBOO MULLI AFTER THE CRISIS FROM KII

Location	Market Chain	TK per 1000 Bamboo	TK per Bamboo	%VC
Alikadom	Collector	1000	1.0	2.8
	Middlemen	11000	11.0	30.6
	River transport	7000	7.0	19.4
	GoB Tax	7000	7.0	19.4
Chaukoria	Price wholesale	26000	26.0	72.2
	Transport	2307	2.3	6.4
	Labor	1000	1.0	2.8
	Bribe	1076	1.1	3.0
	Dakila (permit for transportation)	1076	1.1	3.0
	Price transport	5459	5.5	15.2
	Retailer profit	4541	4.5	12.6
Kuthupalong	End price	36000	36.0	100



Men carry wood down a new road being built in Thangkhal camp. Photo by Mahmud Rahman for CRS/Caritas Bangladesh

Current average prices are 337 taka for bamboo Borak, 40 taka for bamboo Mulli and 134 taka for timber.

We also observed an **increase of transportation cost: +13% for the bamboo Borak, +8% for the bamboo Mulli and +5% for the timber.** The increase in transportation cost for bamboo is due to the increase in bribes from the Bangladeshi military and law enforcement during the journey. **Permits and taxes have not changed since the crisis, but transporters can meet up to 25 check points along the road and be asked to pay anywhere between 200 taka to 3,000 taka of bribe per check point.** The maximum bribe was reported to be 7,500 for the entire journey.

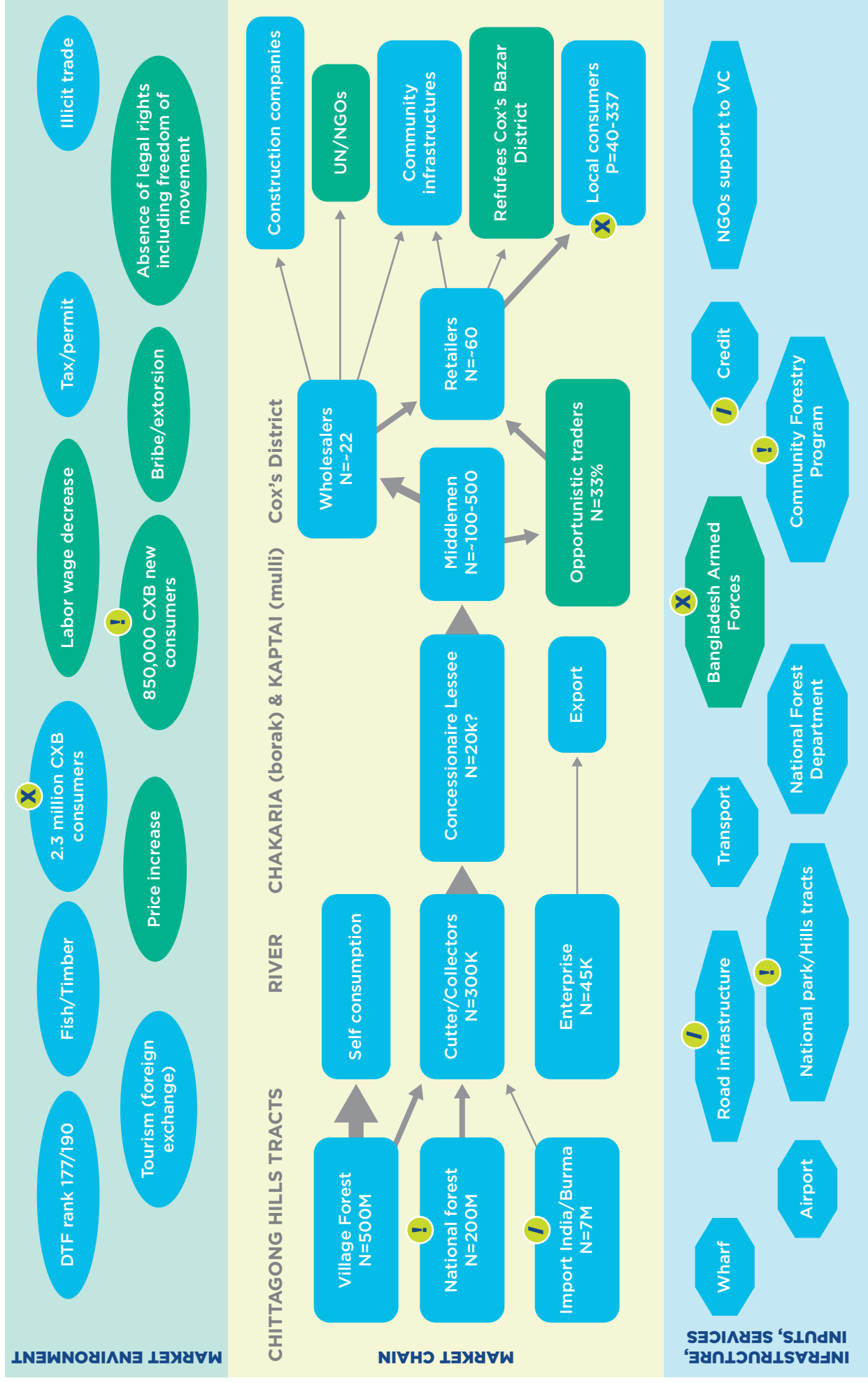
Average cost of transportation of Bamboo Borak after crisis (in taka)	13,936
Average cost of transportation of Bamboo Mulli after crisis (in taka)	17,550
Average of transportation of Timber after crisis (in taka)	11,231

Additionally, reports exist of **extortion of refugees at the shelter sites, with land owner seeking up to 5,000 taka per shelter.**

In term of credit, we observe **changes in delay of payment to supplier.** Traders have now limited options, ranging from paying 20% in advance to paying for the entire order up to 3 days maximum after delivery. For credit to customers, we observe a **segregation depending on the customer:** 55% of vendors would give credit to local consumers, whereas only 40% of them would give a credit to Rohingya for the purchase of bamboo or timber.

Market Mapping Bamboo

! Partial disruption
 X Major disruption
 ! Critical disruption
 BASELINE
 POST AUG. 25



VIII. ENVIRONMENTAL IMPACT

Because the refugee camps are located near protected local forests, and the bamboo sourcing is concentrated almost exclusively in the Chittagong Hills Tracts, **potential negative environmental impacts exist.**

At the **national level**, the pressure on bamboo resources existed prior to the arrival of the **Rohingya**. The national production meets the national demand, as well the potential demand surge from the Rohingya crisis (the total cumulated needs ESK and USK represent 3.16% max of the national production). However, the overall renewal of the forest is slow. Pressure exists on the forest because of the increase in population taking over the forest areas, and given the growing need for forestry products.

At the **regional level** (Chittagong Hills Tracts), an **increase in pressure is taking place on the quality and quantity of bamboo delivered.** It is not significant, but bamboo seems greener—meaning that it does not meet the quality standard of dryness to extend its longevity—and takes time to deliver. However, because the demand surge is to meet a one-time need, and because of the rapid renewal of bamboo (3 to 5 years depending of the quality of bamboo), **this additional pressure might be only temporary.** Still, further investigation is needed to confirm limited impact, as other factors should be considered, such as soil erosion.

At the **local level**, we observe **deforestation**: Of the 43,000 acres of forest in Cox's Bazar district, at least 3,000 acres are occupied by the refugees. The equivalent of 1,000 football fields covered on the surface with trees is needed per year to meet the cooking fuel needs (1,570 kg wood/HH/Year) if nothing is done beforehand. Already, this has resulted in the **loss of income for 1,500 local households previously involved in community forestry program management.**

Risks associated to deforestation at local and regional levels include:

- **negative impact on biodiversity and protected/endangered species;**
- **increase in human/elephant conflicts.** One incident has been already reported, and it might happen again as some camps are established on elephant tracks;
- **soil erosion risks** need to be confirmed, even if unlikely, because of the rapid renewal of bamboo;



Refugees transport wood for construction, cooking fuel and other use. Many walk up to 15 km outside the camp to find wood.
Photo by William Martin/CRS

- **sourcing of alternative natural resources in case of lack of bamboo.** It could potentially affect significantly and with more severity the timber;
- **increase of conflict with host population** who lost their livelihoods or have less access to their land or natural resources available locally.

IX. MAIN RECOMMENDATIONS AND CONCLUSIONS

A. RESPONSE LOGIC

Because of the time sensitiveness nature of the crisis, with the approaching pre-monsoon season, as well as the scale of need, a **comprehensive, multimodal response is recommended for Shelter Phase 2.** Although markets are not well integrated, a **market-based approach to supporting shelter upgrades would be appropriate as complementary to in-kind distributions already in the pipeline,** since the bamboo market is functional and has the structural capacity to deliver the needed upgrades before the pre-monsoon season. If done properly, a market-based response would not harm existing markets or the eco-system, but would support the local economy—including the formal construction sector (registered vendors)—by outsourcing logistics, transportation, storage, and handling of bamboos to vendors.

B. RESPONSE RECOMMENDATIONS

After analyzing all possible response options (cf. annex 3), we recommend the following responses:

1. **Redirect on-going in-kind ESK distribution toward Shelter upgrades** (except for new arrivals) and change 4W reporting (a report of Who, What, Where, When) for dynamic reporting to better measure progress to target. The 4W approach is a critical element to help coordination of relief efforts during any humanitarian crisis. Such information can help to alleviate duplications, identify possible gaps, better inform decision makers, and allow everyone to ask better questions;
2. For in-kind distributions planned but not yet purchased, **switch from local to regional/international purchases with treated bamboo** to decrease pressure on local and regional forests, while increasing the shelter longevity.
3. Because of delays with delivery, poor market integration, and diversity of family needs, **organize e-voucher shelter fairs** at the border of camps so that refugees can more easily access USK materials. Shelter fairs should last multiple days or even weeks due to the cost of set up and the continuous influx of refugees. The use of electronic voucher would facilitate purchases at this scale, and allow for the inclusion of cash voucher options when needed, using the same pipeline.
4. **Distribute complementary, targeted, one-off, conditional cash for shelter upgrades, or unconditional cash for the extremely vulnerable.** These cash distributions would help extremely vulnerable families or individuals to cover part of the transport and labor costs that are often needed to access humanitarian assistance (especially given the size and rugged terrain of the camps). If conditional cash is preferred by humanitarian organizations, cost-effectiveness should be compared with the impact of unconditional one-off cash distributions for most successfully reaching the shelter upgrade objectives;
5. Improve market integration, acceptance with the local population, and people's purchasing power through **Cash for Work (CfW) activities to build market roads and market places** within the camps in priority, and then outside the camps. Before implementation of CfW, humanitarian actors should harmonize daily labor rates, and conduct a quick labor analysis to identify local skills and available labor. For a Shelter phase 3, consider doing a Value Chain Analysis (VCA) of construction labor as it requires more skilled labor.
6. In collaboration with GoB, **support local forestry programs** to improve forest renewal and protection, and improve income generating activities among members of the host community who are more affected by the influx and presence of the Rohingya refugees;
7. Provide **shelter upgrades and site planning technical assistance** to meet SPHERE minimum and Building Back Better Standards (BBBS), as well as **technical assistance and pilots for alternative and sustainable sources to bamboo for the shelter upgrades** (such as multi-story shelter made of timber piloted by CRS);
8. **Monitor and provide shelter material price information** in a limited number of markets. We recommend adapting the MarkIT methodology²⁶ and monitoring bi-weekly the critical shelter material prices in: two markets per area of intervention (per camps), two control market outside each area of intervention, and one regional market (Chittagong).
9. **Advocate for the recognition of freedom of movement as a human right, with the objective of better market integration** benefitting both the host community and refugee populations. If it's not possible to negotiate freedom of movement in the whole country, as per Refugee Conventions and Protocols, the humanitarian community should **negotiate provisory solutions to ease movement, such as pushing military cordon further to allow full freedom of movement to Rohingya refugees in the Cox's Bazar District.** This would allow refugee to access shelter material and other commodities beyond the camps, such as in the Ukhyia market, while still providing the GoB the benefit of controlling Rohingya circulation.
10. **Pilot conditional community grants for community infrastructure for vulnerable individuals who are not benefiting from the humanitarian programs.** Such infrastructure support could include safe havens for vulnerable women, repair or upgrade of latrines, or community income generating infrastructure, like a bamboo treatment center or small business nursery.

²⁶ <https://www.crs.org/our-work-overseas/research-publications/markit>

ANNEX 1: SPECIFICATION OF THE UPGRADE SHELTER KIT



COX'S BAZAR BANGLADESH: ROHINGYA REFUGEE CRISIS SHELTER UPGRADE KIT (SUK) TECHNICAL GUIDANCE

DRAFT

SHELTER / NFI SECTOR

INTRODUCTION

In the initial stages of an unfolding crises involving mass displacement of populations, access to adequate shelter can be a critical determinant for survival. Shelter is essential to provide security and personal safety, protection from the climate and enhanced resistance to disease and ill health. With a rapid displacement of large numbers of people, it is important to provide shelter solutions as quickly as possible. Rather than waiting for the provision of tents or other such temporary shelter solutions, relief items such as plastic sheeting, rope, basic tools and fixings can provide the basis for a simple shelter or can be used to repair or upgrade damaged shelters.

The Shelter/NFI Sector has carried out comprehensive distributions of acute emergency shelter kits (primarily tarpaulins and rope) and the refugees have constructed their own shelter with these materials and using materials either gathered or procured on the local market. The standard of shelters for the new influx is very basic and it is now important for the shelter sector to mobilise phase 2 operations with an objective of improving shelter standards and living conditions. This is an incremental approach with limited land available for the average HH to expand so, the kit is designed accordingly. Further upgrades and more comprehensive shelter interventions may follow according to the context.

The **Shelter Upgrade Kit (SUK)** is designed to provide the materials and tools to carry out simple shelter upgrades and it is imperative that these kits are accompanied with **technical assistance, training and IEC materials** to ensure genuine positive impact on shelter standards and living conditions.

CONSIDERATIONS

Security—Some of the items within these kits may need consideration to **safety, security and mitigation to potential violence within displaced families and communities**. Always consider the distribution of items and consult with

communities and authorities before planning and undertaking distributions.

Suggested Packages—The SUKs are generic in details and specifications. As the usage for the kit will be based on countless situations and context to meet emergency shelter, privacy and dignity needs of families and communities, the contents detailed are suggested only. **Technical advice should be sought when required to adapt / add or change suggested kit.**

Cash Based or Local Market Responses—As the provision to give out unconditional or conditional cash grants maybe considered for emergency shelter needs, indicative costs envelopes are detailed. Market surveys should be undertaken before considering cash responses. All items detailed could be replaced with similar items or more suitable emergency shelter items based on specific needs, locations and solutions.

Orientation to families and communities on usage of Kit—Families and communities should receive guidance on the safe and appropriate usage / intention for the Kit distributed. **Technical assistance, training and provision of appropriate IEC materials is an absolute necessity.**

Other Sectors—It is likely that other sectors such as WASH and Site Management will also be distributing tools for improvement works and the tool kits in particular have been designed to take this into account. This is one of the reasons that tools are not being distributed at the HH level but rather as a kit for up to 5 HHs.


Note: all values stated in United States Dollars (USD) and / or BD Taka.




NOTE—ALL DIMENSIONS AND SPECIFICATIONS ARE TO BE CONSIDERED IN THE CONTEXT OF AVAILABILITY AND ABILITY TO RESPOND TO EMERGENCY NEEDS. ITEMS SHOULD BE FIT FOR PURPOSE BUT MAY CHANGE BASED ON NEED, CONTEXT AND AVAILABILITY. OPTIONAL ITEMS ARE ENCOURAGED TO SUIT SPECIFIC NEEDS.

SHELTER UPGRADE KIT (SUK)								
#	Item description	Unit	No.	Unit cost/ BDT	Cost/ BDT	Specification description	Picture	Note
TARPAULIN PURPOSE—To provide water, wind, sand protection / coverage. Also to provide privacy and dignity.								
1	Tarpaulin (4m x 5m, 4m x 6m shelter grade)	piece	1	1,250	1,250	UNHCR approved standards OR SIMILAR specifications as below: Tarpaulin Size: the finished size of each sheet is 4 x 5 meters or 4m x 6m +/- 1 %. Color: preferably white or blue/grey, sun reflective on both sides. Inner black fibers to ensure opacity. Red Cross Specs: http://itemscatalogue.redcross.int/upload/products_data/files/HSHETARP.pdf UNHCR Specs: http://www.unhcr.org/53fc56bd9.pdf		Essential Item.
BAMBOO PURPOSE—To create/strengthen shelter framework.								
2	Bamboo (Borak)	piece	4	260	520	Min 25 feet long; At least 8" (eight inch) perimeter measurement at 1/3 length from the toe of the Barak Bamboo. No insect defect in the circumstances of the Barak Bamboo		Essential.
3	Bamboo (Mulli)	piece	60	40	800	20 feet long. Section size ?? diameter nominal.		Essential.
	Timber	ft	20	130	2,600	2" x 2" softwood timber; for framing, bracing etc		Optional
ROPE, WIRE & OTHER FIXINGS PURPOSE—To fix the timber and tarpaulin frames together as well as secure structures to the ground.								
4	Rope	piece	1	350	350	Polypropylene or similar, diameter. 6 mm diameter, length: 25m, in a roll, preferred colour: black/blue/ dark green. Woven with 2 or 3 strands, with the possibility of being unravelled.		Essential
5	Wire	piece	1	180	180	low carbon steel, hot dip galvanised; roll of 25m.		Essential
6	Round Wire Nails	kg	1	150	150	Steel, length: 3inch, diameter 3 mm, supplied in a sealed bag.		Optional
SHELTER UPGRADE MATERIALS COST ENVELOPE FOR ESSENTIAL ITEMS BDT 3,620—4,000 (APPROX. USD 45—50)								

SHELTER UPGRADE KIT (SUK)—Community Tool Kit (1 kit per 5 HHs)

TOOLS PURPOSE—To fix the frames and tarpaulins; excavation and site improvements







#	Item description	Unit	No.	Unit cost/ BDT	Cost/ BDT	Specification description	Picture	Note
1	Claw Hammer	piece	2	180	360	Weight: 16oz. Wooden handle, replaceable. Head in forged steel/high carbon steel. Good quality.		Essential
2	Handsaw	piece	2	180	360	SAW, All-Purpose , 400-450mm blade, for wood, good quality, teeth from tempered and hardened steel. Unbreakable handle. Saw blade covered in protective cardboard.		Essential
3	Bamboo Baskets	piece	5	200	1,000	Woven bamboo baskets; traditional Jهوري		Essential
4	Steel Pan	piece	5	??	??	Steel pan, specification?		Optional (replacement for basket)
5	Shovel	piece	2	220	440	Shovel head with sharpened tip in forged steel which is tempered and hardened. Supplied with a handle. Total length: 100 to 110 cm.		Essential
6	Hoe	piece	2	270	540	Hot forged carbon steel, hardened and tempered, at a maximum the hardened zone should reach halfway up the back of the blade; with wooden handle		Essential
7	Digging bar	piece	1	220	220	Bars are typically 5 to 6 ft (1.5 to 1.8 m) long and weigh 15 to 23 lb (6.8 to 10.4 kg). They are usually made entirely of cylindrical or hexagonal forged steel with a diameter of approximately 1 in (2.5 cm). Chisel and wedge ends typically have a blade width measuring 1 to 3 in (3 to 8 cm). Blunt ends typically have a diameter of 2 to 3 in (5 to 8 cm).		Essential
8	Cutting Knife	piece	2	150	300	Hot forged carbon steel, hardened and tempered curved blade, 405mm/16", lacquered against oxidation, overall length 550mm; blade thickness: 2.5mm thick; wooden handle with 3 aluminium rivets plus washers.		Optional
9	Pliers	piece	2	350	700	Combination, 8 inch, heavy duty		Optional

#	Item description	Unit	No.	Unit cost/ BDT	Cost/ BDT	Specification description	Picture	Note
10	Chisel	piece	2	??	??	Spec needed (IFRC??)		Optional
BAG/BOX PURPOSE—To contain and distribute all the items of the Community Tool Kit.								
11	Woven Bag	piece	1	240	240	Woven Bag, synthetic, for containing the items listed above comprising the kit, colour: white or grey, closes with a string or wire.		Optional
12	Metal Box	piece	1	??	??	Galvanised steel trunk; dimensions to suit tool kit		Optional
COMMUNITY TOOL KIT COST ENVELOPE Essential Items = 3,000 BDT—3,500 BDT (USD 38—44)								

NEIGHBOURHOOD / MAJI BLOCKS –Community Tools

Note. It estimated that each Maji Block contains approximately 100 HHs

TOOLS PURPOSE—Site Upgrades; drainage; general improvements.

#	Item description	Unit	No.	Unit cost/ BDT	Cost/ BDT	Specification description	Picture	Notes
1	Wheelbarrow	piece	1	2,500	2,500	Wheelbarrow, approx. 90L dry solids, strong solid wheel		Optional for Neighbourhood/ Block Kit
2	Shovel	piece	5	220	1,100	Shovel head with sharpened tip in forged steel which is tempered and hardened. Supplied with a handle. Total length: 100 to 110 cm.		Optional for Neighbourhood/ Block Kit
3	Hoe	piece	5	270	1,350	Hot forged carbon steel, hardened and tempered, at a maximum the hardened zone should reach halfway up the back of the blade; with wooden handle		Optional for Neighbourhood/ Block Kit
4	Ladder	piece	1	??	??	Bamboo ladder; Spec ??		Optional for Neighbourhood/ Block Kit
5	Sandbags	piece	200	??	??	Sand bag; heavy duty made from best quality, natural hessian fabric; recommended filling capacity 15Kg		Optional for Neighbourhood/ Block Kit
6	Bamboo Baskets	piece	5	200	1,000	Woven bamboo baskets; traditional Jهوري		Optional for Neighbourhood/ Block Kit

ANNEX 2: DATA SET

https://www.dropbox.com/s/jx8s8o415n2mhp5/RAWDATA_17_v0.7_RowsRemoved_ODDremoved_GeoAdded.xls?dl=0

ANNEX 3: RESPONSE OPTIONS MATRIX

Green: best options at scale, Orange: options to consider in package, Blue: very targeted, Yellow: must have, Pink: nice to have	LRP Bamboo USK	LRP alt. source (geo or commodity)	Fair	Token	Sectoral cash cond.	One off uncond. cash	Tech. assist.	Mix	Support to vendor (treat Bamboo)	Market road CfW HIMO	Market places	Support to existing forestry program	Advocacy freedom movement	Price info	Price monitor	IGA Bamboo
Appropriateness, relevance (right thing to do)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Feasibility	2	1	2	1	2	2	2	2	1	2	2	2	2	2	2	1
Timeliness	1	0	2	2	2	2	2	2	1	2	2	1	0	2	2	1
Effectiveness (objective achieved)	2	2	2	2	2	1	1	2	1	1	1	1	0	0	0	1
Cost-efficiency (objective achieve economically)	1	1	1	2	1	2	1	1	1	1	1	1	1	0	0	0
No negative impact (protection/environment /market risks)	1	2	1	1	1	1	2	2	1	1	1	1	1	2	2	1
Sustainability of impact	2	2	2	1	1	0	1	2	2	1	1	2	1	1	1	1
Total	11	10	12	11	11	10	11	13	9	10	10	10	7	9	9	6

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