Needs Assessment Report
on
Bamboo Flowering, Rat Infestation and Food Scarcity in the Chittagong Hills Tracts, Bangladesh

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for

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Abbreviations

CHT	Chittagong Hill Tracts
FGD	Focus Group Discussions
GOB	Government of Bangladesh
HKI	Helen Keller International
IPHN	Institute of Public Health Nutrition
KII	Key Informant Interviews
NGO	Non-Government Organization
ORS	Oral Rehydration Solution
RTI	Respiratory tract infections
UNDP	United Nations Development Programme
UP	Union Parisad

Executive Summary

In 2006, bamboo flowering started in the northeastern Indian state of Mizoram, which is adjacent to the Chittagong Hill Tracts,(CHT) the phenomenon crossed the border in late 2007 with anecdotal reports of the ensuing rat plague and the negative consequences of food shortages and destruction of livelihood opportunities. This slow onset disaster is particularly dire among the Jhum cultivators in remote areas of the CHT (Jhum refers to the slash and burn agriculture).

Following the bamboo flowering pattern from north to south and from highland to lowland, the rat infestations are taking place in remote isolated communities in the hills and mountains of this hilly region. There is a general lack of information on the region, the Jhum communities, the current food, health, and nutrition situation and on the overall impact of the rat plague outbreaks. This is partly due to the complicated socio-political setting of the CHT, the challenges of language, remote and difficult terrain and the lack of robust data collection systems for and in the CHT. Though a UNDP rapid assessment was done on the rodent infestation, it was not sufficient to proceed with humanitarian assistance effectively to mitigate the sufferings of the affected population. In order to look into the rat infestation and its consequences, a detailed sector-wise assessment was required. This information was also needed to determine the required responses to respond, cope, and mitigate the eminent crisis with short- and long-term interventions.

A qualitative assessment was conducted in Barkal and Bilaichari upazilas of Rangamati District and Ruma upazilla of Bandarban District from 9-12 April 2008 using direct observations, focus group discussions, and key informant interviews. The findings of the extensive rapid assessment indicate that generally very little is known about the CHT region and its inhabitants. It is evident that these very remote communities are marginalized and isolated. Given their limited resources and the hardship of their existence, these remote communities have developed very effective coping strategies however, the consequence of the bamboo flowering phenomena has exacerbated their already fragile existence. This slow onset disaster will have catastrophic consequences on the ecology of the CHT, the bamboo industry and the lives and livelihoods of the CHT affected communities if appropriate and timely action is not taken.

This report highlights and puts forward a number of recommendations to address the environment and ecological consequences of the bamboo flowering phenomena, the consequences of the livelihood and market dynamics in the CHT and indeed Bangladesh, the food and food security issues to address to minimize the impact of the negative consequences of the bamboo flowering on the health and nutritional status of the affected communities most notably of the vulnerable populations of children under five years of age, pregnant women and lactating mothers. A summary of the key findings are presented below:

Environment and Ecology

- Deforestation and degradation of the environment is more extensive than was known or suspected
- Strong anecdotal reports and evidence of bamboo flowering, fruiting and bamboo dying
- Strong anecdotal reports and evidence of increased rat populations, rat activity and destruction by rats
- Evidence and history of the bamboo flowering phenomena suggests that this has a 3-5 year cycle with far reaching impact on the bamboo industry, the ecology of the CHT and the lives and livelihoods of the affected communities
- No strategic planning for rodent control and mitigation programs

Livelihoods & Markets

- The CHT has limited livelihood options and alternatives
- The CHT depends heavily on Jhum cultivation and the bamboo industry which are both under threat as a result of the bamboo flowering phenomena
- The bamboo flowering phenomena and the subsequent ecological changes has far-reaching negative consequences for Jhum cultivation and the bamboo industry in Bangladesh

Food and Food Security

- Food and seed stocks are in limited supply and will be soon exhausted in the severely affected areas
- Food habits and patterns have been negatively affected resulting in less food being consumed in both amount and frequency
- Food quality has being negatively affected by the food shortage, the monotonous food-aid diet, the unknown quality of wild and alternative foods
- Food aid and relief to affected communities in remote and isolated areas as being very low or not at all

Nutrition and Health

- Women and children are visibly compromised and showing signs of poor health and nutrition status
- While no case of severe acute malnutrition was detected the vast majority of screened children are in the high to moderate risk category for malnutrition
- It is noteworthy, that within as short a period as two weeks these children in the high risk group could very well become severely malnourished
- It is also noteworthy, that it is more difficult and costly to rehabilitate the severely malnourished child than to prevent the deterioration of the nutritional status of children
- There are no health or primary health care services in these remote and isolated affected areas

1. Background

The Chittagong Hill Tracts (CHT), only hilly area of Bangladesh, is geographically and socio-culturally distinct from the rest of Bangladesh. The CHT in southeastern Bangladesh borders India and Myanmar (Burma) and comprises an area of 13,180 km^2 which is about one-tenth of the total area of Bangladesh with a population of over 1.3 million. In 1991, the Bangladesh Bureau of Statistics estimated that the total indigenous population of Bangladesh was about 1.2 million with just over more than halve of the indigenous people living in the CHT. The people in this unique region of Bangladesh suffered years of civil conflict between 1973 and 1997, with stability restored with the signing of the CHT Peace Accord in late 1997. The indigenous tribes, collectively known as the Jumma, consist of 13 enthic groups with their own language and cultural diversity. The Chakma, Marma, and Tripura the major tribes with the remaining, almost 49 percent, of the CHT population being Bengali settlement communities that includes Muslims, Buddhists, Hindus and Christians. Until 1984, the CHT was a single district of Bangladesh. In that year, it was divided into three separate districts: Khagrachari, Rangamati, and Bandarban.

Like many other countries of Asia bamboo is a natural resource, which plays an important role in people's everyday life in Bangladesh. In Bangladesh so far 28 species and one variety of bamboo under seven genera have been recorded[1]. The genera are: *Bambusa, Dendrocalamus, Gigantochloa, Schizostachyum, Melocalamus, Melocanna and Thyrsostachys*. Most of the species in the country belongs to the genera *Bambusa* and *Dendrocalamus*. The most interesting aspect of bamboo biology seems to be the flowering habit. Some bamboos flower every year, others at short intervals, but the majority at long intervals. In species that bloom after long intervals, the flowering is gregarious, with all plants in the population flowering simultaneously or close to each other. Most of the bamboo species die after gregarious flowering. In Bangladesh there are two distinct bamboo production areas: the forests and villages. Naturally grown bamboo species have been found in the semi evergreen and deciduous forests in the hills of Chittagong Hill Tracts, Cox's Bazar, Sylhet and northern Mymensingh. Recently Muli bamboo – *Melocanna baccifera* and Kali bamboo – *Gigantochloa andamanica* have started blooming in Bangladesh. It is noteworthy that 90% of the CHT bamboo is Muli bamboo (*Melocanna baccifera*) and that the CHT supplies up to 90% of bamboo fencing materials and raw materials for the Karnaphuli Paper Mill at Chandraghona, Rangamati.

Within a week of pollination, bamboo flowering leads to fruit setting. Pollination, fruit setting, and maturation take place within four to five months, usually April and May. However, fruit maturation is quicker in the early part of the seeding season. Both flowering and fruiting in a clump are simultaneous. Bamboo fruiting provides a nutritious supply of food for rodents leading to an unbelievable increase of the rat population. These rats will ultimately devour the bamboo supply of food and move on to feed on agricultural crops in the fields and granaries, which subsequently negatively influences the food and livelihoods of the affected people.

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[1] Alam, M. K. 2001. Bamboos of Bangladesh: a Field Identification Guide. Bangladesh Forest Research Institute, Chittagong, 35 pp.

2. Rational

In 2006, bamboo flowering started in the northeastern Indian state of Mizoram, which is adjacent to the CHT, the phenomenon crossed the border in late 2007 with reports of the ensuing rat plague and the negative consequences of food shortages and destruction of livelihood opportunities. This slow onset disaster is particularly dire among the Jhum cultivators in remote areas of the CHT (Jhum refers to the slash and burn agriculture). Bamboo flowers only once in the plant's lifetime and dies after flowering. The cycle of bamboo flowering may vary from 40-50 years. When bamboo flowering happens, it causes ecological crisis for two reasons. Firstly, the bamboo plants die after flowering. It takes 4-5 years for bamboo plants to regenerate again, leaving bare soil during the period-which may lead to soil erosion, flashfloods, landslides, and a poor soil condition particularly for the Jhum cultivators. Secondly, rats feeding on the bamboo fruit and seeds activates a rapid birth rate among the rodents; rats which usually breed 2 times in a year may breed as much as 6 – 8 times in a year during the bamboo flowering.

The increased rodent population also negatively affects the bamboo regeneration by the rats consuming the bamboo seeds, delaying the growth of new bamboo. The rats after devouring the bamboo fruit, move on to field crops, paddies and harvested crops in granaries and storage, which subsequently results in food and seed shortages. For the marginalized and isolated Jhum cultivators this series of events has a huge impact on their live and livelihoods. The loss of food, in an already stressed community leads to increased morbidity and mortality. The loss of seeds, poor soil, and the constant threat of rats is a burden on the Jhum cultivation for food and livelihoods. The loss of bamboo as a natural resource has far-reaching consequences for Bangladesh.

Bamboo plays a significant role in the rural economy of Bangladesh. The rural people have traditionally being using this raw material to meet their daily needs. Major construction materials for rural housing are bamboo. It is also linked with other agricultural production systems like betel-leaf production, vegetables cultivation, and the natural eco-system for Jhum cultivation. About 85.8% of rural household articles and construction material are being met by bamboo and rattan[2]. Millions of people are directly or indirectly dependent on this resource for agriculture, housing, cottage and handicrafts industries, household furniture and other activities. It is also an important source of raw materials for pulp and paper industries in the country. Beyond traditional handicrafts and practical daily products, Bangladesh's bamboo sector has become a fast emerging rural industry. High-grade parquet flooring blocks, tiles, furniture, boards, and many other composite products are made from bamboo.

According to a UNDP rapid assessment, 572 villages in 7 upazilas are affected by this crisis, including 25,680 households or 128,400 people. In addition to Jhum crops, rats have destroyed other green plants like papaya, chili, gourd, and ginger. They are even destroying the young green paddy planted in the valley lands. As a result, many people, particularly the Jhumias in the remote areas of the CHT are facing a food crisis.

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[2] Banik, R. L. 2000. Silviculture and Field-Guide to Priority Bamboos of Bangladesh and South Asia. Publication of Bangladesh Forest Research Institute, Chittagong. ISBN984-753-033-3.

It is noteworthy that the natural habitat of bamboo is restricted to the high rainfall hilly areas of the world, and the species with net-like extensive rhizome system might had been selected naturally for protecting the forest soil[3]. Following the bamboo flowering pattern from north to south and from highland to lowland, the rat infestations are taking place in remote isolated communities in the hills and mountains of this hilly region. There is a general lack of information on the region, the Jhuma communities, the current food, health, and nutrition situation and on the overall impact of the rat plague outbreaks.

This is partly due to the complicated socio-political setting of the CHT, the challenges of language, remote and difficult terrain and the lack of robust data collection systems for and in the CHT. Though the UNDP rapid assessment was done on the rodent infestation, it was not sufficient to proceed with humanitarian assistance effectively to mitigate the sufferings of the affected population. In order to look into the rat infestation and its consequences a detailed sector-wise assessment was required. This information was also needed to determine the required responses to respond, cope, and mitigate the eminent crisis with short- and long-term interventions. Therefore, a quick assessment involving and drawing on the expertise from the following disciplines - environment & ecology, livelihoods and markets, food security and nutrition – was undertaken (**Annex 1**: Rapid Assessment Team).

Given the time constraints and the logistical challenges to reach remote areas, the rapid assessment was designed and limited to qualitative research methodologies and to purposefully selected assessment areas (**Annex 2:** Rapid Assessment Schedule)

3. Objectives

Objectives of this Needs Assessment Mission:

- Provide detailed assessment of the damages
- Provide detailed emergency relief and rehabilitation measures to alleviate further suffering and hardship
- Draw out a plan for medium- and long-term food supply for the affected population, and;
- Propose sustainable agricultural and livelihood systems for long term socio-economic recovery of the affected population.

Scope of the needs assessment mission:

1) The mission will confer and consult with all relevant authorities of the CHT.

2) The mission will assess the impact of the Bamboo flowering phenomena on the population and assess the needs of the affected population.

[3] Banik, R. L. 1989. Recent flowering of muli bamboo (*Melocanna baccifera*) in Bangladesh: An alarming situation. Bano Biggyan Patrika, 18 (1&2):65-68.

3) The mission will review the existing emergency response mechanisms in terms of both material and operational capabilities and appropriateness.
4) The mission will visit the affected localities and consult with all the local leaders, residents, and victims.

5) The mission will identify specific needs in the following areas:
    - Food
    - Effective mechanisms to combat the Rat Plague
    - Medical / Health
    - Water and Sanitation
    - Agriculture
    - Economy

6) The mission will quantify the response requirements and develop a response plan for immediate and medium term interventions, including mechanisms of distribution, targeted delivery, interview techniques, and implementation strategies.

7) The mission will recommend the cooperation that would be needed from local authorities for smooth implementation of immediate and medium term interventions.

8) The mission will focus on a package of assistance that contributes to sustainable recovery.

9) The mission will carry out the above tasks in a consultative manner that further supports confidence building in the affected area.

4. Methodology

4.1 Study design

A qualitative assessment was conducted in Barkal and Bilaichari upazilas of Rangamati District and Ruma upazila of Bandarban District to generate data and to formulate a report for the joint donor and Government of Bangladesh Needs Assessment Mission. The rapid assessment was broken down into three teams for the fieldwork, which focused on the three respective districts. The USG team was responsible for assessing needs in the Rangamati District and a part of the Bandarban District. The survey was conducted from 9-12 April 2008.

4.2 Data collection

Focus Group Discussions (FGD): 1 to 3 focus group discussions were conducted in each of the visited Upazilas. In each of the FGDs, 8 to 15 women or men attended to discuss various issues. FGDs for women and men groups were conducted separately. Local headman, *Karbari*, Union Parisad (UP) Chairman and UP member were included in the male groups' while the female group composed of women having children under five years of age, pregnant and lactating mothers, women involved in Jhum cultivation and adolescent girls.

Key Informant Interviews (KII): 4 to 5 key informant interviews were conducted in each of the upazila visited. The key informants were health service providers, local government officials, local elected representatives, sales man, and the women in a household.

Observations: To perceive the real situation, the team visited and documented observations in some of the affected communities' households, health service delivery points and the food markets.

5. Findings and Discussions

5.1 Environment and Ecology

Bamboo flowering and fruiting was observed. There was strong anecdotal evidence from the community with reports from all stakeholders that rats were negatively affecting the Jhum cultivation, food and seed stores and causing damage in houses and homesteads.

It was observed that de-forestation was taking place at a higher rate and across a larger area than was suspected or documented. And that much of the available flatlands of the CHT were being used for banana, pineapple and tobacco cultivation. It was not established who were the owners or beneficiaries of these organized and very large plantations.

It was observed and reported that from the bamboo flowering and fruiting

- Complete dying of the bamboo clumps results in denuded habitats.
- Predated by rats and hence rodent population increases. In years of gregarious seeding of Muli bamboo, rats breed rapidly, and when the seeding is over these rats commit great havoc to neighboring agricultural fields.
- Rat population is self-limiting and dependent on the food supply.
- Rats are not known to migrate and travel across large areas
- Loss of bamboo seeds due to rat and human consumption will have a negative impact on the ability of the bamboo to naturally regenerate
- Germinated during rainy seasons, the barren lands covered with green seedlings. So rat population diverts towards crop fields.
- Bamboo is a major livelihoods activity in the CHT. With the dying of the bamboo forests, bamboo cutters are migrating to where the bamboo is thriving, however, this leads to over-cutting and pressure on the decreasing bamboo resource.

Rodent Assessment

a. Rodent species causing agricultural damages

Confirmed identification of the rodent species that actually caused the damage proposes a challenge, since the villages and associated jhum crops that were surveyed during this assessment were already affected (e.g., last summer and early fall). However, some information was collected through meetings with village residents.

In Barkal village, information assembled through detailed interviews, photographs, and biological descriptions of species suggests that the lesser bandicoot rat (*Bandicota bengallensis*) and a *Rattus* sp. caused most of the damages to the jhum crops. Most residents

were able to recognize a photograph of *Rattus rattus* as closely resembling the *Rattus* sp. causing damage in their crop fields. These residents also suggested that mice (Mus sp.) and short-tailed mole rats (*Nesokia indicia*) might have caused a minimal amount of damage. One teenage boy told that he still captures rats on a regular basis; however, he was not able to present any carcasses. Only one (very old) rat burrow system was observed. It was explained that the other burrows had been filled in. The reason for this was unclear, but it was suggested that this was due to a festival.

At a second village (Jadiphail Para village, Bom community), it was suggested that a *Rattus* sp. had caused the most crop damages, while the lesser bandicoot rat also caused some damages. The description of the lesser bandicoot rat included burrows with multiple entrances with large quantities of rice and other food sources stored in them. One juvenile dead rat and many rat-tails were shown to the assessment team. The dead rat resembled a *Rattus* sp., but its condition (smashed head) and age made a species specific identification difficult. The individuals also described the greater bandicoot rat (*Bandicota indica*) as occurring in the area but being very uncommon and not causing significant damage.

The residents also mentioned the death of large number of rats (they found them dead in the field and they smelled the rotten carcasses) during December 2007 - January 2008. At a nearby village (more than 5 km away from Jadiphail Para village), residents frequently observed large rats (weight >1 kg) in the area. One person displayed a smoked specimen and based on dentition and general morphology, it was subsequently identified as a mongoose (*Herpestes* sp.). These village residents also showed a piece of dead bamboo with fruit sill attached. The fruit had obvious rodent gnawing marks on it. The rigidity and the length of the branch that was presented suggested that a climbing rodent had caused the gnawing marks.

In another village another, the rodent reported to cause the most damage was consistent with the description of a mouse. Some items that were damaged included grain storage containers constructed from bamboo and various clothing items. One consistent observation amongst the village residents was that rodent damage tends to occur approximately two to three months after the initiation of the bamboo flowering cycle. However, some officials reported damage as early as January 2008. It is not clear how this timing could be associated with jhum rice (typically planted in spring). More than one village resident suggested that the rats essentially destroyed the entire rice crop in 1-2 nights.

It should be pointed out that the species identifications were based strictly on the information provided by the village residents. A confirmed identification will need sites with active or more current damage. This may sound like a trivial issue; however, attempts to abate the damage caused by these rodents cannot be logically conducted unless the species causing the damage are known because different strategies may be needed for each species. From earlier reports in Bangladesh, *Rattus rattus* was thought to primarily be a commensal species (living in close proximity to man). However, in nearby India, including the Mizoram State adjacent to the Chittagong hill tracts, a subspecies of this animal, *Rattus rattus brunneusculus* (Hodgson rat) is known to burrow in jhum rice fields and population eruptions of this species have been thought to be associated with bamboo flowering in the past. Given the close proximity of this subspecies in India, it is likely that they are also a common inhabitant of Chittagong hill tracts of Bangladesh. Overall, the primary species causing damage to jhum rice fields in the CHT may vary by locality.

b. Current rodent control

Interviewees mentioned that very little measures were taken to control the rodent population in the affected areas. Primarily, control consisted of mechanical (striking rats with a bamboo stick with the aid of a light during nocturnal hours) and minimal trapping efforts (bamboo drift fences with single kill traps and snares). At present, five live traps are being given to each affected family. It is unlikely that five traps of this style will have any significant effect on this problem.

Only one rodenticide was found to be commonly available (Rat-Dire, Anowe Chemical Company, CTG., Bangladesh) in the rural markets of the surveyed areas. The shop owners said that they had not sold much of the product. Furthermore, the formulation of this product is not clear from its label.

c. Rat "migration"

It was mentioned in more than one occasion that the rats affecting the jhum crops had followed the bamboo flowering activity or are migrating to newly flowering bamboo.

Although not completely out of the realm of possibilities, this is quite unlikely. First, many rodent species are territorial and adults often live in and defend a core area. Movement out of these core areas would subject these rodents to an increased risk of predation as well as increased competition from other rats. Therefore, considering the rapid reproduction and maturity rates of the rodent species involved in this cycle, a more parsimonious explanation for this observation may be the high reproductive outputs of one or more species following the initiation of the bamboo cycle. Furthermore, this would help to explain why village residents often described a third common rat "species," as this likely represents juvenile rats following a birth pulse.

d. Long-term rat damage

It was mentioned that the current rat population eruption would last for three years. Aside from historical recollections, the base of this information is not clear. Nonetheless, this is one of many possibilities. However, some villagers have already noted a natural die-off of rats. Others have noted much less rat activity in recent months compared to the last summer/fall. One point worth emphasizing here is that most rodents, especially most rats and mice, are nocturnal and secretive animals. Therefore, they are not likely to be noticed, unless they are in large numbers, actively causing crop damage, or actively entering residences and out buildings. Active monitoring is the only way to assess the present rat population levels with any type of reliable estimate.

e. Potential zoonotic (i.e., animal to human) diseases associated with the population eruption

There are many potential etiologic agents (e.g., viruses, bacteria, rickettsia, etc.) associated with rodents that can be transmitted to humans (i.e., a zoonotic potential). Two primary concerns during the assessment were plague and water-associated illnesses. Although both can have serious consequences, these simply represent only two of the many diseases caused by the rodents. For example, rodent-borne hemorrhagic fever viruses represent potential concern. These fever caused by the viral families *Bunyaviridae* and *Arenaviridae* are thought to occur on most continents where rodents occur. Of interest, a Hantavirus (Thailand virus) has been detected in a greater bandicoot rat and antibodies to a Hantavirus have been detected in Savile's bandicoot rat (*Bandicota savile*) in Thailand. Furthermore, a hantavirus-like virus has been detected in *Rattus rattus* from Cambodia. The extent and nature of the human

diseases caused by these viruses' is still to be determined. However, several Old World Hantaviruses are known to cause a human disease called hemorrhagic fever with renal syndrome (HFRS). In China, e.g., over 1 million cases of HRFS were thought to occur between 1950 and 1995.

*The taxonomic identification of species is dynamic and changes over time as more information becomes available. As such, some of the scientific names used herein could be historic rather than current.

5.2 Livelihoods & Markets

Despite the trend of dwindling productivity, tribal people of the CHT still practice shifting cultivation (Jhum) as a dominant hill farming system to support their livelihood. The need assessment explored how and to what extent the production from present Jhum cultivation supports the tribal people's livelihood and how and to what extent this has being affected by the rat plague and what alternative livelihood strategies they have adopted for subsistence. The findings draw on data on input/output and income/expenditures, and analyzing markets.

Livelihoods

The findings showed that the main sources of livelihoods in the area are Jhum cultivation for both food and cash. In most rat-affected areas, jhum is the only source of livelihood. Alongside jhum cultivation, mixed cropping is practiced. Sale of Teak tree, firewood, bamboo and other forest products also form a major part of their livelihood. For cash, households mainly sell fruits, vegetables, and spices. They sell casual labor for felling and carrying trees and bamboo, earthwork, working in agriculture and the tobacco fields. There is limited opportunities and competition for casual labour which further depresses the wage rates of casual labour (around 70-120 Taka for men and 60 Taka for women). Women invest their labour in weaving and earn money through selling produces in the market.

The Jhum cultivators are broadly of two categories, viz., C1: those who are practicing agriculture on hills only and C2: those who are doing agriculture by the riverbanks (fringe lands).

Table 1 *The comparative production (%) of different food sources categorized by jhum cultivators are presented below*

Source of food	Production before the rat plague		Production after the rat plague	
	C1	C2	C1	C2
Jhum (rice, ginger, turmeric, vegetables, banana, cotton, sesame seeds)	80%	40%	30%	15%
Daily labor	0%	15%	0%	30%
Forest products, especially bamboo collection & sale	20%	15%	20%*	15%
Jamin: Agriculture on the riverbanks (fringe lands)	0%	30%	0%	20%
Wild foods and yam**			20%	10%

*Increased wood collection/sale to compensate for bamboo loss

** Yam is least preferred food. They are taken to fill the stomach and reduce hunger.

Rats have destroyed jhum production and productivity declined markedly, yields were lower than input values and farmers are experiencing food shortages which will continue for at least

the next two to six months in the famine year. In the affected areas, rats have consumed varying amounts of jhum crops depending on timing of bamboo flowering in the locality. The estimated damage to crops ranges and in some places is as high as 80%. The farmers harvested the last jhum crops in August 2007.

To make a living, farmers have adopted new occupations such as wage labour, animal husbandry, cultivation of annual monocrops and extraction and selling of livestock and forest products. In the most severely affected areas, food stocks are exhausted and the consumption of yams and bamboo shoots has increased. However, the yams will not be available by next month (May 2008). The next jhum crops harvest is due in August 2008. If they can harvest all without the rat plague affect, there will still exist a shortage of food for the next 5 months (May – September 2008). People are sharing the existing foods with relatives and neighbors which is a social safety net and established social capital unique to the tribal communities. Farmers do not have stored seed for further cultivation of jhum crops and thus consequently the next harvestable yield will be limited and hampered. Therefore, provision of seeds for next harvest is a significant issue. Farmers are unable to pay casual labour since they too are empty handed, hungry and do not have food stock.

To cope with the food shortage, the affected people have changed their food consumption patterns adding to the increase of market prices in the face of limited supplies of rice, assorted vegetables, shrimp paste, dry fish, seasonal fruits, and vegetable oil.
It was reported by the community that there is a group of day laborers who are depending on cutting bamboos. This community is migrating to places where bamboo is flowering or yet to flower and consequently over-cutting and exhausting the decreasing bamboo supply. They are paying labour to cut those bamboo clumps and earning cash for their livelihood. This has influenced double pressure on the bamboo resources.

Markets:
Only District town markets were visibly full of food and other basic commodities. It was reported by the community that prices of most commodities are usually higher in *para* markets than upazila centered markets. However, the market situation is deceptive given that the assessment was done right before a festival (*Biju*). Furthermore, market traders are mostly plain land Bengalis and they reported that stocks were built up in anticipation of good sales during the festival.

Access to markets varies from one community to another where distance to reach the market may range from 3-6 hours return journey. This rat plague has lowered the purchasing power of the affected communities. According to traders, business was generally slow and business had gone down by 20-40 percent. From their perspective, the contributing factors were general price increases and decreasing purchasing power of the local population. According to traders, *para* people used to purchase food on a weekly basis, but now they buy what they consume daily.

Local tribal traders sell turmeric, ginger, and banana on the local market and buy almost everything. The commodities bought most frequently were rice, oil, cigarettes, salt, fuel oil, matches, and soap. Credit purchase was reported to be on the increase. Traders explained that they pay back loans by selling labour or livestock or handicrafts. Traders reported that retailers from *para*-markets are buying in lesser quantities than before. The price of bamboo has significantly increased. Karnaphuli Paper Mill, which is using bamboo as raw material for producing paper, is now purchasing bamboo at the cost of Tk. 20, which was Tk. 6 only

for the same size. If this scarcity of bamboo sustains, this paper mill would have to shut down due to raw material shortage further stressing the already limited labour market in the CHT.

5.3 Food and Food Security

Food source

The main sources of food in the assessment areas were Jhum crops, paddy produced in the valley lands and purchases from local markets. The Jhumia households produce different local and indigenous varieties of vegetables and fruits for their household consumption. They also sell the surplus Jhum crops in the market to buy other foods and household necessities. The main sources of cash for Jhum cultivators were from selling Jhum crops, bamboo/forest products, and daily labor in the logging industry.

It was evident that the households depending on the Jhum cultivation are the most and worst affected by the rat plague. In addition, to Jhum crops, the rats have also damaged and devoured vegetables, standing crops and food and seed stores, leaving these households with a food and cash shortage and an impending crisis.

The Jhum cultivators are broadly from two categories.
C1: Those who are doing agriculture on hills only
C2: Those who are doing both Jhum cultivation and agriculture by the riverbanks (fringe lands)

Source of food before and after Rat Plague:

Production before the rat infestation			Production after the rat infestation	
	C1	C2	C1	C2
Jhum (rice, ginger, turmeric, vegetables, banana, cotton, sesame seeds)	80%	40%	30%	15%
Jamin: Agriculture on the riverbanks (fringe lands)	0%	30%	0%	20%
Wild foots and potato**			20%	10%

** Wild foods/potatoes are least preferred food. They are taken to fill the stomach and reduce hunger.

The community also raised their concern and fear of a poor harvest given that the end of the planting season is at hand (March-April) and that households do not have enough seed stock, that the land is barren and affected by the dying bamboo and that there is the constant threat of the rats consuming whatever is planted. With the next harvest only due in August and the already reduced food and seed availability, the majority of the women raised their concern and fear of a long lean season. The additional fear especially of the men, is the security of the harvest given that the bamboo flowering process is not yet over, making the rat infestation a continued threat.

Food consumption and food consumption patterns:

Rice, assorted Jhum vegetables, shrimp paste, dry fish, meat, seasonal fruits, vegetable oil, salt and some local spices are the components of the traditional food basket. Generally and usually, they reported to consume a wide variety of foods and enjoy three meals a day. Due to the extent of the damage to Jhum crops, this varies and in some places is as high as 80%, this

has forced households to change their food habits and patterns. In some areas given the food shortage, the affected population is consuming foods outside of their usual diet e.g. consumption of bamboo fruit, shoots and the rats themselves.

During normal periods Jhum communities consume three meals a day however, due to their current food shortage and scarcity they have being forced to reduce their meal frequency to once or twice per day (a few women reported skipping meals or going without food for the day), and have reduced their meals both in quantity and quality. Women reported to be taking less food in order to provide more for their children and their working men.

From the vast majority of women one meal of rice and one of yam is now a common practice and the norm. The commodities, which are currently either not consumed or consumed in very small quantities, are rice, shrimp paste, dry fish, and vegetable oil. Consumption of wild foods namely yams and bamboo shoots have increased. Food and water safety is at risk of contamination as rats have entered houses in search of food.

Food Aid

It was reported by UNDP and government officials and confirmed by some community members that food aid was provided by the army, district authorities, UNDP and local NGOs. The community reported that the amount of food aid provided was inadequate and only provided meals for only 1-2 weeks at most. Another shortfall was that the selection of beneficiaries was done through the existing local government structures and there was no uniform definition for vulnerability, no specific identification of severely and moderately affected groups was done suggesting that many of the most and worst affected and vulnerable groups were not appropriately targeted.

Distribution of food aid in the CHT is logistically very difficult and thus most of the distributions were centralized at the Upazila level. Given that most of the affected communities are in remote isolated hill areas, food aid did not reach the most and worst affected communities.

5.4 Nutrition & Health

Nutrition situation

Malnutrition is a serious public health problem in Bangladesh. The CHT is an especially vulnerable part of the country. Since 2003, Helen Keller International (HKI) and the Institute of Public Health Nutrition (IPHN) of the Government of Bangladesh have reported that the prevalence of malnutrition in children under five years of age was very high in the CHT. Night-blindness, the first clinical sign of vitamin A deficiency, was seen in children in the CHT four times more often than in children in the rest of Bangladesh[4].

The changing food habits and patterns of the affected population puts then at added risk of poor nutrition. The lower quantities of food, the unknown quality of wild and alternative foods and the monotonous diet of food-aid and food shortage all contribute to lower food quality of macro- and micronutrients. At higher risk are pregnant women, lactating mothers and children under five years of age, with the higher risk among children 6-24 months.

[4] HKI/IPHN (2003). *Nutrition and Health Surveillance in the Chittagong Hill Tracts*. Nutritional Surveillance Bulletin No. 13, May 2003.

Currently, mothers are breastfeeding their children more to compensate for the food shortage, putting both the mother and the child at risk of severe acute malnutrition because of insufficient calories. The food provided to the children was mainly small amounts of rice, thus the quantity and the quality of the diet does not meet the nutritional requirement in terms of calorie, protein, fat, and micronutrients.

During the rapid assessment, only 40 children were screened for malnutrition, using the mid-upper-arm circumference (MUAC) measure, to detect children who were wasted and severely thin. No cases of severe acute malnutrition (MUAC <110mm) was noted but most of the children (75%) were in the high risk (MUAC 110-124mm) and moderate risk (MUAC 125-135mm) of malnutrition, which was consistent with other reports[5]. It is noteworthy, that over as short a period as two weeks these high risk children could all become severely malnourished. It is evident from other research and program expervience that its far more difficult and costly to rehabilitate severely malnourished children back to health than it is to prevent severe malnutrition[6]. More importantly severe malnutrition has a direct correlation with mortality. The children all appeared to be stunted, too short for their age, possibly because of the chronically poor dietary intake and frequent repeated illnesses.

Table 2 *Mid Upper Arm Circumference measurements by age (n = 40)*

AGE (yrs)	<110mm (n)	110-124mm (n)	125-135mm (n)	>135mm (n)
1	–	5	1	–
2	–	8	3	–
3	–	6	3	–
4	–	6	1	–
5	–	5	2	–
Total	–	30	10	–

Child feeding and caring practices

It appears that women are more involved with income generation activities outside their homes and in Jhum cultivation, so time for childcare, quality of care and breast-feeding cannot be properly ensured for their infants and young children. The absence of appropriate childcare practices will increase as intensified labor is required during the planting and harvesting season. The potential risk and inadequate safety of children may increase as children are kept home with their siblings and older community members.

Women in the CHT tend to breastfeed predominantly and for longer period (well up to age 4-5 years) then women in the rest of Bangladesh. However, mothers' general awareness of exclusive breastfeeding, importance of and timing of complementary feeding was low.

Health and health services

Although generally children looked well nutritionally, there were visible signs of micronutrient deficiencies with a number of children and women with cold sores, angular stomatitis, and running noses. There were also reports of increased incidences of diarrhea outbreaks, especially among the children and women; mothers attributed this to the

[5] MSF-Holland (2008). Food Security Assessment Report: Chittagong Hill Tracks, Sajek Union. April 2008. MSF-Holland: Dhaka.

[6] SCUS (2008). Community-based Management of Severe Malnutrition and Community Case-Management: Jibon O Jibika Pilot Study Presentation: Dr Ireen Chowdhury 7 April 2008

consumption of wild foods, monotonous diet of food aid, poor sanitation, and lack of safe drinking water. The three common illnesses reported were diarrhea, malaria, and respiratory tract infections (RTI) while dysentery and cases of measles were also reported.

Health services are non-existent in these remote and inaccessible areas where the affected communities are to be found. Immunization awareness and coverage was generally low. No health interventions (GOB/NGO) were available in the communities visited during the assessment. Oral Rehydration Solution (ORS) for the treatment of diarrhea was not available at the community or household level. Health service providers interviewed reported malaria as the most common disease in all age groups and alcohol and tobacco abuse highest amongst adult tribal men.

Charges for health care are high where households pay up to 200 taka for malaria treatment. In areas where access to the health facility is more than 3 hours away, communities depend on traditional medicine and only for serious cases report to the Government health facility. The UNICEF distribution of multiple micronutrient powders (Sprinkles) is being implemented in three Upazilas in each District however, none of the areas visited received this service. On clinical examination, anemia is prevalent among adolescents, postnatal and pregnant women

Water and Sanitation:

The main sources of drinking water in the assessment areas were springs, streams, hand dug wells, and rivers. The spring could be a good source of drinking water but they are not protected. Therefore, none of the above mentioned water sources are safe. The practice of boiling water before drinking is absent, although access to firewood was not a problem. Very few households had sanitation facilities, which are mainly used by children while adults use the forest or open places.

6. Key Findings

6.1 Environment and Ecology

- Strong anecdotal reports and evidence of bamboo flowering, fruiting and bamboo dying
- Strong anecdotal reports and evidence of increased rat populations, rat activity and destruction by rats
- Evidence and history of the bamboo flowering phenomena suggests that this has a 3-5 year cycle with far reaching impact on the bamboo industry, the ecology of the CHT and the lives and livelihoods of the affected communities

6.2 Livelihoods & Markets

- The CHT has limited livelihood options and alternatives
- The CHT depends heavily on Jhum cultivation and the bamboo industry
- The bamboo flowering phenomena and the subsequent ecological changes has far-reaching negative consequences for Jhum cultivation and the bamboo industry in Bangladesh

6.3 Food and Food Security

- Food and seed stocks are in limited supply and will be soon exhausted in the severely affected areas
- Food habits and patterns have been negatively affected resulting in less food being consumed in both amount and frequency
- Food quality has being negatively affected by the food shortage, the monotonous food-aid diet, the unknown quality of wild and alternative foods
- Food aid and relief to affected communities in remote and isolated areas as being very low or not at all

6.4 Nutrition and Health

- Women and children are visibly compromised and showing signs of poor health and nutrition status
- While no case of severe acute malnutrition was detected the vast majority of screened children are in the high to moderate risk category for malnutrition
- There are no health or primary health care services in these remote and isolated affected areas

7. Conclusions

The findings of the rapid assessment indicate that generally very little is known about the CHT region and its inhabitants. It is evident that these very remote communities are marginalized and isolated. Given their limited resources and the hardship of their existence, these remote communities have developed very effective coping strategies however, the consequence of the bamboo flowering phenomena has exacerbated their already fragile existence. This slow onset disaster will have catastrophic consequences on the ecology of the CHT, the bamboo industry and the lives and livelihoods of the CHT affected communities if appropriate and timely action is not taken.

8. Recommendations

8.1 Environment and Ecology

- Promotion of bamboo fruit collection and bamboo seed preservation
- Effective management of bamboo resources through
    - Natural regeneration (allowing the ecosystem to restore itself)
    - Aided regeneration (establishing bamboo plantations)
- Value-added bamboo-based commodities development such as high-grade parquet flooring blocks, tiles, furniture and boards
- Enhanced marketing efficiency of bamboo and other non-timber forest product
- Integration of bamboo cultivation with timber and other non-timber forest products
- Re-forestation and natural resource management in the line of co-management protection programs

8.2 Livelihoods and Markets

- Protect and invest in the bamboo industry
- Protect and invest in jhum cultivation through a comprehensive agriculture program i.e. seed distribution and agriculture technology transfer
- Develop alternative livelihoods through value-added bamboo products and handicrafts

8.3 Food and Food Security

- Provision of at least 6 months general food aid to affected communities
- Provision of a full food basket of local and culturally sensitive foods to meet the requirements of children under 5, pregnant and lactating women of the affected communities
- Implementation of a transparent food aid distribution system
- Distribution of food aid on the basis of community vulnerability mapping
- Distribution and monitoring of food aid distribution through decentralized and community structures
- Provision of Jhum seed and agricultural support to re-establish and ensure productive Jhum cultivation
- Implementation of a rat-control program to reduce and control the rat infestation

- Implement a comprehensive food security and nutritional surveillance system to monitor and evaluate the progress of the situation and the interventions to address the situation for the duration of this problem 3-5 years
- Establish coordination structures, incorporating concern government and non-government agencies including Army with clear roles and responsibilities

8.4 Nutrition and Health

- Implement a comprehensive food security and nutritional surveillance system to monitor and evaluate the progress of the situation and the interventions to address the situation for the duration of this problem 3-5 years
- Actively seek out severely acutely malnourished and high-risk children through community-based screening with MUAC
- Provision and expansion of 'Sprinkles' (Multiple Micronutrient Powder) distribution to children under 5, pregnant and lactating women in the affected communities
- Provide community-based primary health care services
- Provide community-based nutrition promotion program for improved health and nutrition
- Strengthening of the primary health care services at the community level (expansion of Para Centers to affected areas as a longer term response)
- Improve access to and promote safe drinking water & sanitation practices

9. Challenges

- Logistics, the biggest challenge given the poor road and communication
- Inaccessible small communities that take many hours and even days to reach
- Political instability and social insecurity
- Multi government structure
- Language barriers

10. Limitations

This was a very short and disorganized assessment mission. Most of the severely affected areas were inaccessible for the teams, so the respondents from the affected community were requested to come to a central point to be interviewed, making the respondent selection inappropriate and a high respondent-bias. A suitable and condusive environment for data collection could not be ensured, especially given the high visiablity and presence of the police and army. The number of children under five years of age was inadequate to make clear judgment on nutritional status. Because of very limited time for data collection and the inability to reach/ observe the severely affected areas, most of the information given by the different respondents could not be verified or crosschecked.

Annex 1: Rapid Assessment Team

Participant List—Rangamati Team

Rangamati		
1.	Pulokesh Mondal	Assistant Chief, Ministry of Environment & Forestry
2.	Lee Briggs	Confidence Building Advisor, UNDP-CHTDF
3.	Chantell Witten	Nutritionist, HKI/Nishorgo
4.	Jeff Root	Rodent expert, USDA
5.	Jo Lesser-Oltheten	Economic Growth officer, USAID
6.	Patrick Nelon	Civil Affairs Specialist, US Embassy
7.	Dan Biers	Officer, US Embassy
8.	Paul Sabatine	Programme Officer, USAID
9.	Azharul Majumder	Environment Specialist, USAID
10.	Khairul Alam	Bamboo Specialist, Nishorgo
11.	Abdul Kader	M & E Specialist, HKI/Nishorgo
12.	Shawkat Hossain	Livelihood Specialist, Arannayk Foundation
13.	Md. Rafiqul Islam	Project Implementation Officer Asian Development Bank
14.	Ushatan Talukder	Member, Regional Council
15.	Shadek Ahmed	Land Officer, Rangamati Hill District Council
16.	S. M. Abdullah Al Mamun	DRRO Rangamati
17.	Kajal Talukder	District Training Officer, Dep. of Agriculture, Rangamati.
18.	Tariq Awan	WFP
19.	Elora Chakma	WFP
20	Sifayet Ullah	DRF Expert, UNDP
21	U Ba Swee Chowdhury	UNICEF

Participant List—Bandarban Team

Bandarban		
1.	Nasheeba Selim	Programme Officer, UNDP-CHTDF
2.	Sudatta Chakma	Deputy Director, Ministry of Disaster Management
3.	Josephine Ippe,	Nutrition Project Manager, UNICEF
4.	Regional Council Rep (1)	
5.	Bandarban Hill District Council Rep. (1)	
6.	DRRO Bandarban (1)	
7.	Siddiqul Islam	WFP, Chittagong Hill Tracts
8.	Ahmed Nazri Zakaria	Relief Delegate, Red Cross
9.	Mohsin Uddin Ahmed	Health Officer, Red Cross
10.	Peter Duncan-Jones	First Secretary, AusAID, Australian High Commission
11.	Leda Tyrrel	Secretary, AusAID, Australian High Commission
12.	Shaheen Mahmud	Senior Program Manager, AusAID, Australian High Commission
13.	Tania Cass	WFP
14.	Deputy Director, Dep. Of Agriculture	

Participant List—Khaghrachari Team

Khaghrachari		
1.	Prasenjit Chakma	Chief, UNDP-CHTDF
2.	Abul Kashem Md. Borhanuddin	Deputy Secretary (DS), MoCHTA
3.	Md. Zohiruddin Ahmed	Deputy Secretary, Ministry of Agriculture
4.	Siddiqul Islam	WFP, Chittagong Hill Tracts
5.	Maria Katajisto	WFP, Dhaka
6.	Khaghrachari Hill District Council Rep. (1)	
7.	DRRO Rep.(1)	
8.	Kriti Nishan Chakma	DANIDA Expert
9.	Regional Council Rep (1)	
10.	Deputy Director, Dep. Of Agriculture	
11.	Dr. Mirza Mashrur Ahmed	Programme Officer, UNICEF
12.	Mohsin Ali	Nutrition Project Officer, UNICEF

Annex 2: Rapid Assessment Schedule

April 8th-April 12th, 2008

Rangamati team

Field Areas:

1. Shakrachari para, Union: Aymachora, Upazilla: Borkol, Rangamati
2. Upazilla: Bilaichari, Rangamati
3. Ruma Upazila, Bandarband

Schedule:

April 8, 2008 (Tuesday)

- 1.00 pm: Arrival at Rangamati.
- Lunch
- 2.00 pm: Briefing session for Rangamati team.
- 3.00 pm: Meeting with the Regional Council representative, Chairman, Hill District Council.

April 9, 2008 (Wednesday) Ruma Team departs.

- Field Visit to Shakrachari para, Aymachora Union, Borkol.
- Evening: Meeting with Deputy Commissioner, Rangamati

April 10, 2008 (Thursday)

- Filed Visit to Bilaichari: meetings with UP chairman, Headman and Karbari in Bilaichari
- Ruma Team travel to 3 villages outside Ruma

April 11, 2008 (Friday)

- 2.00 pm: Debriefing Session with all participants (including the Bandarban and Khagrachari team members)

1. Field Findings
2. Identification of immediate needs for the affected population
3. Identification of long-term rehabilitation plan.
4. Prepare Report Outline and designate report writing responsibilities.

April 12, 2008 (Saturday)

- Half day Workshop with local leaders, government officials, and local NGOs. (Biplab Chakma will provide the details as soon as possible)
- Evening: Return to Dhaka

Annex 3: Rapid Assessment Tools

The Sphere Nutrition Checklist Questions were broken down into 6 categories:

1. What information on the current nutritional status exists? (e.g. any recent nutrition surveys, feeding centre statistics, health centre statistics)
2. What is the risk of malnutrition related to poor public health and the food insecurity? (any disease outbreaks, estimated measles and Vitamin A vaccination coverage, mortality rates, seasonal disease – malaria, diarrhea etc)
3. What is the risk of malnutrition related to inadequate care (change in women's work patterns, change in composition of the household, infant feeding practices, access to baby food)
4. What is the risk of malnutrition related to reduce food access? (how do households normally access food, how has this been affected by the shock , how many meals are households able to afford in a day, how does this compare to normal times, how do they get money, are there any markets available, what is for sale, what prices etc)
5. What formal and informal local structures exist through which potential interventions could be channeled (capacity of MoH, other local international Organizations, UN agencies, CBO, what is the available in the food pipeline, are the population likely to move in the near future as a result of the current food insecurity situation
6. What nutrition or community interventions were in place before the shock that could be supported?

Tally Sheet for Rapid MUAC Screening of Children 1- 5 years of Age.

Name Division_____ Upazila/Village:_____

Date:_____ Name of Screener:_____

Children under 5years (MUAC only to be measured on children 1 year and above or 75-110cm standing)

<11cm	11-12.4cm	12.5-13.4cm	>/=13.5cm	Edema	Clinical signs (under 1 yr)
Total	Total	Total	Total	Total	Total

Total number of children screened: _____

Total number children referred for Hospital/Health

Checklist for FGDs

Situational Analysis:

1. What has been the extent of damage in the area?
    a. # of lives lost,
    b. # of people suffering from starvation
    c. # of people suffering from ill health consequences.
    d. # of deaths from rat bites
    e. Amount of damage to the crops?
    f. The types of crops that have been damaged?
2. When did the bamboo flowering start in the region?
3. When did the rat plague start in the region?
4. Are there any new areas that are being affected by the bamboo flowering?
5. Are there any new areas that are being affected by the rat plague?
6. What were the warning signs?
7. Did the community take any preventive measures?
8. If yes, please list all preventive measures taken by the community.
9. Who were the most vulnerable?
10. What kind of assistance has been provided to them?
11. How much of each type of assistance has been given to them?
12. What is the current situation in terms of the continuation of the rat plague in the area?

Food crisis:

1. Livelihood strategies before and after the crisis
2. Sources of food now?
3. Different foods being consumed now?
4. Sources of income now?
5. Any other threats?

Health:

1. What are the risks for children and vulnerable groups of malnutrition related to the rat plague?
2. What is the risk of malnutrition related to food crisis and shortage of food?
3. What are the most severe illnesses in the area and has the rat plague had any impact on these or any other illnesses/
4. What are the health services available for treatment?
5. Are there already any foreseeable health diseases from the rat plague?

Response to the Emergency:

1. What has been the immediate response to the crisis?
2. Who have been the organizations that have responded immediately? Please list all organizations.
3. How have they responded to the emergency? Please list all types of assistance such as food, rat traps etc.
4. What have been the gaps in responding to the crisis?
5. What should be done to address this issue? Please list concrete actions.
6. Who are the local authorities that have responded to the emergency? Please list all concerned parties.
7. What role has the local authorities played in relief distribution?
8. What type of assistance is seen as the most important currently?

Forward Looking:

1. What are the local structures that exist in the affected regions through which potential interventions could be channeled?
2. How quick and effective delivery can be ensured?
3. Are there any overlaps in service delivery that could be addressed through this mission?
4. Given the current situation, what are the medium term needs for the community? Please list all needs.
5. Given the current situation, what are the long-term needs for the community? Please list all needs.
6. Long-term solutions—based on the needs of the community identify long term recovery strategies.
7. Identify a package of assistance that will contribute to sustainable recovery.

Needs Assessment Mission
For
Bamboo Flowering, Rat Plague and Food Scarcity Emergency in the Chittagong Hill Tracts, Bangladesh

April 8th – April 12th, 2008

General FGD with Officials						
District	Upazila	Population. Projected mid, 08	Not affected	Moderately affected	High/ Severely Affected	% of Jhum cultivations of Total Population
RANGAMATI	BHAGHAICHAIR	92,185				
RANGAMATI	BARKAL	47,187				
RANGAMATI	BELAICHARI	28,227				
RANGAMATI	JURACHARI	26,105				
RANGAMATI	KAPTAI	77,805				
RANGAMATI	KAWKHALI	54,864				
RANGAMATI	LANGADU	76,146				
RANGAMATI	NANIARCHAR	42,298				
RANGAMATI	RAJASTHALI	25,861				
RANGAMATI	SADAR	109,949				

General FGD with sub-groups							
District	Upazila	Union	Popn. Projected mid, 08	Not affected	Moderately affected	High/ Severely Affected	% of Jhum cultivations of Total Population
RANGAMATI	BHAGHAI CHARI	Bhagai Chari	8,553				
RANGAMATI	BHAGHAI CHARI	Banglaltali	13,061				
RANGAMATI	BHAGHAI CHARI	Kedarmara	10,071				
RANGAMATI	BHAGHAI CHARI	Marishya	10,117				
RANGAMATI	BHAGHAI CHARI	Rupakari	8,792				
RANGAMATI	BHAGHAI CHARI	Sajek	25,668				
RANGAMATI	BHAGHAI CHARI	Sarboatali	10,591				
RANGAMATI	BARKAL	Aima Chara	7,210				
RANGAMATI	BARKAL	Bara Harina	5,015				
RANGAMATI	BARKAL	Barkal	6,131				
RANGAMATI	BARKAL	Bhushun Chara	14,662				
RANGAMATI	BARKAL	Shublong	10,985				
RANGAMATI	BELAI CHARI	Belai chari	7,785				
RANGAMATI	BELAI CHARI	Farua	13,265				
RANGAMATI	BELAI CHARI	Kangara Chari	5,668				

Key Informant Interview

1. Livelihoods:

1.1 What are the main livelihoods in this area (min 3- mix 5)

1.2 How do people get their food in the area? (main sources)

1.3 How do people get their income/ cash in the area? (main sources)

1.3.1 What are the usual employment opportunities in the area?

1.3.2 Have these employment opportunities been affected due to the rodent infestation?

1.4 Please quantify (using percentages) sources of food: (for typical Jhum cultivating Households)

		Before Rodent Infestation (%)	Now (%)
Source of food (%)	a. Own production		
	b. Market purchases		
	c. Gathering and/or fishing		
	d. Social networks (gift from friends, family, neighbors)		
	e. VGD other safety nets		
	f. Emergency Relief (VGF etc)		
		100%	100%

1.5 Please quantify (using percentage) sources of income: (for typical Jhum cultivating households)

		Before Rodent Infestation (%)	Now (%)
Proportion of cash income of the household from sources (%)	a. Sale of agricultural product		
	b. Sale of forest product (wood)		
	c. Sale of livestock		
	d. Wage income		
	e. Collection of bamboo		
	f. Salary income		
	g. Business/ trade income		
	h. Remittances		
	i. Relief/ Aid		
	j. Others		
		100%	100%

Agricultural Crops and Seasonality:

1.6 What are the main staple crops grown in the area?

1.7 When are these staple crops harvested?

1.8 What are the main cash crops grown in this area?

1.9 When are these cash crops harvested?

1.10 Please estimate the total crop production amount lost to rate in this area and provide crop specific breakdown.

2 Population

Vulnerable groups:

2.1 Can you tell us about/ list the specific vulnerable groups in the area amongst the affected households? (Possible answer: Female headed households, large size households, jhum cultivators, minority ethnic groups, pregnant women, nursing mothers, young children etc.)

3. Food Availability and Markets:

3.1 How well are the markets functioning in this area?

3.2 Is food available in adequate supply?

3.3 Are there any reports of food shortages in the market?

3.4 If yes, of which commodities?

3.5 Do affected families have food stocks? _____ yes, _____no

3.6 If yes, what commodities?

3.7 If yes, how long would these last?

3.8 How long does it take you to reach the district market by walking?

3.9 How long does it take you to reach the upazilla market by walking?

3.10 How long does it take you to reach the local market (hat) by walking?

3.11 How much does it cost to get to the local (hat) market?

4 Food Access and Markets:

4.1 Can you tell us about food price trends in the market; especially regarding staples e.g. rice?

4.2 Price 1 kg. (Variety Atop)

Now_____(TK)
Before the crisis_____(TK) date_____
One week ago_____
one month ago_____
three months ago_____

4.3 What is your expectation on food prices during the next 3 months? (check one)

4.3.1 Prices will stay the same ___
4.3.2 Prices will rise ___
4.3.3 Prices will fall ___

4.4 Are there any reports on food aid ending up in the market? ___yes ____no

4.5 If yes, what type/ commodity and how much?

4.6 If yes in large quantities, has food aid affected the market price?

5 Food Utilization

5.1 What are the most common foods consumed in this area?

5.2 Have there been any reports of changes in diet?

5.3 If yes, what type of changes?

5.4 Do people have adequate access to clean water or cooking? ___yes ___no

5.5 Do people have adequate access to cooking fuel? ____yes _____no

5.6 Does lactating mother usually breast-feed? ____yes _____no

5.7 If yes, how many (percentage)?_____%

5.8 When does the breast-feeding normally stop (age of child)? _____ Years

5.9 Is adequate supplementary food available for infants & yang children? _ _yes __no

6 Coping strategies

6.1 If this area was affected by the rodents, how are people coping? What specifically are they doing?

7 Assistance

7.1 Has there been any assistance to households affected by the rodents? ___yes ___no

7.2 If yes, who provided the assistance (GOB/ NGOs/ UN/ Others)

7.3 If yes, what type of assistance (food, cash, other e.g. rat traps)

7.4 If yes, how many households received assistance, how much (rations), how often?

7.5 Are there development or safety net programs in this area? (i.e. VGD, Others)__yes __no

7.6 If yes, please describe the types of programs, numbers of families benefiting and types of assistance?

8 Priorities the types of assistance needed:

What are the three most urgent needs of this community? 1= cash 2= food 3= drinking water 4= medical/health support 5= sanitation 6= others (specify) 7= don't know			
What are the three most important recovery needs of this community? 1= agricultural inputs 2= agricultural equipment 3= irrigation 4= trees 5= roads infrastructure 6= school 7= health facilities 8= income generating activities/ vocational training 9= others (specify)			