2012 CAMBODIA POST-FLOOD RELIEF AND RECOVERY SURVEY

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CAMBODIA POST-FLOOD RELIEF AND RECOVERY SURVEY

May 2012

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ABBREVIATIONS

ADB	Asian Development Bank
ANOVA	Analysis of Variance
ARI	Acute Respiratory Infection
BMI	Body Mass Index
CI	Confidence Interval
CDHS	Cambodia Demographic and Health Survey
CSES	Cambodia Socioeconomic Survey
CSI	Coping Strategies Index
DEFF	Design Effect
ENA	Emergency Nutrition Assessment
EPI	Expanded Programme on Immunisation
FCS	Food Consumption Score
FGD	Focus Group Discussion
GAM	Global Acute Malnutrition
GIS	Geographic Information System
GPS	Global Positioning System
GS	Growth Standard
HAZ	Height-for-Age Z-score
HFIAP	Household Food Insecurity Access Prevalence
HFIAS	Household Food Insecurity Access Scale
HHS	Household Hunger Scale
HKI	Helen Keller International
IYCF	Infant and Young Child Feeding
IQR	Interquartile Range
MAFF	Ministry of Agriculture, Forestry, and Fisheries
MAM	Management of Acute Malnutrition
MDG	Millennium Development Goal
MFI	Microfinance Institution
MOP	Ministry of Planning
MUAC	Mid-Upper Arm Circumference
NCDM	National Committee for Disaster Management
NGO	Non-Governmental Organisation
PCA	Principal Component Analysis
PLW	Pregnant and Lactating Women
PPS	Probability-Proportional-to-Size
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SMART	Standardised Monitoring and Assessment of Relief and Transitions
SMS	Short Message Service
SPSS	Statistical Package for Social Sciences
UNICEF	United Nations Children's Fund
VHV	Village Health Volunteer
WASH	Water, Sanitation, and Hygiene
WAZ	Weight-for-Age Z-score
WFP	United Nations World Food Programme
WHO	World Health Organization
WHZ	Weight-for-Height Z-score

FOREWORD

The immense power and destructiveness that natural disasters are capable of were on full display during the floods that affected Cambodia in 2011. Families were displaced from their communities, entire wet season crops were devastated, farmers, fishermen, and day labourers all saw their livelihoods upended. Many households already operating on a thin margin were forced to cope with an additional problem they did not create and for which they had few options to better prepare.

The 2012 Post-flood Relief and Recovery Survey is an attempt to understand the different ways that households were affected by the floods, to learn how their coping strategies are changing, evolving over time to more effectively and efficiently meet their needs, and to uncover the preparedness and response gaps that made their coping efforts all the more necessary.

Yet, valuable as these lessons are, they cannot serve as an end unto themselves. The development community—Government, NGO, and UN agencies—needs to learn from and act upon these results to better prepare and assist those that will endure future floods. When the cause, the impact and the needs are as clear as for flood disasters and their victims, then the development community must show it can jointly engage with affected communities by using the lessons learned from this event, develop appropriate recovery programmes and improve emergency preparedness plans so that affected populations might be better protected when future disasters occur.

The 2012 Post-flood Relief and Recovery Survey findings represent the great efforts of those dedicated to improving the safety and coping ability of households throughout the country. A very sincere appreciation goes out to the survey teams, coordinating members, and, not least, to the communities for giving their valuable time in the service of such an important exercise.

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UN World Food Programme
On behalf of the seven participating organizations

H.E. Dr. Nhim Vanda
Senior Minister in Charge of
First Vice President
National Committee for Disaster Management

ACKNOWLEDGEMENTS

The 2012 Post-flood Relief and Recovery Survey was a joint initiative by Action Aid, Asian Development Bank (ADB), DanChurchAid/ACT Alliance, Danish Red Cross, Save the Children,UNICEF and World Food Programme, in collaboration with the National Committee for Disaster Management (NCDM).

Very special thanks go to NCDM, which provided valuable logistical and coordination support at various stages of the survey. In addition, NCDM hosted a preliminary findings workshop in March 2012 that greatly improved the overall value of the survey results, and co-hosted the national dissemination of the survey report and findings in May 2012.

The Helen Keller International Country Office in Phnom Penh played a critical role in organizing and implementing the survey: Zaman Talukder, Hou Kroeun, and Ly SokHoing ensured that the survey progressed efficiently and according to the highest of standards. The eight teams of enumerators who worked tirelessly, often in less than desirable conditions, to collect this data in a timely fashion are also gratefully acknowledged.

Thanks is also owed to the WFP Country Office in Phnom Penh; particular thanks is extended to Yav Long for his assistance with the survey training, Khmer translations, and logistical support,Chanvibol Choeur for his expertise with GIS mapping and support to sampling frame construction, John Jeong for his assistance analysing the market assessment data and invaluable contributions to the interpretation of survey findings,and Kurt Burja for his support with the overall survey design and navigating the countless major and minor obstacles that invariably challenge any large-scale, multi-partner survey.

Finally, several other people immeasurably improved this report by reading and providing feedback on various drafts, and the author is grateful for their time: Belinda Abraham, Sarthi Acharya, Joel Conkle, Ammar Kawash, Lindsey Horton, and Isidro Navarro.

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EXECUTIVE SUMMARY

In September 2011, above average rainfall resulted in severe flooding along the Mekong and Tonle Sap river basins, affecting 18 of Cambodia's 24 provinces. The floods were reportedly the worst Cambodia had experienced in more than a decade.

As immediate relief efforts by government agencies, the Cambodian Red Cross, and development partners gradually gave way to longer-term recovery considerations, it was agreed that an expanded investigation into the floods' effects on food security and nutrition, health, water and sanitation, household assets and economic situation was needed to better identify the most appropriate emergency preparedness and recovery phase response options.

A two-stage cluster survey was conducted from January 10–29, 2012 and collected representative data for areas within 250 meters of the peak-flood boundary in the Plains and Tonle Sap ecological zones. In total, information was collected on 2,397 households and 1,282 children aged 0-59 months from 164 villages in these areas considered most affected by the floods.

An estimated 64,000 households living within 250 meters of the peak-flood boundary were displaced from their homes for at least one night as a result of the floods; this includes some 19,600 households that were displaced outside of their home communities. Survey findings show that the floods disproportionately displaced the poorest households: nearly 20 percent of the poorest households living in these areas were forced from their homes compared to just one percent of the richest households. Between 5–10 percent of households living in these areas experienced damage to their housing (flooring, walls, and roofing) as a result of the floods. At the time of the survey, most households reported having access to their usual water and sanitation sources.

Just less than 10 percent of households had a member migrate out since the floods, though more than half of these reported that the main reason was due to the flood. Migration from households was most prevalent among the poorest households, and those considered most affected by the floods; the findings suggest that these migrations were driven in large part by household economic pressures.

The most common household assets destroyed by the floods in these areas were fishing nets (33 percent), boats (21 percent), and bicycles (19 percent). Households relying on fishing for their livelihoods appeared particularly affected by the floods, as were those dependent upon agricultural and non-agricultural wage labour: more than two-thirds of these households reported that their income had decreased since the floods. The economic hardships currently facing these households are further exemplified by the finding that, among the poorest and most affected households with children aged 5–14 years, between 8–15 percent reported that their children had done work for someone else or for the family business in the week prior to the survey.

The floods' impact on agriculture in the areas of the Plains and Tonle Sap considered most affected was extensive. There is some evidence that households in these areas were less likely to plant wet season rice compared to households in the rest of the ecological zones due to historical weather and environmental conditions. However, of the households growing 2011 wet season rice, 90 percent reported that their crop had been damaged in some way; for 30 percent of households, the damage was so complete that they were not able to harvest any rice. The average yield for households who did manage to harvest 2011 wet season rice was 1,100 kg/ha—less than half the average yield reported for these zones in 2010.

More than two-thirds of households owning livestock reported losing some animals as a result of the 2011 floods. The animals most likely to have died during the floods were chickens, though many cows were also

lost as a result. Counter to anecdotal evidence, half of the households fishing for wild fish reported the current catch was less than that from a year ago.

Nearly 40 percent of households living in these areas reported having taken out a loan as a direct result of the floods. The poorest households were disproportionately forced to take on debt: nearly 50 percent had a flood-related loan compared to just 22 percent of the richest households. The most common reasons reported for taking on flood-related loans were to buy food, agricultural inputs, and for business development. The main sources of loans to households—microfinance institutions (MFI), private lenders, and banks—differed greatly on their terms for borrowing: the costs of financing from private lenders were nearly twice that of MFI and banks. Among the three main sources of lending, the poorest households were least likely to have accessed financing from banks, and most likely to have used private lenders.

Findings related to household food security suggest that the situation at the time of the survey was stable. The Food Consumption Score, which is a measure of the overall quality and diversity of diet, was relatively high for all households the week before the survey. The Household Food Insecurity Access Scale, which better captures food access difficulties, found 15 percent of households were severely food insecure. All measures of household food security captured in the survey were significantly associated with household wealth and the extent to which households were affected by the floods, such that the poorest households and those considered most affected scored lowest on these indices.

The health and nutrition status of mothers aged 15–49 years and children aged 0–59 months were also stable, though underlying factors suggest these measures could deteriorate should the currently tenuous financial situation of many households worsen. Thirteen percent of non-pregnant mothers were considered thin according to Body Mass Index. Overall, 87 percent of children aged 6–59 months in these areas had received vitamin A supplementation in the 6 months prior to the survey. Nearly a quarter of all children aged 0-59 months (22 percent) had suffered from diarrhea in the two weeks prior to the survey, though the proportion of these children taken for treatment to a health facility or provider (64 percent) suggests that, at least at the time of the survey, the floods' had not limited access to the formal health system.

Height and weight measurements were collected from 1,116 children aged 6–59 months. According to the 2006 WHO Growth Standards, the prevalence of wasting (low weight-for-height) among these children was 5.6 percent (95% CI: 4.0–7.2); just 0.3 percent of children in these areas were severely wasted. Thirty-seven percent of these same children were stunted (95% CI: 33.9–40.3), and 23.3 percent were found to be underweight (95% CI: 20.4–26.1).

Based on the findings from the 2012 Post-flood Relief and Recovery Survey, a set of recommendations, reviewed and discussed by all survey partners, are proposed to government and development stakeholders that address high priority areas for future emergency preparations and recovery phase programmes:

1) Existing emergency communication plans should test and strengthen, or implement if they do not already have, a word-of-mouth system to ensure optimal coverage and saturation (e.g., from commune chief to village chief/VHV or someone else within the village dedicated for such a purpose). Moreover, emergency partners should consider adding and testing an SMS system that takes advantage of households' high ownership of mobile phones.

2) Partners interested in helping the poorest households and reducing the impact of future natural disasters (e.g., household displacement and its associated economic losses) are encouraged to support the poorest households' ability to improve their housing structures.

3) WASH-related preparedness and recovery efforts will best be directed towards hygiene education, as well as strategic prepositioning and continued distribution of soap and water treatment materials in high-risk and flood-affected areas.

4) Recovery programmes that aim to alleviate financial pressures by directing assistance through the labour market (i.e. public works programmes) should target the poorest households and those considered most affected by the floods. These programmes are encouraged to explore multi-faceted channels and more frequent disbursement modalities for this assistance.

5) In the short-term, the price paid to farmers for dry season paddy should be closely monitored: substantial deviations from historical prices will undoubtedly affect farmers' ability to meet their increased financial burdens resulting from the floods. In the medium- to long-term, more robust protection mechanisms are needed for small-scale farmers to prevent them from resorting to negative coping strategies to deal with external shocks.

6) The newly standardized health benefits package for households qualifying for social safety net programmes (IDPoor, Health Equity Funds, etc.) should be widely communicated throughout the health system, to sub-national and local governments, and eligible house-holds to ensure optimal programme participation.

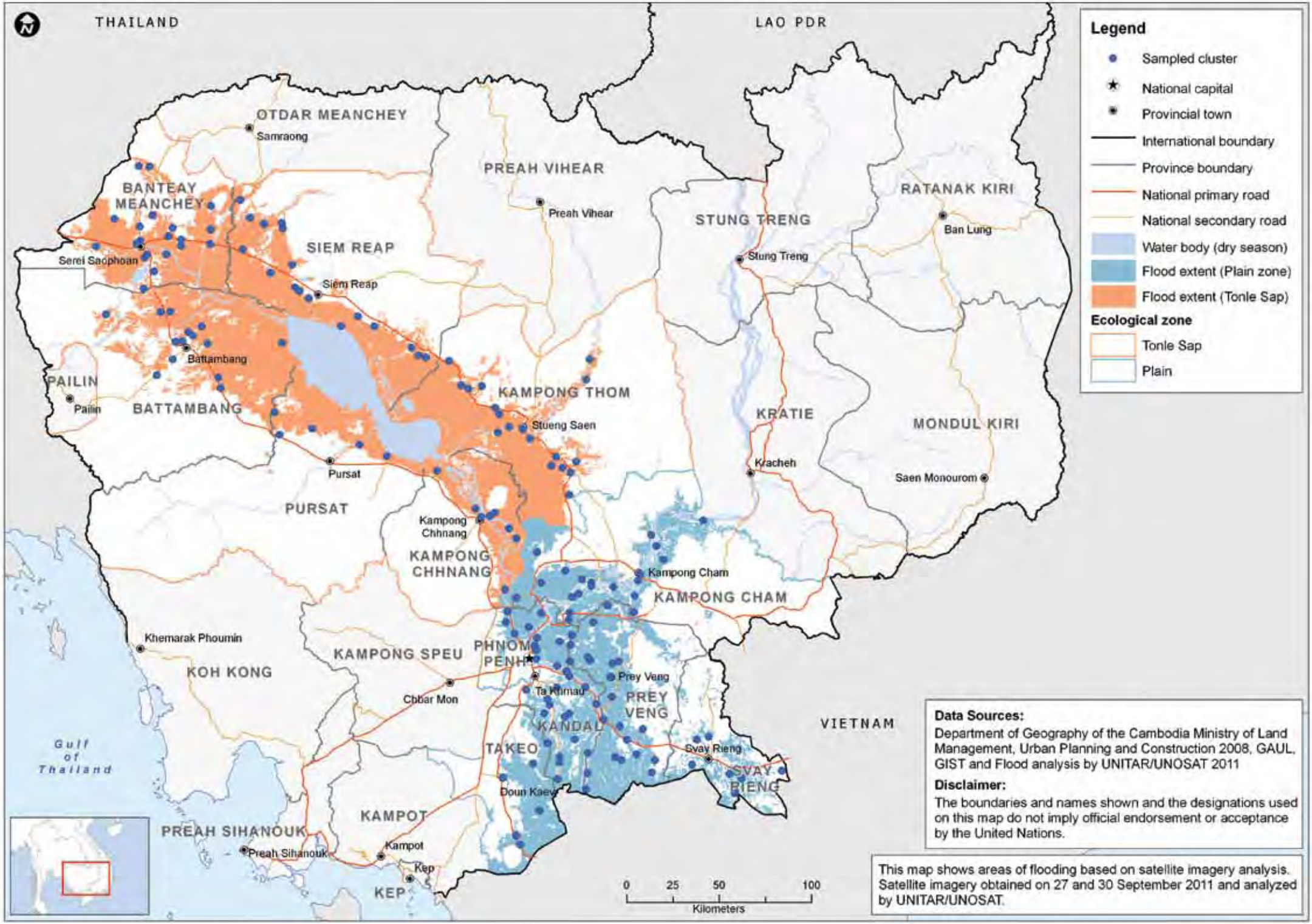
7) Recovery programmes that seek to protect children and to improve school attendance should be designed in ways that recognize the economic context within which households, particularly those affected by the floods, are being forced to rely upon child labour.

8) Recovery programmes that seek to improve households' investment in productive activities (agricultural as well as self-employment/small business) with financial assistance will see the greatest marginal benefits from the poorest households.

9) Additional financial support, in the form of targeted social safety net activities, is needed by the poorest and most vulnerable households to protect against the deterioration of the health and nutritional status of their families, particularly children under 5.

10) The continued provision of preventative nutrition support (e.g., vitamin A supplementation, micronutrient fortification of foods, and home gardening projects, among others) is considered a vital gap-filling strategy for protecting these households and children.

11) Disaster preparedness plans, and future relief phase responses in general, will do well by aiming to mitigate an external shock's impact on livelihoods and incomes through targeted supports (agricultural inputs, credit for self-employed, etc.) and financial assistance for large monthly expenses.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Provincial town
International boundary
Province boundary
National primary road
National secondary road
Water body (dry season)
Flood extent (Plain zone)
Flood extent (Tonle Sap)
Ecological zone
Tonle Sap
Plain
Data Sources:
Department of Geography of the Cambodia Ministry of Land Management, Urban Planning and Construction 2008, GAUL, GIST and Flood analysis by UNITAR/UNOSAT 2011
Disclaimer:
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
This map shows areas of flooding based on satellite imagery analysis. Satellite imagery obtained on 27 and 30 September 2011 and analyzed by UNITAR/UNOSAT.

SECTION

1 INTRODUCTION

1.1 BACKGROUND

In September 2011, above average rainfall resulted in severe flooding along the Mekong and Tonle Sap river basins, affecting 18 of Cambodia's 24 provinces [1]. The floods were reportedly the worst Cambodia had experienced in more than a decade.

Cambodia's National Committee for Disaster Management (NCDM) estimated that more than 350,000 households were affected and 50,000 households were displaced by the flooding [2]. The floods affected an estimated 3,800 kilometers of roads, 1,200 schools, and more than 100 health centers. More than 400,000 hectares of cultivated land were affected and 270,000 hectares reportedly destroyed by the flooding [3].

In the immediate aftermath, rapid assessments in the most affected provinces found that the floods had negatively impacted household food stocks and normal livelihood activities, potentially reducing rural households' ability to access food [4]. Destruction of roads, schools, and health centers, as well as village-level infrastructure, created concern that access to basic services had been severely disrupted in flooded areas. Moreover, according to the Ministry of Planning's Identification of Poor Households Programme, nearly a third of rural households are classified as poor [5], the implications of which were that many households in flood-affected provinces had a low capacity for coping with external shocks in general, and therefore would have been especially vulnerable to the effects of the 2011 floods.

As immediate relief efforts by government agencies, the Cambodian Red Cross, and development partners gradually gave way to longer-term recovery considerations, it was agreed that an expanded investigation into the floods' effects on food security and nutrition, health, water and sanitation, household assets and economic situation was needed to better identify the most appropriate preparedness and recovery phase activities.

1.2 SURVEY OBJECTIVES

The main objectives of the Cambodia Post-flood Relief and Recovery Survey were to:

1. Collect timely information on household- and individual-level food security, nutrition, health and livelihood measures among a representative sample of households in flood-affected provinces:

- Food security (food stocks, food consumption, dietary diversity, access to markets, access to food assistance)
- Health and nutrition (child and maternal anthropometry, infant and young child feeding practices, recent morbidity, access to health services)
- Water, sanitation, and hygiene (access to safe water and adequate sanitation facilities, water treatment, hand-washing and soap)
- Livelihoods (current income sources, household expenditures, loans and debt)
- Assets (damage to housing, village infrastructure, livestock, farm land)
- Coping capacity (type and severity of coping strategies)

2. Identify household and community needs, inform the timing of transition from relief to recovery phase activities, and recommend areas of high priority for emergency preparation and recovery programmes to government and development stakeholders.

SECTION

2 METHODOLOGY

2.1 SURVEY DESIGN

The Post-flood Survey was designed to provide representative information on households and children under-5 living within 250 meters of the peak-flood boundary as photographed by satellite from September 27–30, 2011.[1] For data quality and logistical reasons, the geographical coverage of the survey was limited to flood-affected provinces in the Plains and Tonle Sap ecological zones.[2]

The survey employed a two-stage cluster design and was stratified by ecological zone. Eighty-two villages were sampled from each zone for a total of 164 villages. Within each village, fifteen households were randomly sampled according to the updated EPI method recommended by the SMART methodology; this household sampling method was used because time and budgetary limitations did not allow for a detailed household listing required by a simple or systematic random sample [6].

Table 1. Provinces for Post-Flood Survey

Tonle Sap (#villages)	Plains (#villages)
Siem Reap (17)	Kampong Cham (20)
Pursat (5)	Kandal (29)
Kampong Thom (18)	Prey Veng (20)
Kampong Chnnang (8)	Svay Rieng (7)
Battambong (14)	Takeo (6)
Banteay Meanchey (20)	

2.2 SAMPLE SIZE

The sample size of households required for each ecological zone was determined by calculating the minimum sample required for various individual indicators of interest.

Equation 1. $N = [DEFF * 1.96^2 * P * (1-P)] / [(a * d^2)]$

N: minimum sample of households required

DEFF: estimated design effect

P: estimated prevalence of indicator

a: estimated non-response

d: desired precision

Table 2. Sample Size Caculations

Target Group	Estimated Prevalence	Estimated DEFF	Desired Precision	Number Individuals Per HH	Estimated HH Non-Response	Total HH
Children 6-59 Months						
Wasting	0.109	1.20	0.03	0.46	0.88	1228.9
Stunting	0.399	1.35	0.05	0.46	0.88	1228.9

The indicator requiring the most households was wasting among children aged 6–59 months (Table 2). This number was rounded up to 1,230 to allow for fifteen households within each of the 82 villages; thus there were 2,460 households in the overall sample.

[1] This design was chosen because there were large areas in many flood-affected provinces that were not at risk of having been directly affected by the floods. The survey's primary objectives were to understand the floods' impact on households and identify priority recovery activities; as a result, this more limited sampling frame avoided visiting households with near zero probability of having directly experienced the floods' effects. An important implication of this design is that the estimates contained within this report cannot be extrapolated to the entire populations of the Plains and Tonle Sap ecological zones; inferences can only be made about the total population living within 250 meters of the peak-flood boundary. The total population figures for this area are provided in Appendix 6.

[2] Even within the more limited sampling area, there were invariably some households (albeit a very small number) which did not directly experience the floods' effects. However, for simplicity, the phrase "flood-affected" has been used to denote the area within 250 meters of the peak-flood boundary (i.e. the sampling frame).

2.3 SAMPLING

First Stage

As stated above, the Post-flood Survey employed a two-stage cluster design. In the first stage of sampling, a master sampling frame was developed that contained all villages according to the 2008 census within 250 meters of the peak-flood boundary.[3] This sampling frame was divided by ecological zone to generate two strata, Plains and Tonle Sap. For each stratum, a listing was constructed that included the number of households for every census enumeration area. Eighty-two clusters were then sampled from each stratum listing using probability-proportional-to-size (PPS). To do this, a sampling interval (SI) was first created by dividing the stratum's cumulative population by the planned number of clusters (82). A random number between one and the SI was generated and the first cluster was identified by finding the enumeration area with a cumulative population matching this random number. Following the selection of the first cluster, each subsequent cluster was identified by adding the SI to the previous figure and finding the corresponding enumeration area.

Second Stage

Upon entering a sampled village, enumerators first visited with the village chief to notify him of their arrival and to explain the purpose of survey. Enumerators then asked the chief to take them to the approximate center of the village, whereupon they spun a pen to determine the first direction of travel; enumerators proceeded in this direction until they reached the edge of the village. After reaching the edge of the village, the pen was again spun to determine a second direction of travel. Enumerators counted the number of households they passed along this second direction up to the edge of the village. A random number table was then used to select the first household for the survey from the list.

After completing the first household, enumerators proceeded to interview the next nearest household. Enumerators continued in this way, selecting the next nearest household, until fifteen were completed.

Missing Households and Children

For the household questionnaire, enumerators interviewed the head of household, or a member of the household who was familiar with its day-to-day affairs. If members of a selected household had not been present in the past three months, enumerators were instructed to skip to the next nearest household (i.e. this household was not counted as one of the fifteen required). However, if members were currently living in a household but follow-ups proved unsuccessful, the household was counted as one of the fifteen required for interview.

For the child questionnaire, enumerators made every effort to interview the child's mother. If she was not present at the time of visit, enumerators were instructed to make an appointment to meet with her later in the day. If children under-5 were not present, an appointment was made to collect their height and weight information later on the day of visit.

Informed Consent and Refusals

Before beginning the household and child questionnaires, enumerators read respondents a statement explaining the purpose of the survey and the importance of information to be collected. Respondents were given the chance to ask questions and then had to give verbal consent before the enumerator proceeded with the questionnaire. Respondents refusing to participate in the survey were thanked for their time and recorded as a refusal for non-response purposes.

2.4 TRAINING AND PRE-TESTING

A comprehensive training for enumerators was conducted January 5–7, 2012 (Appendix 1). The training covered all aspects of survey implementation and was coordinated and conducted by Helen Keller International (HKI) staff, with additional support from World Food Programme (WFP) for food security-related modules. Topics for the training included:

- Survey background and objectives
- Roles of team members, responsibilities and accountabilities

[3] To generate the list of villages within 250 meters of the peak-flood boundary, the satellite photograph was superimposed onto a digital map containing GPS coordinates. ArcGIS software enabled the identification of all villages within the stipulated distance.

- Survey methodology and sampling issues
- Interviewing techniques
- Anthropometric measurement training
- Review of each question in the household, child, and Focus Group Discussion (FGD) questionnaires

Following the training, a field practicum was held on January 8 in two villages near Phnom Penh. Enumerators practiced household sampling, interviewing, and anthropometric measurements during the pre-test. Helen Keller staff then conducted a systematic review of the pre-test performance of each enumerator to identify the strongest to participate in fieldwork activities.

2.5 FIELDWORK LOGISTICS

Helen Keller was also contracted to provide overall coordination of fieldwork operations (Appendix 2). Four HKI staff supervised the eight teams of enumerators (three enumerators per team) who were tasked with interviewing 15 households per day. Teams traveled together according to a survey schedule prepared by HKI, and when possible, convened at night to discuss that day's work and solve any problems that arose. Fieldwork activities were conducted from January 10–29, 2012.

2.6 SURVEY QUESTIONNAIRES

There were four primary data collection tools for the survey (Appendix 3). The most comprehensive of these, a household questionnaire, was administered to each household sampled within the villages. Enumerators were expected to speak with the head of the household or with someone intimately familiar with the household's affairs if the head was not available. The household questionnaire was divided into 13 sections that aimed to collect the most important information highlighted in the objectives.

The survey also used a child questionnaire to collect relevant information on children under-5 in sampled households. Enumerators were expected to speak with the child's mother or the child's primary caretaker if the mother could not be interviewed. If a household contained multiple children under-5, a separate child questionnaire was filled out for each child. Height, weight, and MUAC measurements were taken for all children aged 6–59 months and their mothers.

In addition to the household and child questionnaires, a short Focus Group Discussion (FGD) questionnaire with additional, open-ended questions was administered for each village. When all households for the village had been completed, enumerators requested six men and women to gather at a central point for the short session. Enumerators then asked a short series of questions meant to promote discussion and reflection to generate additional information that would complement the data collected at the household level. The purpose of the FGD was to get community members talking freely about the questions presented.

Finally, in each province, two or three different markets were visited to assess their overall condition. The market chief was asked a short series of questions to gauge whether the market was operating at pre-flood levels. Prices of basic commodities were also collected from traders and information on wages for day labourers was collected. This information was needed to help determine whether communities had access to functioning markets and if elevated food prices might have been further affecting households' ability to cope with the floods.

The English version of each questionnaire was translated into Khmer, which was subsequently back-translated to ensure the translated version's meaning was faithful to the original.

2.7 DATA QUALITY CONTROL

Throughout the entire survey process, several levels of supervision ensured that the data collected was accurate and reliable. Helen Keller supervisors carefully managed the training and pre-testing phases to ensure a complete understanding of the meaning and intent of all questions. These supervisors also closely monitored fieldwork activities and reviewed all questionnaires for completeness.

At the start of fieldwork activities, HKI supervisors also performed spot checks of enumerators during administration of the questionnaires to identify any significant variations in tone or rapport that might have biased the respondents' answers.

To further ensure the quality of anthropometric data collected, the height and weight data of children under-5 were routinely entered and checked for digit preference,

acceptable standard deviation ranges, and normalcy of z-score distributions.

2.8 DATA ENTRY, PROCESSING, CLEANING

Helen Keller data management staff designed a data entry screen using SPSS Data Entry Builder to capture the information from the hard-copy questionnaires into electronic format [7]. The screen used various measures to prevent entry errors, such as range limits for all numerical variables; checks were also incorporated to flag incongruous responses from different sections of the questionnaire. The screen was further cross-checked with pre-test questionnaires to identify errors and updated to accommodate final questionnaire changes.

A team of five data entry clerks based in Phnom Penh entered all questionnaires twice to ensure complete verification of the data. The duplicate data files were compared to identify entry differences; when differences were found, the hard-copy questionnaires were consulted to confirm the correct information. The master files were then checked for duplicate entries.

2.9 DATA ANALYSIS

Descriptive statistics for all variables were run to ensure that the distribution of responses (and relative frequencies) fell within expected ranges. Household and child weights were derived to account for differential probabilities of selection and response rates of population sub-groups. All survey data were analyzed using Stata/MP v. 11.0, and the complex sampling design was accounted for using the software's *svyset* function [8].

An SPSS syntax file provided by WHO was used to generate children's anthropometric z-scores according to WHO 2006 Growth Standards. The anthropometric data were checked for various biases, including age heaping, digit preference and intra-team weight and height variances. Cases that were flagged as having very high or low z-scores (i.e. less than -3 SD or more than +3 SD from the mean) were checked against the hard-copy questionnaires.

2.10 SAMPLE COVERAGE

According to the sample design, a total of 2,460 households were expected for the 2012 Cambodia Post-flood Relief and Recovery Survey. Table 3 shows the final number of households and eligible children for which data was collected. The response rate for all households was 97 percent, and the majority of incomplete questionnaires resulted from unsuccessful follow-ups in the Plains ecological zone.

Table 3. Results of Household Interviews

Number of households and children aged 0-59 months, and response rates, by ecological zone (unweighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Results	Ecological Zone		
	Plains	Tonle Sap	Total
Households			
Selected	1,230	1,230	2,460
Completed	1,176	1,221	2,397
Refused	14	2	16
Not at home	39	7	46
Other	1	0	1
Household response rate	95.6	99.3	97.4
Children			
Eligible	591	685	1,276
Completed	591	685	1,276
Eligible children response rate	100.0	100.0	100.0
Overall response rate	95.6	95.6	97.4

SECTION

3 HOUSEHOLD CHARACTERISTICS

For the 2012 Cambodia Post-flood Survey, a household was defined as a group of people who shared the same cooking arrangements. A series of questions were asked of each household to construct the contextual information that many of the outcome indicators would be considered against.Unless otherwise noted, the data presented henceforth have been weighted to reflect that, though an equal number of villages were visited in each ecological zone, the population of flood-affected households was much larger in the Plains area.

3.1 HOUSEHOLD COMPOSITION

As shown in Table 4, the survey found that a majority of flood-affected households in the Plains and Tonle Sap zones were headed by women (53 percent for both).[4] The average number of usual members, at five, was consistent with findings for rural areas from other national surveys.

3.2 HOUSEHOLD CHARACTERISTICS

Source of Drinking Water

As relevant information for many outcome indicators, and because the flood's impact on household-level access measures was unclear, respondents were asked to provide information on thier currrent source of drinking water. Table 5 shows that access to an improved source of drinking water varied considerably by ecological zone; two-thirds of Plains households were using an improved source, while less than half of Tonle Sap households were doing the same (67 and 39 percent, respectively). Households in the Tonle Sap were more reliant on unprotected wells (22 percent vs. 3 percent), while Plains households had better access to boreholes (43 percent vs. 21 percent). A majority of households in both zones reported using an appropriate method for treating their drinking water (82 and 73 percent for Plains and Tonle Sap, respectively).

Type of Toilet Facility

Access to an improved toilet facility varied less by zone. Table 6 shows that roughly a third of flood-affected households in the Plains and Tonle Sap areas (34 and 29 percent, respectively) were using improved toilets, which is consistent with 2010 CDHS findings [9]. More than half of all flood-affected households had no facility and were defecating in open areas.

Hand-washing and Soap Availability

Because of the environmental risks associated with the flood, a primary response in the immediate aftermath was to provide soap and other hygiene materials. The 2012 Post-flood Survey sought to determine whether the hygiene situation in households met acceptable standards. Enumerators were instructed to visually verify whether a location with water and soap existed at or near the household; as shown in Table 7, nearly 3 in 4 households (73 percent) had such a hand-washing area. A majority of affected households (87 percent) appeared to have access to soap of some kind.

Housing Materials

In addition to water and sanitation access, the 2012 Post-flood Survey sought to assess the floods'effect on housing as well. Enumerators observed the main materials of each household's floor, walls, and roof, before asking a series of questions related to the floods' impact. Table 8 shows the distribution of households by flooring material (see Tables 73 and 74 for household distribution by wall and roofing material). Most households in the Tonle Sap zone (76 percent) had

[4] This finding is at odds with other national figures that show a much higher percentage of households headed by men (73% in 2010 CDHS). One likely explanation: during survey training, enumerators were advised to probe respondents about "who makes the day-to-day household and financial decisions," a difference that might have resulted in capturing which sex "managed" the household as opposed to which one "headed" it.

Table 5. Household Drinking Water

Percent distribution of households and de jure population by source and treatment of drinking water, by ecological zone (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Characteristic	Ecological Zone			Population
	Plains	Tonle Sap	Total	Total
Source of drinking water				
Improved	66.8	38.8	56.6	55.9
Piped into dwelling/yard/plot	15.7	5.4	11.9	12.3
Public taps/standpipe	2.5	0.6	1.8	1.8
Tube well or borehole	43.4	20.5	35.0	34.0
Protected dug well	1.8	2.2	1.9	2.0
Protected spring	0.1	0.1	0.1	0.1
Rainwater	3.4	10.0	5.8	5.7
Non-improved	32.9	60.9	43.1	43.8
Unprotected dug well	2.5	22.3	9.7	9.9
Unprotected spring	0.1	2.2	0.9	0.8
Tanker truck	2.6	3.4	3.0	1.6
Surface water	27.3	31.0	28.6	29.2
Bottled water	0.3	2.0	0.9	0.8
Other	0.3	0.4	0.3	0.3
Missing	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0
Time to obtain drinking water				
Water on premises	61.0	44.9	55.1	55.3
Less than 30 minutes	28.8	46.5	35.3	34.8
30 minutes or longer	9.6	8.5	9.2	9.4
Don't know/missing	0.6	0.2	0.4	0.5
Total	100.0	100.0	100.0	100.0
Water treatment[1]				
Boil	72.5	57.7	67.1	66.3
Bleach/chlorine	0.6	1.7	1.0	1.0
Strained through cloth	0.2	0.7	0.4	0.3
Water filter (ceramic/sand/etc.)	16.4	24.1	19.2	19.8
Solar disinfection	0.0	0.0	0.0	0.0
Stand and settle	7.5	7.1	7.4	7.4
Other	0.2	0.5	0.3	0.3
No treatment	15.0	23.0	17.9	18.4
Appropriate treatment method[2]	81.8	73.1	78.6	78.1
Number	1,524	873	2,397	12,088

1 Respondents may have reported more that one treatment method.

2 Includes boiling, using bleach/chlorine, water filter, or solar disinfection.

wood planks as flooring, while the distribution according to flooring material was more varied in the Plains zone. The distribution of wall material was fairly consistent across zones, such that covered adobe was the most prevalent source (42 percent), followed by palm/thatch and metal (35 and 12 percent, respectively); a greater discrepancy was seen within household roofing material, with a larger proportion of households in the Tonle Sap using metal (60 percent vs. 47 percent), and a greater proportion of households in the Plains using clay tiles (35 percent vs. 22 percent).

Source of Cooking Fuel

Also of interest for the Post-flood Survey was the impact the floods might have had on the access and usage of fuel sources for cooking. Ninety-two percent of households in flood-affected areas of the Plains and Tonle Sap zones were using wood to heat and prepare their meals, a finding that is largely consistent with that from the 2010 CDHS [9].

IDPoor Status

Finally, Table 8 also shows the distribution of flood-affected households by IDPoor and other poverty-related status. Roughly 1 in 4 households (23 percent) had been identified in some way as candidates for social safety net support.

3.3 HOUSEHOLD POSSESSIONS

Asset Ownership

Households were also asked whether they owned a range of assets prior to the floods; this information allowed both for the construction of a wealth profile of each household and for an understanding of assets lost as a result of the floods. Table 9 shows the distribution of households by individual asset ownership. Among the most common assets owned in each zone prior to the floods were mobile phones and televisions (70 and 69 percent, respectively). Households in the Tonle Sap area appeared to have slightly more agriculturally productive assets, including ploughs (23 percent) and hand tractors (19 percent). The distribution of households owning water filters in each zone aligns well with the water treatment findings. The relatively high proportion of households in both zones owning a boat, as compared to the 2010 CDHS findings, reflects the underlying design of the Post-flood Survey, which was more likely to sample households in close proximity to bodies of water. Three in four households (74 percent) owned a bicycle, and nearly half (47 percent) owned a motorbike.

3.4 HOUSEHOLD WEALTH

The relative wealth of a household was estimated by constructing a wealth index for the entire sample. A set of dichotomous indicators assumed to be associated with wealth (e.g., source of drinking water, toilet facility, roofing material, and ownership of various assets) were given weights created from a principal component analysis (PCA). These scores were subsequently normalized with a mean of zero and standard deviation of one and summed for each household. Following this, a weighted distribution frequency of households was created in order to determine the cut-points for each wealth quintile [10].

Table 10 shows the distribution of household population by wealth quintiles, which is mostly similar for each zone, though it appears that households in flood-affected areas of the Plains were slightly wealthier than those in the Tonle Sap. Many of the main indicators from the 2012 Post-flood Survey have been disaggregated by wealth index to facilitate an equity-based interpretation of the floods' impact on households.

3.5 EDUCATION OF MOTHERS

Another important source of information for interpreting many of the survey's key indicators is the educational attainment of mothers. Many child-level indicators, including malnutrition and health-seeking behavior, are dramatically dependent on the level of education attained by the child's mother. As part of the child questionnaire, the Post-flood Survey asked all available mothers how much schooling they had attended and completed.

The proportion of mothers who reported ever attending school (Table 11) decreased with age, such that the percentage of 15–24-year-old mothers ever attending school (92 percent) was significantly higher than that of 40–44-year-old mothers (70 percent). Mothers living in the Plains were slightly more likely to have ever attended school than mothers in the Tonle Sap (85 and 77 percent, respectively). Among mothers in the poorest households, 64 percent had ever attended school, compared to 93 percent of mothers in the richest households.

Table 9. Household Durable Goods

Percent distribution of households and de jure population possessing various durable goods and modes of transport, by ecological zone (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Asset	Households			Population
	Plains	Tonle Sap	Total	Total
Household effects				
Radio	45.2	44.0	44.8	45.3
Television	71.4	63.8	68.7	71.4
Cell phone	70.9	69.7	70.4	73.7
Sewing machine	6.1	6.4	6.2	6.9
Battery	52.6	58.6	54.8	56.8
Plough	18.7	23.0	20.3	22.2
Hand tractor	7.7	18.5	11.6	13.1
Tractor	0.4	0.5	0.5	0.5
Thresher	0.7	0.8	0.8	1.0
Rice mill	2.4	4.1	3.0	3.4
Fishing nets	27.1	32.4	29.0	31.8
Water filter	18.5	25.9	21.2	22.2
Water pump	37.4	14.8	29.2	31.7
Table	40.5	36.3	39.0	40.3
Chair	39.8	35.3	38.1	39.2
Bed/mattress	74.4	69.5	72.6	73.6
Jewelry/gold	36.3	32.7	35.0	35.9
Modes of transport				
Bicycle	76.8	69.8	74.2	77.2
Motorbike	49.2	42.5	46.7	50.2
Oxcart	13.1	20.3	15.7	17.2
Car/truck	2.8	1.2	2.2	2.3
Boat	19.6	22.8	20.8	23.5
Number	1,524	873	2,397	12,088

Table 10. Wealth Quintiles

Percent distribution of de jure population by wealth quintiles, by ecological zone (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Wealth quintile						
	Poorest	Second	Middle	Fourth	Richest	Total	Number
Ecological Zone							
Plains	19.4	19.4	19.7	19.9	21.4	100.0	7,560
Tonle Sap	21.0	20.9	20.5	20.0	17.6	100.0	4,528
Total	20.0	20.0	20.0	20.0	20.0	100.0	12,088

3.6 SCHOOL ATTENDANCE OF CHILDREN 5–14 YEARS

In addition to maternal education status, households with children aged 5–14 years were asked to report whether any of these children were not attending school at the time of the survey. Table 12 shows that 94 percent of all boys aged 5–14 years were attending school at the time of the survey; 95 percent of all girls aged 5–14 years were attending school. The proportion of children attending school was associated with wealth such that children living in wealthier households were more likely to have been attending school.

3.7 BACKGROUND CHARACTERISTICS OF CHILDREN 0–59 MONTHS

The Post-flood Survey also collected a range of information for children aged 0–59 months. Table 13 shows the distribution of these children by various background characteristics. The overall distribution of child age and sex are roughly consistent with other national surveys.

Table 13. Background Characteristics of Surveyed Children

Percent distribution of children aged 0-59 months by sex, age, household wealth status, and ecological zone (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background Characteristic	Ecological Zone		Total	Number of children
	Plains	Tonle Sap		
Sex				
Male	50.6	49.8	50.3	899
Female	49.4	50.2	49.7	888
Age				
0-5	10.1	10.9	10.4	184
6-11	8.8	8.8	8.8	155
12-23	21.0	21.6	21.2	376
24-35	22.8	22.8	22.8	404
36-47	20.5	17.7	19.4	343
48-59	16.8	18.2	17.4	308
Affect index				
Unaffected	60.5	60.4	60.4	1,080
Mildly	16.0	16.7	16.2	290
Moderately	18.5	15.8	17.5	312
Severely	5.0	7.1	5.8	104
Wealth quintile				
Poorest	26.4	27.0	26.6	476
Second	19.4	22.3	20.5	367
Middle	17.6	19.0	18.1	324
Fourth	16.8	18.6	17.5	313
Richest	19.8	13.0	17.2	307
Total	100.0	100.0	100.0	1,787
Number	1,091	696	1,787	---

SECTION

4 GENERAL EFFECTS

4.1 INFORMATION AND COMMUNICATION

The Post-flood Survey sought to better understand the way important information was received by households living in flood-affected areas. More specifically, the survey assessed the various types of information that households received, the mediums through which these messages were received, and households' preferred mediums of information in the event of a future emergency.

Types of Information

Table 14 shows the various types of flood-related information that households had received since the onset of flooding. The most common information households received was related to the flooding situation, which included messages related to water levels, the need for relocation, weather forecasts, etc. Households were least likely to have received information pertaining to schools (e.g., open/closed) and health care (e.g., where/how to seek emergency medical services). The types of messages received varied little by ecological zone. More variation was observed according to wealth, such that the poorest households, in general, were less likely to receive flood-related information compared to wealthier households.

Sources of Information

Just as important as the types of information received were the mediums through which households received these messages. As shown in Table 15, 80 percent of households received flood-related information via television. Seventy-six percent of households further reported receiving information about the floods via word-of-mouth (e.g., informally from a neighbor, relative, or village chief). Very small proportions of households received flood-related information from newspaper/print materials and mobile phones (1 and 6 percent, respectively).

Table 15. Sources of Information Transmission

Percent distribution of households receiving flood-related information via different communication mediums (self-reported), by background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Results	Television	Radio	Newspaper	Mobile phone	Word of mouth	Number
Ecological Zone						
Plains	81.1	68.5	0.9	5.6	72.9	1,524
Tonle Sap	77.8	72.1	0.9	5.4	82.4	873
Wealth quintile						
Poorest	65.3	60.2	0.5	4.2	79.3	520
Second	77.1	66.8	0.4	5.5	77.2	494
Middle	81.2	69.6	0.7	5.6	75.9	471
Fourth	88.0	75.6	1.0	6.8	78.2	457
Richest	90.0	78.5	1.8	5.7	70.6	454
Total	79.9	69.8	0.9	5.5	76.3	2,397

Preferred Source of Information

Because even well-designed public service messages will not have the desired effect if they are transmitted through mediums with minimal reach, households were also asked to identify their preferred way of receiving important information in the event of a future disaster. Table 16 shows that two-thirds of households (66 percent) chose television as their preferred source of emergency-related messaging in the future. The poorest households were least likely to choose television, but it was still their most preferred source of emergency information by a 2 to 1 margin over word-of-mouth.

4.2 HOUSEHOLD DISPLACEMENT

A key piece of information following any natural disaster is a measure of household displacement. In the areas of the Plains and Tonle Sap ecological zones considered to most likely have been affected by the 2011 floods, nearly 1 in 10 households (9 percent) were displaced from their dwelling for at least one night as a direct result of the floods (Table 17).Extrapolating for the entire sample frame, this translates to roughly 64,000 households having been forced to spend at least one night away from their home; this includes nearly 44,600 households that had to relocate within their communities.[5] Slightly more households in the Tonle Sap zone appear to have been displaced as a result of the floods. The poorest households were also the most likely to have been displaced (20 percent); just 1 percent of the richest households were displaced due to the floods.

4.3 INFRASTRUCTURE

Housing Material

After determining the main materials used for the flooring, walls, and roofing of the house, respondents were asked to report whether any of these had been damaged during the floods. Information was also collected as to the timeline over which the household planned to repair or replace any damaged materials.

Table 18 shows that among all households, 7 percent experienced some measure of damage to their flooring due to the floods. There was no significant variation by ecological zone; however, the poorest households were considerably more likely to experience damage to their flooring compared to wealthier households. Roughly 1 in 12 households (8 percent) experienced damage to their walls due to the floods (Table 19). There was again little variation according to ecological zone, and 1 in 4 of the poorest households (24 percent) had their walls damaged by the floods. Just 5 percent of households had any damage to their roofs as a result of the floods; 15 percent of the poorest households had their roofs damaged (Table 20). Overall, almost 10 percent of the

Table 17. Household Displacement

Percent distribution of households displaced from home by flooding, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Results	Displaced[1]				Number
	Yes, outside community	Yes, within community	Total	(95% CI)	
Ecological Zone					
Plains	2.5	5.2	7.7	(4.4, 11.0)	1,524
Tonle Sap	2.9	7.4	10.3	(6.0, 14.7)	873
Wealth quintile					
Poorest	7.3	12.8	20.0	(14.3, 25.7)	520
Second	3.1	5.3	8.4	(4.7, 12.2)	494
Middle	2.1	6.9	9.0	(4.1, 13.9)	471
Fourth	0.0	3.0	3.0	(1.1, 4.9)	458
Richest	0.2	1.0	1.1	(0.1, 2.1)	454
Total	2.7	6.0	8.6	(6.0, 11.3)	2,397

[1] Displaced defined as household having spent at least one night away as a direct result of the floods.

[5] The definition of "displaced" used in the 2012 Post-flood Survey was perhaps more liberal than that used by NCDM to estimate displaced households during September and October 2011 and may help explain why these Post-flood Survey estimates are substantially higher than those produced at the peak of the flood.

Table 18. Damaged Flooring

Percent distribution of households whose flooring was damaged or destroyed due to the floods and, among those with damaged floors, the expected time to repair, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Damaged	Number	Among HH with damaged flooring, expected time to repair:					
			<3 months	≥3 months	Cannot afford to repair	Already repaired	Total	Number
Ecological Zone								
Plains	6.2	1,524	21.9	15.9	36.2	26.0	100.0	95
Tonle Sap	7.3	873	3.1	7.0	51.4	38.6	100.0	64
Wealth quintile								
Poorest	18.0	520	15.3	15.6	40.3	28.9	100.0	94
Second	5.7	494	(11.2)	(13.2)	(30.0)	(45.6)	100.0	28
Middle	4.6	471	*	*	*	*	*	22
Fourth	2.0	458	*	*	*	*	*	9
Richest	1.3	454	*	*	*	*	*	6
Total	6.6	2,397	14.3	12.3	42.3	31.1	100.0	159

Note: Figures in parentheses are based on 25-49 unweighted cases; an asterisk indicates that a figure has been supressed because there were fewer than 25 unweighted cases.

poorest households reported damage to all parts of their housing (flooring, walls, and roofing); no households in the upper wealth quintiles reported the same (Table 75).

Of the households with damage to their flooring, walls, and/or roofing, about 2 in 5 were unable to repair the damage because they could not afford the associated costs (42, 42, and 36 percent, respectively). More than a third of households (36 percent) had already repaired their damaged roofs, while just 20 percent had repaired their damaged walls.

Water and Sanitation

In addition to housing materials, the Post-flood Survey also sought to assess whether the floods had affected water and sanitation infrastructure to the extent that households were forced to use alternative sources. Households were asked whether their current sources of drinking water and toilet facility were the same as usual for that time of year. As shown in Table 21, 6 percent of households were using a source of drinking water that was different than normal for that time of year; 5 percent of households were using a sanitation facility that was different than normal.

4.4 HOSTING/SUPPORTING OTHERS

Table 22 shows that only 2 percent of households were hosting non-usual members as a result of the floods at the time of the survey. There was no significant variation when disaggregated by ecological zone or wealth quintiles. A slightly larger proportion of households were supporting relatives and/or neighbors with food or cash at the time of the survey. Unlike hosting others, in-kind support was different according to wealth, such that 6 percent of the richest households were supporting others, while just 2 percent of the poorest households were doing the same.

4.5 MIGRATION SINCE FLOODS

Just 7 percent of households had a usual member migrate out in the months since the floods (Table 23). No difference was observed in migration according to ecological zone. However, the poorest households were considerably more likely to have had a member migrate out compared to the wealthiest households (9 percent and 4 percent, respectively). Of all households reporting that a member had migrated out since the

Table 23. Migration

Percent distribution of households with a usual member migrating since the flood, and among those with migration, the main reasons for migration, by background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background	Any member migrate	Number	Among HH with a member that migrated since the flood, main reason:				
			Seasonal	Due to flood	Education	Health	Number
Ecological Zone							
Plains	6.7	1,524	28.7	55.2	4.0	1.3	103
Tonle Sap	7.9	873	30.0	60.2	2.9	0.0	69
Wealth quintile							
Poorest	9.4	520	18.9	68.8	3.8	0.0	49
Second	9.5	494	(31.8)	(59.1)	(0.0)	(0.0)	47
Middle	8.9	471	(35.9)	(54.4)	(1.6)	(3.3)	42
Fourth	3.5	457	*	*	*	*	16
Richest	3.9	454	*	*	*	*	18
Total	7.2	2,396	29.2	57.2	3.5	0.8	172

Note: Figures in parentheses are based on 25-49 unweighted cases; an asterisk indicates that a figure has been supressed because there were fewer than 25 unweighted cases.

floods, more than half (57 percent) identified the floods as the main reason for the migration.

4.6 MAIN HOUSEHOLD DIFFICULTIES SINCE FLOODS

As shown in Table 24, the main difficulties faced by all households in the months since the floods included damage to land/harvest (50 percent), buying food (47 percent), loss of income (46 percent), and medical costs (42 percent). Upon disaggregating by ecological zone, some differences were observed. In particular, considerably more households in the Tonle Sap (64 percent) identified damage to land/harvest as a main difficulty compared to the Plains (41 percent). One in four households in the Tonle Sap (25 percent) also identified the loss of animals as a main difficulty compared to 15 percent of households in the Plains. In contrast, households in the Plains were more likely to name fuel costs, debt, and medical costs as main difficulties faced since the floods than households in the Tonle Sap.

The main difficulties that households faced also varied by wealth; among the poorest households, nearly 1 in 6 (16 percent) identified damage to their housing as a main difficulty compared to just 2 percent of the wealthiest households. The poorest households were also most likely to identify debt as a main difficulty faced in the months since the floods (33 percent). The burden of fuel costs appeared to follow the opposite relationship, such that the wealthiest households were more likely to identify this as a difficulty compared to the poorest households (22 and 7 percent, respectively). Households in the middle wealth bracket were most likely to report that damage to land/harvest was a main difficulty (60 percent).

4.7 AFFECT INDEX [6]

Figure 1 shows the eight variables used to construct the Affect Index. Table 25 shows the distribution of households in each category by the underlying characteristics used to define the index. According to the Affect Index, the floods had a negligible impact with respect to most characteristics on unaffected households; roughly 15 percent of households in this category suffered losses of assets or took out a loan as a result of the floods. Mildly affected households were considerably more likely to have had assets damaged and to have taken out one or more loans due to the floods. Moderately affected households, in addition to asset damage and undertaking loans, were also more likely to have been displaced from their dwelling, to have suffered structural damage to their housing, and to have had a usual member migrate out from the household. A large majority of all severely affected households were displaced by the floods and experienced total destruction of their floors, walls, and roofs, above and beyond the impacts listed above.

The proportion of households in various categories of the Affect Index did not differ significantly according to ecological zone. There was considerable variation when the Affect Index was disaggregated by wealth quintiles, such that fully 11 percent of the poorest households fell into the severely affected[7] category compared to just 0.2 percent of the wealthiest households.

Table 25. Affect Index

Percent distribution of households by affect index categories, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Affect Index				
	Unaffected	Mildly	Moderately	Severely	Number
Ecological Zone					
Plains	63.8	16.3	15.9	4.0	1,524
Tonle Sap	67.9	15.1	12.2	4.9	873
Wealth quintile					
Poorest	48.5	18.2	22.4	10.9	520
Second	58.0	19.6	18.0	4.4	494
Middle	63.9	15.4	15.9	4.8	471
Fourth	73.9	16.4	9.4	0.3	458
Richest	85.2	8.9	5.7	0.2	454
Income source previous month					
Self-employed	74.1	13.2	10.3	2.5	900
Agricultural wage labour	62.0	15.2	17.5	5.3	391
Non-ag casual labour	60.1	16.3	16.6	7.0	341
Income from fishery	45.7	16.3	24.2	13.8	292
Construction	63.0	17.6	16.9	2.5	284
Sale of paddy	78.3	11.7	8.6	1.4	264
Sale of other agri.	75.0	14.6	9.8	0.5	245
Garment factory	60.3	19.0	19.0	1.6	225
Total	65.3	15.8	14.6	4.3	2,397

6 See Section 11.1 for a more comprehensive background on the Affect Index created for the Post-flood Survey.

7 Note: throughout the report the phrase "most vulnerable" households is used to denote those households identified as severely affected by the Affect Index. See Section 11.1 for more information on the Affect Index.

SECTION

5 ECONOMIC IMPACT

5.1 INCOME SOURCES

Number of Income Earners

The number of current members earning an income was collected to further understand households' income generating potential and absorption capacity for work-related recovery programmes. As shown in Table 26, just over a third of households (38 percent) had one or fewer members earning an income at the time of the survey; about 1 in 6 households (17 percent) had more than two members earning an income. The number of income earners did not vary much according to ecological zone, but considerable differences were observed when disaggregated by wealth quintiles and Affect Index. Half of the poorest households (50 percent) had one or fewer members earning an income compared to 23 percent of the wealthiest households. Among households identified as severely affected by the Affect Index, 64 percent had one or fewer members earning an income.

Compare Number of Earners

Households were also asked about the number of members earning an income before the floods to gain, after comparing to the number of earners after the floods, additional insight into households' response to the floods. While little discrepancy in the distribution pattern of income earners before and after the floods was observed between the two ecological zones, considerable differences were observed when disaggregating by the Affect Index (Table 27). Among the households identified as severely affected by the floods, 10 percent had fewer income earners at the time of the survey compared to before the floods. An almost equal number (8 percent) had more income earners at the time of the survey; households considered unaffected by the floods had very little change in their number of income earners.

Main Income Sources

The ways in which a household generated cash income was used as an indicator of its coping and resilience strategies in the aftermath of the floods. Households were asked to identify their two main sources of income in the month prior to the survey. Table 28 shows the cumulative response from all households. The most common type of cash income source reported by households in both zones was coded as self-employed (38 percent), which constituted a host of activities, including reselling market goods in the village, making breads and cakes for school children, and repairing motorbikes, among others. One in six households (16 percent) reported doing agricultural wage labour for others; fourteen percent reported another form of causal labour that was not agriculture-related. About twice as many households in the Tonle Sap reported generating income in the month prior to the survey from fishing than in the Plains (18 and 9 percent, respectively); households in the Plains area were considerably more likely to have generated cash income from garment factory work (13 percent).

Change in Income since Floods

In addition to the sources of income and the number of members earning income, the Post-flood Survey also asked households to report whether the relative amount of their income had changed as compared to before the floods. Roughly two-thirds of households (64 percent) had seen their income decrease since before the floods (Table 29). Households in the poorest wealth quintile, those considered severely affected by the Affect Index, and those with fewer income earners compared to before the floods were most likely to report that they had seen their income decrease (78, 74, and 75 percent, respectively).

Table 29. Change in Income since Flood

Percent distribution of households by reported income change since the floods, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Decreased	No change	Increased	Number
Ecological Zone				
Plains	62.3	33.8	3.9	1,524
Tonle Sap	66.5	31.3	2.1	873
Affect index				
Unaffected	58.9	37.6	3.5	1,565
Mildly	71.5	27.0	1.5	380
Moderately	73.7	22.4	3.9	349
Severely	77.8	18.6	3.6	103
Wealth quintile				
Poorest	74.3	24.0	1.7	520
Second	70.9	27.1	2.0	494
Middle	66.3	31.0	2.7	471
Fourth	60.4	36.4	3.3	458
Richest	45.3	47.9	6.8	454
Compare income earners				
Less than before	74.8	21.5	3.6	97
Same as before	63.8	33.2	3.1	2,178
More than before	57.7	36.1	6.2	109
Income source previous month				
Self-employed	59.8	36.7	3.5	900
Agricultural wage labour	73.2	25.6	1.2	391
Non-ag casual labour	67.3	28.9	3.8	341
Income from fishery	69.9	26.2	3.9	292
Construction	64.1	33.2	2.7	284
Sale of paddy	66.7	30.7	2.6	264
Sale of other agri.	60.7	32.6	6.7	245
Total	63.9	32.9	3.2	2,397

Child Labour

In the aftermath of the floods, there was additional concern that households might turn to their children to help support income generation and livelihood protection. As shown in Table 30, 6 percent of households with children aged 5–14 years reported that a child member had done work either for someone outside the household or for the family business. The reliance of households on child labour was seen most dramatically among households considered severely affected according to the Affect Index, with 15 percent reporting some work had been done in the past week.

The poorest households were also more likely to have their children working compared to the wealthiest households (8 and 3 percent, respectively).

5.2 EXPENDITURES

Another method used for assessing the floods' impact on household welfare required understanding the underlying cash expenditure patterns of rural households and determining whether reported changes in those expenditures might reflect added financial stress.

Table 31. Food Expenditures

Proportion of weekly household food cash expenditures (last 7 days). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Total	Ecological Zone		Wealth quintile				
		Plains	Tonle Sap	Poorest	Second	Middle	Fourth	Richest
Fish	25.6	26.3	24.5	21.0	24.3	26.1	28.6	28.9
Rice	23.1	26.3	17.5	33.3	25.3	20.3	19.2	15.9
Veg/fruit	12.1	10.5	15.1	11.1	12.6	13.2	11.7	12.2
Condiment	10.8	9.1	13.7	11.5	12.0	12.1	10.1	8.0
Meat	10.5	10.5	10.4	5.7	8.6	9.3	12.7	16.9
Oil/fat	5.8	5.4	6.3	6.2	6.1	6.4	5.6	4.5
Sugar/sweet	4.0	4.1	4.0	4.0	3.8	4.4	4.1	4.0
Eggs	3.0	2.8	3.4	2.9	2.8	3.2	3.1	3.1
Prahok	1.3	1.3	1.3	1.4	1.6	1.3	1.3	0.9
Bread	1.2	1.3	1.2	0.7	0.9	1.4	1.2	2.0
Other	0.9	1.0	0.8	1.0	0.9	0.7	0.7	1.4
Milk products	0.6	0.5	0.6	0.3	0.4	0.5	0.4	1.2
Maize	0.4	0.2	0.7	0.2	0.2	0.5	0.3	0.5
Beans, pulses	0.3	0.4	0.3	0.3	0.3	0.3	0.5	0.4
Cassava	0.2	0.1	0.2	0.1	0.1	0.2	0.3	0.1
Sweet potato	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1

Food Expenditures

Households were first asked to recall how much cash they had spent on a set of 16 food items in the week prior to the survey. These expenses were summed to create a weekly food expenditure total, which was subsequently used to determine the proportion of food-related expenditures spent on each food item. Table 31 shows that fish, rice, fruits and vegetables, and condiments represented the main cash expenses on food in the week before the survey. Households in the Tonle Sap area spent comparatively less on rice than Plains households (18 and 26 percent, respectively). The poorest households were using a third of their food-related expenditures toward buying rice, compared to just 16 percent of the richest households. By contrast, the wealthiest households were using close to half of their food-related expenses (46 percent) on meat and fish; just 27 percent of food-related expenditures went towards meat and fish in the poorest households.

Non-food Expenditures

Households were also asked to recall how much cash they had spent on non-food items in the month prior to the survey. Again, these expenses were summed to create a monthly total, which was then used to determine the proportion of non-food item expenditures that went towards each item. Table 32 shows that the single biggest non-food expense for households in the month before the survey (mid-December to mid-January) was ceremonies (23 percent). Households in the Tonle Sap zone had used slightly more of their non-food expenditures towards ceremonies than Plains households (27 and 21 percent), while households in the Plains were using a larger proportion of cash to purchase farm equipment. The largest non-food item expense for the poorest households during this recall period was related to paying back loans (19 percent).

Total Expenditures

Food and non-food expenditures were then combined and summed to create a total expenditure profile for each household. As shown in Table 33, the largest proportion of total monthly cash expenditures for all households during December—January was food (43 percent). The poorest households used 49 percent of their monthly expenditures towards food; the second largest expenditure among poorest households went towards servicing loans (11 percent).

Change in Expenses

Finally, households were asked to report whether their current expenditure on each of these food and non-food items was more, less, or about the same compared to the same time the previous year.

As shown in Table 34, households considered severely affected by the Affect Index were most likely to report a year-on-year expenditure increase for food, medical care, and loan repayments (56, 58, and 53 percent, respectively). These households were also considerably more likely to report an increase in housing expenditures (22 percent) compared to households identified as unaffected by the Affect Index (2 percent).

Households which were identified as mildly or moderately affected by the Affect Index also reported increases in food, medical care costs and loan repayments, but were additionally more likely to report an increase in farm equipment and agriculture input costs compared to households considered unaffected by the Affect Index.

5.3 ASSETS

Damaged by Floods

Having established whether various types of assets were owned by the household prior to the floods, the Post-flood Survey then asked households to report whether the owned asset had been damaged or destroyed by the floods. Table 35 shows that the most commonly damaged assets during the floods were fishing nets (33 percent), boats (21 percent), rice mills (19 percent), bicycles (19 percent), and water pumps (14 percent). More than a quarter of households reported they could not afford to replace their damaged fishing nets (28 percent) and boats (29 percent).

Table 33. Total Expenditures

Proportion of total monthly household cash expenditures (month: mid-Dec to mid/end-Jan). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Total	Ecological Zone		Wealth quintile				
		Plains	Tonle Sap	Poorest	Second	Middle	Fourth	Richest
Food	43.2	44.4	41.2	49.4	45.3	40.0	41.3	39.3
Ceremonies	12.7	11.1	15.6	8.3	11.8	13.6	13.9	16.7
Loans	9.3	9.7	8.7	11.4	10.5	10.1	7.9	6.3
Medical	8.9	8.9	8.8	9.4	9.2	9.1	9.3	7.2
Agriculture inputs	6.5	7.8	4.2	5.8	6.1	8.0	7.1	5.7
Education	5.3	5.1	5.5	4.2	4.4	5.1	5.7	7.1
Transport	4.9	4.6	5.3	3.7	4.4	5.2	5.0	6.4
Clothing	2.2	1.9	2.7	1.7	1.7	2.3	2.4	3.0
Energy	2.1	2.0	2.3	1.6	2.0	2.1	2.1	2.9
Communication	1.5	1.5	1.6	0.8	1.2	1.7	1.8	2.3
Hygiene	1.4	1.3	1.6	1.4	1.5	1.4	1.3	1.3
Housing	1.1	0.9	1.5	1.4	1.4	0.7	1.2	0.8
Firewood	0.8	0.8	0.9	0.8	0.7	0.8	1.0	1.0

Table 35. Household Asset Damage

Among households possessing various assests, percent distribution of households experiencing damage to the asset due to the flood, and estimated time to repair/replace asset (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Damaged during flood	Number	Among HH with asset damaged, expected time to repair:					
			<3 months	≥3 months	Cannot afford to repair	Already repaired	Total	Number
Household effects								
Radio	9.4	1,073	14.8	10.7	20.9	53.5	100.0	101
Television	9.1	1,646	14.2	12.8	21.1	51.9	100.0	150
Cell phone	12.2	1,688	12.5	3.7	17.4	66.4	100.0	206
Sewing machine	4.5	149	*	*	*	*	*	7
Battery	5.5	1,314	11.1	9.3	35.9	43.7	100.0	72
Plough	4.9	486	(32.6)	(18.8)	(12.6)	(36.0)	(100.0)	24
Hand tractor	10.2	279	(29.2)	(6.5)	(2.6)	(61.8)	100.0	28
Tractor	*	11	*	*	*	*	*	1
Thresher	*	19	*	*	*	*	*	1
Rice mill	19.0	73	*	*	*	*	*	14
Fishing nets	32.9	695	11.9	28.9	28.2	31.1	100.0	229
Water filter	2.2	508	*	*	*	*	*	11
Water pump	14.0	699	19.0	10.7	10.6	59.7	100.0	98
Table	0.9	934	*	*	*	*	*	8
Chair	1.3	914	*	*	*	*	*	12
Bed/mattress	5.1	1,741	14.2	12.2	24.6	49.0	100.0	89
Jewelry/gold	0.8	839	*	*	*	*	*	7
Modes of transport								
Bicycle	18.6	1,779	16.9	8.5	22.5	52.2	100.0	331
Motorbike	11.4	1,120	15.3	4.3	7.3	73.0	100.0	128
Oxcart	7.7	377	(18.1)	(13.3)	(12.0)	(56.6)	(100.0)	29
Car/truck	7.9	53	*	*	*	*	*	4
Boat	20.8	498	7.0	19.8	29.3	43.8	100.0	104

Note: Figures in parentheses are based on 25-49 unweighted cases; an asterisk indicates that a figure has been supressed because there were fewer than 25 unweighted cases.

SECTION

6 AGRICULTURE, LIVESTOCK, AND FISHING

6.1 WET SEASON CULTIVATION (2011)

The Post-flood Survey collected a range of agricultural data that help illuminate the effects of the floods on cultivation during the 2011 wet season. Table 36 shows that, among households within the sampling frame, 71 percent cultivated some wet season crop during 2011. This figure varied by zone: 4 of 5 households in the Tonle Sap zone (80 percent) cultivated a crop compared to 66 percent of households in the Plains. A majority of households (51 percent) cultivated wet season rice, though there was considerable discrepancy according to ecological zone and wealth.[8] About 1 in 6 households (7 percent) cultivated a *chamkar* crop (e.g., beans, corn, or potatoes); a sizeable proportion of households also cultivated home gardens[9] and vegetable gardens during the 2011 wet season (40 and 18 percent, respectively).

Wet Season Rice Crop

The Survey also collected information on the total area cultivated, the proportion of households experiencing some damage to their crop as a result of the floods, the proportion which managed to harvest anything, and the total mass of crop harvested. Figure 2 shows the proportion of households according to their 2011 wet season rice harvest status. In the Plains zone, 38 percent of households which cultivated wet season rice reported that the crop had been damaged by the floods to an extent that they were not able to harvest anything; just 23 percent of households in the Tonle Sap were unable to harvest anything due to damage from the floods. About half of the households in the Plains experienced damage to their wet season rice crop but were able to harvest something (48 percent); 70 percent of households in the Tonle Sap managed to harvest something from their damaged crop.

Table 36. Wet Season Cultivation (2011)

Percent distribution of households that cultivated any crops during the 2011 wet season, and among those, the percentage cultivating various crops, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Wet cultivate[1]	Types of crops					Number
		Rice	Chamkar	Home garden	Vegetable garden	Other	
Ecological Zone							
Plains	66.2	39.9	6.8	36.4	17.0	3.1	1,524
Tonle Sap	80.2	69.9	6.2	46.3	19.2	3.4	873
Wealth quintile							
Poorest	57.1	40.5	1.4	28.6	15.9	2.5	520
Second	69.0	51.1	4.8	36.8	16.6	2.5	494
Middle	78.9	60.3	8.7	43.5	19.8	3.3	471
Fourth	78.8	54.4	10.3	46.1	18.6	3.3	457
Richest	74.8	49.1	8.7	46.7	18.5	4.6	454
Total	71.3	50.9	6.6	40.0	17.8	3.2	2,397

[1] Includes Rice, Chamkar, Home garden, Vegetable garden, and other.

[8] See Section 11.3 for explanation of these estimates.

[9] Home gardens were defined in the Post-flood Survey as sources of food owned/maintained by household that required minimal labour efforts (e.g., mango and banana trees).

Figure 2. Household Wet Season Rice Harvest

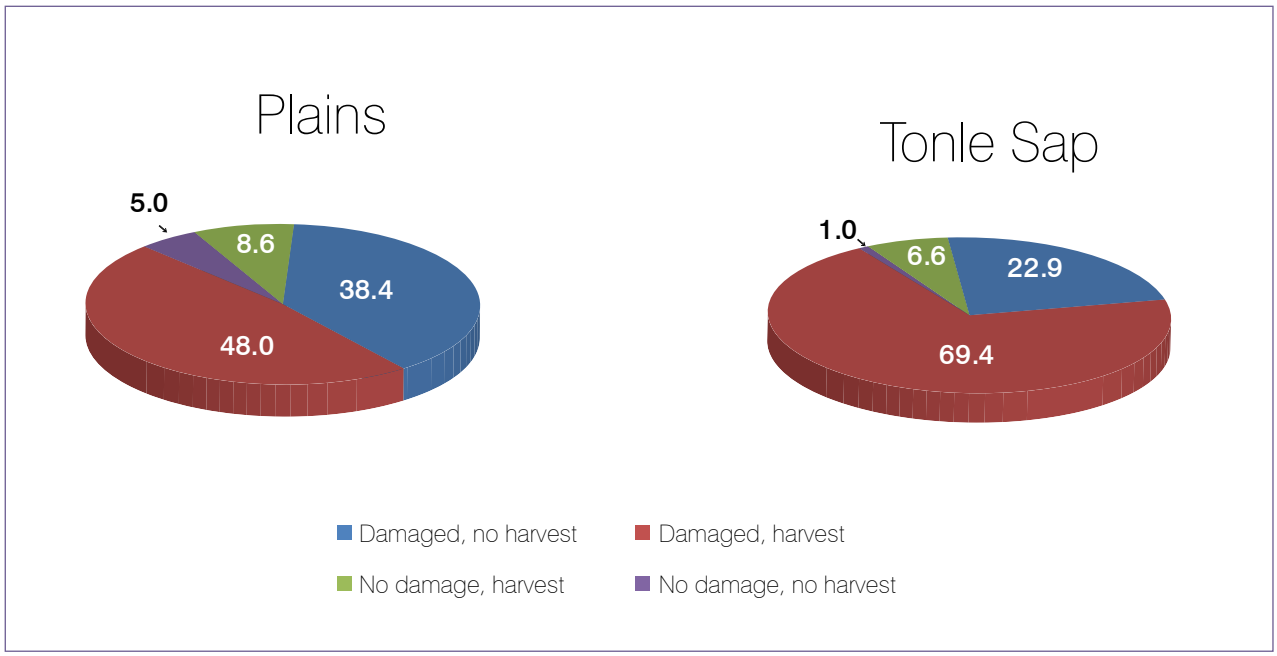

Table 37shows the median areas cultivated and reported harvests for 2011 wet season rice by households. The average wet rice yield for households with any harvest was 1,110 kg/ha. Households in the Plains ecological zone had a slightly higher overall yield at 1,220 kg/ha. Just 21 percent of households were planning to sell any portion of their harvest. More than 4 in 5 households in the Plains and Tonle Sap zones who cultivated any wet season rice were expecting to sell less of their wet season rice harvest compared to the year before (81 and 86 percent, respectively).

Finally, households were asked whether they had any of their wet season rice still in stock at the time of the survey. Nearly three-quarters of Tonle Sap households who cultivated wet season rice (74 percent) still had some of their harvest in stock; however, just over half of households in the Plains (54 percent) reported the same. About half of the households which cultivated rice during the 2011 wet season in both zones reported that these rice stocks would last their families 5 months.

6.2 DRY SEASON CULTIVATION

Basic information was also collected regarding households' cultivation plans for the 2011/2012 dry season. Three in five households reported that they were planning to or had already cultivated land for the dry season (Table 38). Among all households, just over half (51 percent) cultivated crops both during the wet season and dry season. Tonle Sap households were more likely to have only cultivated land during the wet season (29 percent vs. 16 percent), while Plains households were more likely to have only cultivated during the dry season (12 percent vs. 5 percent). Disaggregating by wealth reveals that 30 percent of the poorest households did not cultivate land in either the wet or dry season; 87 percent of households in the middle wealth quintile cultivated land during either the wet or dry season.

6.3 SEED STOCKS

Households that had cultivated 2011 wet season rice were also asked whether they had any seed in stock for the 2012 wet season. As shown in Table 39, 70 percent of households had some wet season rice seed in stock. Households in the Tonle Sap zone were slightly more likely to have seeds in stock than households in the Plains (72 and 67 percent, respectively). The poorest households were least likely to have seeds in stock (60 percent). The median amount of seeds in stock varied linearly according to the area planted during the 2011 wet season.

When asked how the amount of seed in stock compared to previous years, roughly 28 percent of households reported their stock was less than normal. There was minimal variation according to ecological zone; 38 percent of the poorest households reported the amount of seed in their stock was less than normal.

6.4 IRRIGATION

A series of questions were asked to better understand household access to irrigation for the current dry season, as well as the previous wet season. Among all households, 32 percent had access to irrigation at the time of the survey (Table 40). There was a considerable difference in access to irrigation according to ecological zone, such that 39 percent of households in the Plains had access at the time of the survey compared to just 20 percent of Tonle Sap households. A smaller percentage of households reported having access to an irrigation source before the floods (29 percent); the biggest differences in reported access were in the Plains zone and among the middle wealth quintile.[10]

The sources of irrigation to which households had access prior to the floods were also queried: the most common source reported was irrigation canals (39 percent). Households in the lowest two wealth quintiles were more likely to report access to community ponds (10 percent), while those in the upper wealth quintiles more frequently reported using the river as a source of irrigation (23 percent). Wells also served as a source of irrigation for many households, though this was captured in the "Other" category. Among households with access to irrigation prior to the floods, about 1 in 4 (25 percent) reported that the source had been damaged during the floods.

6.5 LIVESTOCK

Questions were also asked to gather information on the floods' effect on household livestock situation. Table 41 shows that 75 percent of households in the sampling frame owned animals before the floods; the most common animals owned were chickens (68 percent) and cows (34 percent). Animal ownership was fairly consistent between the ecological zones; households in the middle wealth quintile were most likely to own animals before the floods (82 percent). Nearly two-thirds of households owning animals before the floods reported that they had lost any animals as a result of flooding (68 percent); the poorest households appeared most likely to have lost animals as a result of the floods (74 percent).

6.6 FISHING

The Post-flood Survey also sought to determine whether the floods had any measureable effect on the fishing situation for households. Table 42 shows that more than a third of all households (34 percent) reported catching wild fish before the floods. A larger proportion of households in the Tonle Sap reported fishing for wild fish before the floods compared to the Plains (42 and 30 percent, respectively). Households in the poorest wealth quintile were most likely to have been fishing for wild fish prior to the floods (47 percent). The proportion fishing for wild fish at the time of the survey was somewhat lower at 26 percent. When households that were currently fishing for wild fish were asked how the catch compared, half reported that the amount was less than that from the same time the previous year. Few households reported having raised fish before the floods or that they were raising fish at the time of the survey (6 and 4 percent, respectively).

[10] Due to the sequence and wording of these questions, it is difficult to ascertain whether households with access to irrigation before the flood and at the time of the survey were actually using it for their crops.

Table 40. Irrigation

Percent distribution of households with access to irrigation at the time of the survey and prior to the flood; and among those with access to irrigation before the flood, the specific type of irrigation; and the percentage of households reporting damage to this source of irrigation due to the flood, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background	Current access to irrigation	Access before flood	Number	Types					Source damaged by flood	Number
				Private pond	Community pond	Irrigation canal	River	Other[1]		
Ecological Zone										
Plains	39.2	34.2	1,510	2.3	6.9	37.6	19.8	38.6	23.1	516
Tonle Sap	19.6	20.3	872	5.9	6.4	41.4	7.5	43.2	28.7	177
Wealth quintile										
Poorest	24.6	21.0	511	2.9	9.8	39.5	12.6	39.9	24.3	107
Second	34.0	32.5	490	3.8	10.2	40.3	12.1	41.8	22.5	159
Middle	37.4	29.7	471	1.6	4.3	39.3	11.8	47.0	27.9	140
Fourth	34.7	33.7	456	4.4	5.1	39.8	22.2	32.7	27.1	154
Richest	24.6	29.2	454	3.2	4.8	33.3	24.3	37.7	20.6	133
Total	32.0	29.1	2,382	3.2	6.8	38.5	16.7	39.8	24.5	693

[1] The most common sources reported as "Other" were wells and surface water.

SECTION

7 LOANS & DEBT

7.1 HOUSEHOLD LOAN STATUS

To determine whether families were forced to borrow money to cope with the floods' effects, households were first asked if they had any loans to repay at the time of the survey. Table 43 shows that among all households, 60 percent were in debt to some source.The poorest households were considerably more likely to have any loans compared to the richest households (69 and 41 percent, respectively). The survey then asked if households had taken out any loans as a direct result of the floods. Among those households with any debt, 66 percent had taken out a loan because of the floods; nearly half of all households contracting new debts due to the floods (44 percent) took out multiple loans.

There was no difference between zones in the overall reliance on flood-related loans. However, just over half of the richest households with any debt (53 percent) had flood-related loans compared to 70 percent of the poorest households with any debt. The richest households were also less likely to have taken out multiple loans than those in the poorest quintile.

7.2 MAIN REASONS FOR LOANS

After establishing the household's loan status, the survey then asked respondents to identify the main reasons for the largest of the loans to better understand the nature of the financial burden. As shown inTable 44, a larger proportion of households with any loans in the Tonle Sap reported the main reason for taking the loan was to purchase food compared to households in the Plains (49 and 42 percent, respectively). Households in the Tonle Sap were also more likely to report having taken out the loan to repair their house. In contrast, more

Table 43. Household Loan Status

Percent distribution of households with any loans at the time of the survey, and among those with any loans, percent which had taken on loans due to the flood, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background	Any loans	Number	Among households with any loans, those with loans due to flood:				
			1	2	>2	Total	Number
Ecological Zone							
Plains	61.8	1,524	34.7	18.4	11.4	64.5	940
Tonle Sap	55.8	873	40.1	16.8	11.6	68.5	487
Wealth quintile							
Poorest	69.3	520	39.2	17.4	13.4	69.9	360
Second	65.9	494	35.9	19.7	12.5	68.1	326
Middle	64.6	471	34.3	20.2	13.7	68.2	303
Fourth	55.0	458	36.6	18.7	8.2	63.5	251
Richest	41.1	454	36.1	10.6	6.7	53.4	187
Total	59.6	2,397	36.5	17.8	11.5	65.9	1,427

Table 44. Main Reason for Loans

Among households with any loans, percent distribution by main reason for largest loan (if multiple), according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Pay back original loan	Buy food	School costs	Buy ag inputs	Buy or rent land	Pay for ceremonies	Business development	Medical expenses	Repair house
Ecological Zone									
Plains	7.0	42.2	5.7	35.2	2.9	9.7	32.8	19.0	3.8
Tonle Sap	5.4	48.7	3.5	33.1	2.7	6.8	27.2	22.7	6.4
Wealth quintile									0
Poorest	4.8	59.9	3.0	27.9	2.3	7.3	28.3	25.0	5.2
Second	6.7	50.7	4.8	30.4	2.4	9.1	24.4	25.4	5.0
Middle	8.9	38.4	4.0	41.6	2.7	9.3	28.7	17.8	4.4
Fourth	6.2	34.1	8.1	40.4	3.0	9.3	34.7	13.2	3.0
Richest	5.4	27.5	6.6	35.2	4.4	9.4	46.1	15.8	6.2
Total	6.4	44.4	5.0	34.5	2.8	8.8	30.9	20.3	4.7

households in the Plains reported taking out the loan for business development purposes (33 and 27 percent, respectively).

Disaggregating this information according to wealth reveals that poorer households were more likely to report that a main reason for their loans was to buy food. Similarly, a quarter of poorer households (25 percent) reported taking out their loans to cover medical expenses compared to just 16 percent of the richest households. Households in the middle and fourth quintiles were more likely to report taking out loans to purchase agricultural inputs (i.e. seeds, fertilizer, irrigation, and equipment). The most common reason cited for loans among the richest households was business development (46 percent).

7.3 PRIMARY SOURCE OF LOANS

In addition to the reasons for their debt, households were also asked to name the primary source from which their largest loan was received. This information provides insight to the level of access different households had to various sources of financing. Table 45 shows that the three most common sources of financing for households were MFI (30 percent), private lenders (24 percent), and banks (20 percent). Households in the Plains ecological zone were more likely to have received their loans from a bank (23 percent), whereas households in the Tonle Sap were most often accessing debt from a private lender and MFI (29 percent). Access to bank financing followed a relatively linear pattern among wealth quintiles, such that the wealthiest households were considerably more likely to have received a loan from that source compared to the poorest households (25 percent vs. 16 percent). By contrast, the poorest households were more likely to rely on a private lender compared to the wealthiest households (28 and 21 percent, respectively). The poorest households were also least likely to identify a family member as the source of their largest loan.

7.4 FINANCIAL TERMS OF LOANS

Finally, information was collected to better understand the terms under which households were borrowing this money. Table 46 shows that the principal amount borrowed varied according to zone, Affect Index, and

wealth quintile, as well as by primary source of the loan. For all sources, the median amount of money borrowed for the largest loan was $375 in the Plains compared to $250 in the Tonle Sap.[11] Households in the poorest wealth quintile borrowed considerably less from all sources than those in the richest quintile ($250 and $750, respectively). Among the three most common sources of financing, households were able to access the most credit from banks ($600).

The time for repayment of the largest loan was also analysed. For all households with a loan, the median length of repayment was just over 10 months. This period varied most according to the Affect Index, such that households considered severely affected by the floods had a median repayment period of 8 months compared to just over 11 months for those households considered unaffected.

The costs of servicing the largest loan was also assessed and presented in Table 46. The median amount households were paying each month to finance $100 from all sources was $12.9. Households in the Plains were paying slightly more each month to finance $100 than households in the Tonle Sap ($13.3 and $12.5, respectively). The poorest households were paying $13.4 to finance $100; the richest households were paying $11.9. Among the three most common sources of financing, households borrowing from private lenders were paying nearly $20 per month to finance $100. The poorest households with loans from a private lender were paying $24 per month to finance $100. Households in the Tonle Sap appeared to get better borrowing terms from private lenders, paying just over $15 per month to finance $100.

Table 46. Financial Terms of Loans

Among households with any loans, the median amount borrowed (principal) for the largest loan, the median repayment period, and monthly cost to borrow $100, for largest loan (unweighted). $1=4,000 Riel. Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Principal Amount ($)				Repayment period (months)	Cost/month ($) to borrow $100[1]			
	MFI	Private lender	Bank	All sources		MFI	Private lender	Bank	All sources
Ecological Zone									
Plains	275	250	625	375	10.0	11.9	25.5	11.9	13.3
Tonle Sap	300	250	500	250	11.3	11.9	15.1	11.9	12.5
Affect index									
Unaffected	250	250	725	300	11.3	11.9	19.9	11.9	12.4
Mildly	400	375	(1,000)	375	10.3	11.9	16.0	(11.9)	13.2
Moderately	250	250	500	275	10.0	11.9	24.3	12.2	12.9
Severely	(275)	(125)	*	250	8.0	(11.9)	26.1	*	16.4
Wealth quintile									
Poorest	250	175	375	250	10.0	11.9	24.0	11.9	13.4
Second	250	250	500	250	10.0	11.9	22.0	11.9	13.3
Middle	250	340	750	300	10.0	11.9	16.6	11.7	13.3
Fourth	400	250	690	500	12.0	11.9	19.5	11.9	11.9
Richest	1,000	(500)	(1,500)	750	12.0	11.6	(20.0)	(10.9)	11.9
Median	300	250	600	300	10.3	11.9	19.9	11.9	12.9
Number	415	356	261	1,413	1,413	413	345	261	1,358

[1] Excludes loans with repayment periods less than one month.

Note: Figures in parentheses are based on 25-49 unweighted cases; an asterisk indicates that a figure has been supressed because there were fewer than 25 unweighted cases.

[11] Households were asked to report the amount they borrowed for their largest loan in riel or dollars; for ease of comparison, the amounts reported in riel have been converted to dollars using $1 : 4,000 riel rate.

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SECTION

8 FOOD SECURITY

8.1 NUMBER OF MEALS

A general measure for assessing the food security of a household is the number of daily meals eaten by adults and children under-5. Households were asked to identify the number of meals eaten the previous day, as well as how the numbers of meals eaten and how the quantity eaten at each meal compared to the same time the previous year. Table 47 shows that the mean number of meals eaten by adults in all households was 2.5. Adults in households considered severely affected by the floods according to the Affect Index and those in the poorest households had eaten fewer meals, on average, than households considered unaffected and those in the wealthiest quintile. The mean number of meals eaten by children under-5 the day prior to the survey was 2.8; those children living in the poorest households had eaten just 2.6 meals the day prior to the survey.

8.2 FOOD CONSUMPTION SCORE

The Post-flood Survey also assessed household food security using a method that relies on a simple 7-day food-frequency recall. Households were asked how many days in the previous week they had consumed various foods from a set of pre-identified food groups. Their responses, which ranged from 0–7 days, were weighted and summed to construct a food consumption score (FCS) that was used to compare households' dietary quality and diversity across sub-groups.

Households were asked to report their consumption of 18 food items that were subsequently regrouped into seven distinct food groups: staples (rice, maize, bread, cassava, and sweet potatoes), pulses (beans, groundnuts, and other legumes), meats (fish, other aquatic species, beef, pork, poultry, and eggs), vegetables, fruits, sugar products, oils and fats, and dairy products. Specific weights were applied to these food groups to emphasize their relative nutritive value, so that, for example, meats (weight = 4.0) counted more towards a quality and diverse diet than sugar products (weight = 0.5). The maximum FCS possible was 127.

The mean food consumption score for all households was 50.8. The mean FCS for households in the poorest wealth quintile was 47.7, while the richest households had a mean FCS of 55.5. According to the common cut-offs used in Cambodia, just 0.4 percent of households had a poor diet, which typically consists of just rice and some vegetables every day (Table 48). Four percent of households had a borderline diet and 96 percent had an adequate diet. The proportion of households in each FCS group did not vary considerably according to Affect Index, however there was a substantial difference observed according to wealth status. Ninety-nine percent of households in the richest quintile had an adequate diet compared to just 91 percent of households in the poorest quintile.

Table 48. Food Consumption Score

Among all households, mean Food Consumption Score (FCS) and percent distribution by FCS cut-offs, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Food Consumption Score Group				Number
	FCS	Poor	Borderline	Adequate	
		≤ 24.5	> 24.5 & ≤ 38.5	> 38.5	
Ecological Zone					
Plains	50.8	0.5	4.2	95.3	1,524
Tonle Sap	50.8	0.3	3.5	96.3	873
Affect index					
Unaffected	51.1	0.4	3.8	95.8	1,565
Mildly	50.8	0.3	3.2	96.5	380
Moderately	49.8	0.4	4.9	94.7	349
Severely	49.5	1.2	5.1	93.6	103
Wealth quintile					
Poorest	47.7	1.6	7.8	90.6	520
Second	49.5	0.4	4.9	94.7	494
Middle	50.1	0.0	3.4	96.6	471
Fourth	51.6	0.0	2.3	97.7	458
Richest	55.5	0.0	0.7	99.3	454
Total	50.8	0.4	3.9	95.7	2,397

8.3 COPING STRATEGIES

In addition to the quality and diversity of household diets, information was also collected to assess whether households had experienced actual or perceived difficulties accessing food and to understand the strategies they used to cope with these difficulties in the 30 days preceding the survey. A series of nine questions were asked to gauge the extent of these difficulties, with households reporting the general frequency which they experienced them according to Never, Rarely, Sometimes, and Often (Table 49).[12] More specifically, these questions

...appear to distinguish the food secure from the insecure households across different cultural contexts. These questions represent apparently universal domains of the household food insecurity (access) experience and can be used to assign households and populations along a continuum of severity, from food secure to severely food insecure [11].

Basic Frequencies

As shown in Figure 3, a considerable proportion of households in flood-affected areas of the Plains and Tonle Sap zones had worried about there not being enough food in the 30 days prior to the survey. Many households in both zones also reported at least sometimes having to eat foods that they did not prefer because there was not enough food or cash to buy food during this time period. The questions capturing more extreme coping strategies to food access difficulties reflect that, in general, these households were not resorting to these measures in the month prior to the survey.

Household Food Insecurity Access Scale

The household food insecurity access scale (HFIAS) is yet another means of assessing a household's vulnerability to food insecurity. While the Food Consumption Score represents a direct measure of the household's actual diet quality and diversity, the HFIAS

[12] The coping strategies captured in these questions had been tailored to be more relevant in the context of Cambodia; i.e. they represent strategies that rural families in Cambodia are likely to exploit during times of limited food access.

better depicts the access component of food insecurity. The HFIAS was created by summing the individual responses to the same nine questions reported in Table 49. The responses were weighted equally—a response of "Rarely" for any question was given a weight of 1, while "Often" was given a weight of 3—to construct the raw HFIAS for each household. The responses to these questions were then grouped according to their severity to determine the Household Food Insecurity Access Prevalence (HFIAP). For this indicator, households who only reported worrying about not having enough food were considered Food Secure, while those reporting adults skipping meals or going to bed hungry were defined as Severely Food Insecure (see Appendix 4).

Table 50 shows the mean HFIAS results for all households from the Post-flood Survey, as well as the proportion of households falling into each food (access) insecurity group. Among all households, 8 percent were identified to be food secure according to the HFIAP, meaning they had experienced virtually no food insecurity access conditions in the 30 days prior to the survey. More than a third of households (40 percent) were found to be mildly food insecure; a further 37 percent were moderately food insecure, meaning the household resorted to eating undesirable foods frequently or had reduced the quantity of foods consumed. Fifteen percent of households in the survey were identified as severely food (access) insecure, having limited the number of meals eaten or gone to bed hungry.

Coping Strategies Index (Reduced)

The Coping Strategies Index (CSI) is another indicator uses to assess the level of food insecurity within a population, which it accomplishes by measuring peoples' behaviors since:

The acquisition of food and the provision of adequate nutrition to one's children are among the most basic of human endeavors. In general, people respond to conditions under which they do not have enough to eat, and various means of "coping" is what people have to do when they do not have enough—the more people have to cope, the less food secure they are... People generally know how much is "enough" and seek the best options for ensuring that they eat enough. People start to change their consumption habits when they anticipate a problem [12].

The mean reduced[13] CSI for all households in the survey was 8.7 (Table 51). Households considered severely affected by the floods according to the Affect Index had a mean CSI of 27.1 and the poorest households had a mean CSI of 17.0.

Household Hunger Scale

Finally, the Household Hunger Scale (HHS) is a relatively new indicator developed to "...measure household hunger in food-insecure areas. The [Household Hunger Scale] is different from other household food insecurity indicators in that it has been specifically developed and validated for cross-cultural use.This means that the HHS produces valid and comparable results across cultures and settings so that the status of different population groups can be described in a meaningful and comparable way..."[13]. The indicator is created by weighting the three most extreme coping strategies captured in the nine questions discussed above. Table 52 shows the median HHS for households as well as those falling into the three hunger sub-categories. Households considered severely affected by the floods according to the Affect Index were most likely to have been experiencing moderate and severe hunger conditions (22 percent). Just over 13 percent of households in the poorest quintile were reportedly experiencing moderate to severe hunger conditions in the 30 days prior to the survey.

[13] A reduced version of the original CSI has been used here; according to the methods manual, "The reduced CSI...is a sub-set of the context-specific CSI, but is calculated using a specific set of behaviors with a universal set of severity weightings for each behavior...Extensive research has demonstrated that the "reduced" CSI reflects food insecurity nearly as well as the "full" or context-specific CSI..." [12].

Table 52. Household Hunger Scale

Among all households, median household hunger scale (HHS) score and percent distribution by household hunger categories, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	HHS	Little/no hunger in household	Moderate hunger in household	Severe hunger in household	Total	Number
Ecological Zone						
Plains	0	91.8	7.3	0.9	100.0	1,524
Tonle Sap	0	84.6	5.4	0.0	100.0	873
Affect index						
Unaffected	0	95.6	4.0	0.4	100.0	1,565
Mildly	0	92.1	7.6	0.3	100.0	380
Moderately	0	85.5	13.1	1.3	100.0	349
Severely	0	77.7	19.9	2.4	100.0	103
Wealth quintile						
Poorest	0	86.5	11.8	1.7	100.0	520
Second	0	91.6	7.6	0.8	100.0	494
Middle	0	95.5	4.2	0.3	100.0	471
Fourth	0	95.7	4.3	0.0	100.0	458
Richest	0	95.7	4.3	0.0	100.0	454
Total	0	92.8	6.6	0.6	100.0	2,397

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SECTION

9 HEALTH & NUTRITION

In the aftermath of the floods, a primary concern and uncertainty was the extent to which they had impacted the health and nutritional status of the population. In a fundamental sense, the overall well-being of a community is reflected in the health of its women and children, and indicators related to economic, agricultural, and food security conditions are captured to help explain this overall measure. The health and nutrition indicators presented in this section were chosen because they represent standard, comparable measures of well-being for these groups.

9.1 NUTRITIONAL STATUS OF MOTHERS

In addition to what a woman's poor nutritional status says directly about the environment in which she is living, it also has a considerable bearing on the likelihood of anthropometric failure of her child [14]. To better understand the floods' cumulative effect on the nutritional well-being of women, the Post-flood Survey collected height and weight measurements from the mothers of eligible children aged 0–59 months.[14]

Body Mass Index (BMI)

Table 53 shows that for all mothers included in the survey, 6 percent were recorded with heights less than 145 cm. Among non-pregnant mothers, 70 percent had a body mass index (weight/height^2) within the normal range[15]. Just more than 1 in 8 women (13 percent) had a BMI that identified them as underweight. Most of these were mildly thin, though 3 percent had a BMI less than 17.0. Seventeen percent of mothers were classified as overweight. The mean BMI for all non-pregnant mothers was 21.8.

9.2 HEALTH STATUS OF CHILDREN UNDER FIVE

Children afflicted by disease are at risk of becoming malnourished due to their bodies' increased nutrient requirements to fight the disease and a reduced ability to absorb these nutrients from their diet during the disease. Furthermore, malnourished children are more susceptible to diseases than their well-nourished peers, often creating a cycle of sickness and malnutrition from which they are unable to recuperate completely, thereby permanently reducing their growth potential.

Measles Immunization

Immunization is an extremely effective public health measure to reduce the incidence of preventable childhood illnesses. Mothers of surveyed children were asked to show the child's vaccination card in order to assess the immunization status of their child. Among children aged 12–23 months, 77 percent had a vaccination card that was seen by an enumerator (Table 54). There was no significant difference for vaccination card ownership according to child sex or ecological zone. There was minor variation according to household wealth quintile, such that children living in the poorest households were less likely to have a vaccination card that was seen by survey enumerators compared to those in the wealthiest quintiles.

Mothers were subsequently asked whether their child had ever received a measles immunization. Among all children aged 12–23 months, 72 percent had received a measles vaccination according to vaccination card at some time before the survey. There was no observed difference for measles immunization status according to child sex, ecological zone, or wealth quintiles.

[14] The weight and height of pregnant women and those who had given birth in the two months prior to the survey were also assessed but have been removed from the BMI calculations.

[15] The women's BMI data from the Post-flood Survey appears skewed rightward when compared to the 2010 CDHS; one potential explanation for this pattern is that the CDHS includes all women 15-49 in its BMI calculations, while the Post-flood Survey only captured height and weight data of women with a living child under-five.

Table 53. Nutritional Status of Mothers

Among mothers aged 15-49 years, percentage with height less than 145cm, mean body mass index (BMI), and the percentage with specific BMI levels, by background characteristic. Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background Characteristic	Height		Body mass index[1]								
					Thin			Overweight and Obese			
	Below 145 cm	Number of women	Mean BMI	Normal	Moderate and severe	Mild	Total	Over weight	Obese	Total	Number of women
Age				18.5-24.9	<17.0	17.0-18.4	<18.5	25.0-29.9	≥30.0	≥25.0	
15-19	*	11	*	*	*	*	*	*	*	*	8
20-29	4.1	393	21.4	74.6	2.6	11.6	14.2	10.9	0.3	11.2	311
30-39	6.9	291	22.2	67.9	1.6	10.7	12.3	16.9	2.9	19.8	243
40-49	8.2	97	22.5	57.6	7.1	7.1	14.2	27.1	1.2	28.3	85
Ecological Zone											
Plains	4.8	371	21.4	69.5	3.4	12.3	15.7	14.4	0.3	14.7	292
Tonle Sap	6.2	421	22.2	70.7	2.3	9.0	11.3	15.8	2.2	18.0	355
Education											
None	8.6	151	22.5	64.5	3.2	6.5	9.7	22.6	3.2	25.8	124
Primary	5.0	480	21.6	69.5	2.8	12.3	15.1	14.1	1.3	15.4	390
Secondary +	4.3	161	21.6	77.4	2.3	9.0	11.3	11.3	0.0	11.3	133
Wealth quintile											
Lowest	6.0	215	21.5	69.6	4.2	12.5	16.7	11.9	1.8	13.7	168
Second	5.6	160	21.5	73.6	1.6	9.6	11.2	15.2	0.0	15.2	125
Middle	5.7	140	21.9	69.2	3.4	13.7	17.1	11.1	2.6	13.7	117
Fourth	0.0	144	21.9	68.4	3.4	9.4	12.8	17.9	0.9	18.8	117
Highest	10.5	133	22.5	70.0	0.8	6.7	7.5	20.8	1.7	22.5	120
Total	5.6	792	21.8	70.2	2.8	10.5	13.3	15.1	1.4	16.5	647

[1] Excludes pregnant women and those who had given birth in the 2 months prior to the survey.

Note: Figures in parentheses are based on 25-49 unweighted cases; an asterisk indicates that a figure has been supressed because there were fewer than 25 unweighted cases.

Vitamin A & Deworming Supplementation

Vitamin A and deworming supplementation for children are important components of any public health effort in resource-poor settings. A dose of vitamin A promotes child growth and is essential for maintaining healthy immune system functioning, while deworming medication treats parasitic infections that can reduce the absorption of nutrients by the child from her diet.

Mothers were shown vitamin A capsules and asked to recall if their child had received this treatment at any point in the 6 months prior to the survey. As shown in Table 55, 87 percent of children aged 6–59 months had received vitamin A supplementation during this time period. There were no apparent differences in vitamin A supplementation according to child sex, ecological zone, or wealth.

Mothers were also shown deworming tablets (mebendazole) and asked to recall if their child had received this medication in the 6 months preceding the survey. Eighty-three percent of children aged 12–59 months had received deworming medication during this time period (Table 55).

Diarrhea

Nearly a quarter of all children aged 0–59 months (22 percent) suffered from diarrhea in the two weeks prior to the survey (Table 56). There was considerable variation in the prevalence of diarrhea according to child age, such that children aged 12–23 months were considerably more likely to have suffered from diarrhea compared to their younger and older peers. Diarrhea prevalence among children also varied significantly by Affect Index and wealth quintiles: children living in households considered moderately and severely affected, as well as those in poorer households, were more likely to have suffered from diarrhea in the two weeks preceding the survey. Moreover, children living in households using non-improved sanitation facilities were much more likely to have suffered diarrhea, as were those living in households that were not treating their drinking water. Nearly a third of children living in households without access to soap had suffered from diarrhea in the two weeks before the survey (30 percent). About two-thirds of children with diarrhea (64 percent) had been taken to a health facility or provider for treatment; 38 percent had received an ORS rehydration solution (Table 57).

Acute Respiratory Infection

Less than 1 in 10 children (8 percent) had reportedly experienced symptoms of ARI in the two weeks prior to the survey (Table 58).[16] Children aged 12–23 months had the highest prevalence (9 percent); 10 percent of children living in the poorest households had symptoms of ARI. And among those children suffering from symptoms of ARI, more than two-thirds (71 percent) were taken to a health facility or provider for treatment while they were ill. The small sample sizes of children with ARI made it difficult to determine if there were any differences in health-seeking behavior according to age, mother's education, and wealth.

Fever

As shown in Table 59, the proportion of all children that reportedly had a fever in the two weeks preceding the survey was 40 percent. More than half of children aged 6–11 months (55 percent) had suffered from fever. Among all children with fever, just more than half (58 percent) had been taken to a health facility or provider for treatment.

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[16] Symptoms of ARI defined as a cough accompanied byshort/rapid breathing that was chest related in the two weeks prior to the survey.

Table 56. Prevalence of Diarrhea

Percentage of children aged 0-59 months who had diarrhea in the two weeks prior to the survey, by background characteristics zone (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background Characteristic	Diarrhea in the two weeks prior to the survey:		
	All diarrhea	Diarrhea with blood	Number of children
Sex			
Male	23.1	2.2	898
Female	21.7	2.9	888
Age			
0-5	23.5	0.0	184
6-11	33.9	3.2	155
12-23	38.8	3.9	376
24-35	23.0	4.6	404
36-47	7.7	0.6	343
48-59	11.3	1.9	308
Ecological Zone			
Plains	22.2	2.1	1,091
Tonle Sap	22.8	3.3	695
Affect index			
Unaffected	17.8	1.1	1,079
Mildly	23.1	2.6	290
Moderately	33.1	5.0	312
Severely	35.9	10.3	104
Mother's education[1]			
None	32.0	4.9	252
Primary	21.8	1.8	837
Secondary +	19.3	1.6	295
Wealth quintile			
Poorest	25.9	4.0	476
Second	25.1	2.0	367
Middle	23.7	3.3	324
Fourth	17.7	2.1	313
Richest	17.3	0.6	306
Source of drinking water[2]			
Improved	22.7	1.6	950
Non-improved	21.9	3.6	830
Appropriate water treatment[2]			
Yes	21.2	2.3	1,348
No	26.2	3.4	438
Toilet facility[2]			
Improved, not shared	17.6	2.0	501
Non-improved	24.3	2.7	1,285
Soap available[2]			
Yes	21.1	2.0	1,534
No	30.3	5.9	248
Total	22.4	2.5	1,786

[1] Excludes children for whom maternal education was not collected.

[2] See Tables 5, 6, & 7 for definition of these indicators.

9.3 NUTRITIONAL STATUS OF CHILDREN 6–59 MONTHS

The nutritional status of children is a comprehensive measure that reflects the general health of the community and the specific household context within which the child is living. Inadequate nutrition is a direct result of insufficient or inappropriate food intake by the child, repeated diseases, or a combination of both.

The Post-flood Survey collected height and weight measurements from 1,116 children aged 6–59 months. Using these measurements and a child's sex and age in months, a set of anthropometric z-scores using the 2006 WHO Growth Standards were calculated [15]. All z-scores outside a predetermined range (–3 SD, +3 SD) were flagged and the paper-based questionnaires for these cases were checked to ascertain whether a recording error had been made in the field. After this cleaning, there were a total of 1,100 children with plausible WHZ scores; 1,085 children with plasubile HAZ scores; and 1,095 children with plasubile WAZ scores.

Wasting

Table 60 shows that the prevalence of wasting among all children aged 6–59 months was 5.6 percent (95% CI: 4.0–7.2). Children aged 18–23 months and those with thin mothers (according to BMI) had the highest rates of wasting (10.8 and 11.6 percent, respectively). The weight-for-height z-scores varied considerably according to maternal BMI and household wealth. Just 0.3 percent of children were severely wasted.

Stunting

As shown in Table 61, the prevalence of stunting among children aged 6–59 months was 37.1 percent (95% CI: 33.9–40.3). The prevalence of stunting varied considerably with age; just 14 percent of children aged 6–11 months were stunted compared to nearly half of all children aged 24–35 months (45 percent). Children living in the poorest households were also more likely to be stunted than those in the wealthiest households (47 percent vs. 27 percent).

Underweight

Table 62 shows the prevalence of children aged 6–59 months that were classified as underweight according to the WHO 2006 Growth Standards. In all, 23.3 percent of children were underweight (95% CI: 20.4–26.1); 4 percent were severely underweight. As with acute malnutrition, children aged 18–23 months had the highest prevalence of underweight (32 percent). Underweight was also considerably higher among children living in the poorest households and those whose mother had a low BMI.

Management of Acute Malnutrition

The National Nutrition Programme within the Ministry of Health, in conjunction with various development partners, have developed and are implementing guidelines for the facility-based management of moderate and severe acute malnutrition [16]. According to these guidelines, children aged 6–59 months with MUAC measurements less than 11.5 cm should be admitted to a health center for outpatient treatment of severe acute malnutrition. Children of the same age with MUAC measurements between 11.5 cm and 12.5 cm are eligible for targeted supplementary feeding from a health center.

MUAC measurements were taken for all children aged 6–59 months in the Post-flood Survey. Table 63 shows that no children were found to have MUAC measurements less than 11.5 cm; 1.5 percent of children aged 6–59 months had measurements between 11.5 cm and 12.5 cm.

Table 60. Prevalance of Wasting (WHO 2006 Growth Standards)

Percentage of children aged 6-59 months classified as having low weight-for-height according to WHO 2006 Growth Standards, by background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background Characteristic	Weight-for-height			Mean z-score	Number of children
	< -3 SD	< -2 SD	(95% CI)		
Sex					
Male	0.4	7.1	(4.8, 9.3)	-0.70	782
Female	0.2	4.1	(2.1, 6.0)	-0.64	739
Age					
6-11	0.0	2.0	(0.0, 5.0)	-0.49	147
12-17	0.0	6.2	(1.8, 10.6)	-0.67	169
18-23	0.0	10.8	(4.8, 16.9)	-0.76	198
24-35	0.6	5.1	(2.4, 7.9)	-0.68	386
36-47	0.5	5.6	(2.5, 8.7)	-0.66	336
48-59	0.3	4.2	(1.2, 7.1)	-0.69	286
Ecological Zone					
Plains	0.4	6.2	(4.1, 8.3)	-0.69	937
Tonle Sap	0.2	4.7	(2.3, 7.0)	-0.64	584
Mother's nutritional status[1]					
Thin	0.0	10.0	(4.6, 15.3)	-0.82	140
Normal	0.1	4.9	(2.8, 7.0)	-0.67	678
Overweight	0.0	2.9	(0.0, 6.3)	-0.47	153
Height < 145cm	0.0	11.6	(0.0, 25.0)	-0.87	65
Mother's education[2]					
None	0.0	4.7	(1.5, 7.9)	-0.70	221
Primary	0.1	6.6	(4.2, 9.0)	-0.69	714
Secondary +	0.0	4.6	(1.4, 7.9)	-0.58	234
Wealth quintile					
Lowest	0.5	5.4	(2.2, 8.6)	-0.75	396
Second	0.0	7.3	(4.1, 10.5)	-0.75	322
Middle	0.1	6.3	(2.5, 10.2)	-0.65	277
Fourth	0.0	5.2	(1.8, 8.5)	-0.59	273
Highest	0.0	3.5	(0.2, 6.7)	-0.55	253
Total	0.3	5.6	(4.0, 7.2)	-0.67	1,521

1 Excludes children for whom maternal BMI was not collected (e.g., pregnant).

2 Excludes children for whom maternal education was not collected.

Table 63. Management of Acute Malnutrition

Percentage of children aged 6-59 months eligible for inpatient management of severe acute malnutrition, percentage eligible for outpatient management (MUAC <11.5cm), and percentage eligible for TSFP (MUAC >=11.5cm and MUAC<12.5cm), by background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background Characteristic	Inpatient				Outpatient	TSFP	Number of children
	WHZ < -3 SD	Oedema	> 6 mo, weight < 4kg	Total	MUAC < 11.5cm	MUAC >= 11.5 & < 12.5cm	
Sex							
Male	0.4	0.7	0.0	1.1	0.0	1.3	787
Female	0.2	0.3	0.0	0.5	0.0	1.7	747
Ecological Zone							
Plains	0.4	0.8	0.0	1.2	0.0	1.6	947
Tonle Sap	0.2	0.0	0.0	0.2	0.0	1.2	587
Mother's education[1]							
None	0.0	0.0	0.0	0.0	0.0	1.3	225
Primary	0.1	0.5	0.0	0.6	0.0	1.1	720
Secondary +	0.0	0.0	0.0	0.0	0.0	1.8	235
Wealth quintile							
Lowest	0.5	0.0	0.0	0.5	0.0	3.4	403
Second	0.0	1.1	0.0	1.1	0.0	0.3	325
Middle	0.1	0.7	0.0	0.8	0.0	0.7	277
Fourth	0.0	0.0	0.0	0.0	0.0	0.0	274
Highest	0.0	0.7	0.0	0.7	0.0	2.2	254
Total	0.3	0.5	0.0	0.8	0.0	1.5	1,534

[1] Excludes children for whom maternal education was not collected.

9.4 INFANT AND YOUNG CHILD FEEDING

Infant and young child feeding (IYCF) guidelines recommend exclusive breastfeeding for the first six months of a child's life because a mother's breast milk contains all the nutrients a growing child needs for this stage of his development and contains protection against infections and pathogens in the environment [17]. Beginning at six months, children should continue breastfeeding and be supplemented with appropriate complementary foods to supply their increasing energy and nutrient requirements. The frequency of these complementary feeds should increase with age. IYCF guidelines recommend breastfeeding for all children up to 2 years and beyond to encourage healthy physical and mental development.

Early Initiation of Breastfeeding

Early breastfeeding is recommended for newborns because the first breast milk, colostrum, contains essential antibodies and nutrients; it stimulates breast milk production and a close bond between mother and child; and has been associated with lowering the risk of neonatal mortality [18].

Table 64 shows that among all living children born in the 2 years preceding the survey, nearly all (96 percent) had ever been breastfed. Among these same children, two-thirds (67 percent) reportedly began breastfeeding within the first hour of life. These findings are consistent with those from the 2010 CDHS.

Breastfeeding Status by Age[17]

Table 65 shows the proportion of all children less than 2 years old by breastfeeding status the day prior to the survey. The proportion of children aged 0–5 months exclusively breastfed (i.e. consumed only breast milk) was 73 percent. Nearly a quarter of children aged less than two years had been given liquids from a bottle with a nipple (23 percent).

[17] The 2010 CDHS calculates these figures using only the youngest child born in the 2 years preceding the survey, whereas these results include all children under 2; this is of little consequence for findings for children < 9 months, but the figures for older children will appear comparatively smaller because some mothers would have already had a second child and thus stopped breastfeeding the first child.

SECTION

10 ASSISTANCE & PRIORITY NEEDS

A final set of information collected in the Post-flood Survey sought to assess the types of assistance received by households since the floods and to gather households' self-reported priority needs for the recovery phase (i.e. throughout 2012). This information gives a very rough picture of the relief phase interventions reaching households in the aftermath of the floods and should ideally help stakeholders in the design and implementation of recovery phase programmes.

10.1 ASSISTANCE RECEIVED

Table 66 shows that the most common forms of assistance received by households in flood-affected areas of the Plains and Tonle Sap zones in the months since the floods were free food rations (39 percent), clothes and blankets (23 percent), and water treatment kits (11 percent).[18] There were no major differences in types of assistance received according to ecological zone. Table 67 further shows the relative targeting of the most common forms of assistance according to the Affect Index. Nearly two-thirds of households considered severely affected according to the Affect Index (62 percent) had received free food rations in the months since the floods.

10.2 PRIORITY NEEDS

Households were also asked to identify the most useful forms of assistance that would help them meet the difficulties they were facing as a result of the floods. Table 68 presents the eight most frequently reported types of assistance requested. Households living in flood-affected areas of the Tonle Sap were considerably more likely to identify agricultural inputs (53 percent vs. 39 percent) and agricultural tools (37 percent vs. 23 percent) as high priority forms of assistance. Households in the poorest wealth quintile, and those considered severely affect by the floods according to the Affect Index, were most likely to identify free food rations as a high priority form of assistance (76 and 77 percent, respectively). Households depending on agricultural and non-agricultural day labour in the month prior to the survey were most likely to report that income assistance was a high priority in the coming months (61 and 59 percent, respectively).

Table 67. Assistance Received by Affect Index

Percent distribution of households by reported types of assistance received since September 2011, according to Affect Index (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Affect Index				Total
	Unaffected	Mildly	Moderately	Severely	
Types of assistance					
Free food ration	31.4	47.6	54.8	62.0	38.7
Clothes/blankets	19.7	26.7	31.5	29.6	23.0
Water treatment kits	7.9	10.2	19.2	27.7	10.8
Cooking utensils (NFIs)	8.1	11.0	16.3	24.6	10.5
Cash transfers	3.1	8.0	11.7	15.5	5.7
Plastic sheeting/tents	3.3	5.2	7.5	10.5	4.5
Free health care	2.3	4.6	7.4	9.8	3.7
Number	1563	380	349	103	2396

[18] These figures do not in all cases represent assistance that was received as a direct result of the floods; that is to say, assistance received as a part of ongoing programmes in flood-affected areas are also captured in these findings. E.g., during a technical discussion of preliminary survey findings, it was noted that a widespread distribution of mosquito nets had been planned before the floods.

Table 68. Priority Needs[1]

Percent distribution of households by self-reported main recovery needs between the time of survey and wet season planting, according to background characteristics (weighted). Cambodia Post-flood Relief and Recovery Survey, January 2012.

Background Characteristics	Free food ration	Cash-for-work	Free seeds & fertilizer	Free health care	Free agricultural tools	Micro-credit	Plastic sheeting	Cooking utensils
Ecological Zone								
Plains	60.8	54.7	38.7	45.3	23.3	11.4	9.2	7.0
Tonle Sap	66.4	55.2	53.1	33.4	37.1	11.4	7.4	4.1
Affect index								
Unaffected	59.4	52.7	43.8	43.9	30.8	9.4	8.6	5.8
Mildly	66.2	56.2	53.1	35.2	26.0	12.3	4.9	7.3
Moderately	70.4	60.0	41.2	36.5	22.8	16.2	11.2	5.6
Severely	76.8	66.2	22.3	33.3	18.0	23.6	12.6	5.4
Wealth quintile								
Poorest	75.8	60.2	32.8	37.7	23.9	10.6	14.7	7.9
Second	62.9	59.3	46.6	39.3	27.3	11.8	8.4	5.8
Middle	60.1	52.4	51.3	30.0	29.3	16.7	8.7	5.8
Fourth	57.0	53.5	49.8	41.9	33.1	8.9	4.8	4.7
Richest	56.5	48.0	40.4	46.6	28.8	9.1	5.2	5.5
Income source previous month								
Self-employed	62.6	56.4	40.1	46.3	24.2	8.9	7.2	5.2
Agricultural wage labour	67.2	60.7	41.7	37.4	27.6	12.0	9.6	6.0
Non-ag casual labour	71.8	59.1	40.5	43.5	23.1	13.6	8.6	4.4
Income from fishery	65.5	58.8	40.1	33.4	30.7	14.6	9.8	5.2
Construction	65.5	54.5	37.8	46.0	32.6	6.4	8.9	7.3
Sale of paddy	41.2	47.7	59.5	41.5	53.0	7.4	7.8	3.4
Sale of other agri.	55.6	39.6	58.8	40.2	51.1	9.4	4.4	5.9
Total	62.8	54.9	44.0	41.0	28.3	11.4	8.5	6.0

[1] List is not exhaustive; priorities mentioned by less than 5 percent of households not included for brevity.

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SECTION

11 DISCUSSION

11.1 GENERAL EFFECTS

Findings from the Post-flood Survey related to the types of information received by households indicate a relatively high penetration of flood-related communications during and after the floods. That television was the primary medium through which households received these messages, and the preferred source of communication in the event of a future emergency, is consistent with its high level of ownership in general. But poorer households, which were less likely to own a television, depended more upon and preferred other sources for communication, especially word-of-mouth via neighbors, relatives, and other community members. Since the effective communication of information to households is vital during emergencies, these results suggest that emergency communication plans should avoid relying upon a single medium for information dissemination (e.g., television) as this would very likely fail to reach some populations, especially the poorest households, who would have been the primary audience for such messages during the 2011 floods. Therefore, existing emergency communication plans are recommended to test and strengthen, or implement if they do not already have, a word-of-mouth system to ensure optimal coverage and saturation (e.g., from commune chief to village chief/VHV or someone else within the village dedicated for such a purpose). Moreover, that so few households reported receiving flood-related communications via a mobile phone while a relatively large proportion actually own them suggests that this medium was grossly underutilized in 2011 information dissemination strategies.

The Post-flood Survey found that nearly 10 percent of households had been displaced from their home by the floods for at least one night [2]. Because the survey only sampled areas within 250 meters of the peak-flood boundary in the Plains and Tonle Sap ecological zones, this largely confirms the assumption that households within affected provinces were at higher risk of the floods' effects according to their proximity to the lake and rivers. In addition, though most of the villages visited during the survey experienced some level of flooding, a relatively small percentage of households were actually displaced outside their community; most of the displaced relocated within the community. And because the poorest households were most likely to have been displaced and to have experienced damage to their housing infrastructure, it appears that much of the displacement resulted from the destruction of homes built from low-quality materials (e.g., thatch). It is unlikely that households, particularly the poorest, have been or will be able to invest in major improvements to their housing materials. In fact, 42 percent of households with damaged walls reported that they could not afford to repair them. Therefore, partners interested in helping the poorest households and reducing the impact of future natural disasters (e.g., household displacement and its associated economic losses) are encouraged to consider the large effect that interventions supporting the poorest households' ability to improve their housing structures are likely to have.

There was some concern among various stakeholders that the floods might have disrupted households' access to their traditional sources of drinking water and toilet facilities. However, the water and sanitation findings from the survey do not support, at least some months after the floods, this scenario. According to the 2010 CDHS, the most common source of drinking water for rural households during the dry season is a borehole (36 percent). Of the households privately owning water pumps in the Post-flood Survey, just 14 percent reported it had been damaged by the floods. And by the time the survey was conducted, 60 percent of these households had already repaired their damaged water pumps. While the survey did not ask households

whether the floods had any effect on the quality of their drinking water (contamination, turbidity, etc.), nearly 80 percent of all households reported treating their water using appropriate methods and 87 percent had access to soap, both of which were associated with a significantly lower prevalence of diarrhea among children under 5. Moreover, the absence of any large-scale outbreak of diarrhea in these areas suggests that any of the floods' effects on water and sanitation did not manifest as a worst-case scenario. More worrisome, however, given that 22 percent of children under 5 *had* recently suffered from diarrhea, was that so few households seemed to identify water as a potential culprit. These findings suggest that WASH-related preparedness and recovery efforts might best be directed towards hygiene education, as well as strategic prepositioning and continued distribution of soap and water treatment materials in high-risk and flood-affected areas.[19]

The Affect Index was created to provide a standard measure for comparing the floods' impact on households within the peak-flood boundary. Its design and scope were necessarily limited because all households could not experience similar flood-related hardships: only half of all households surveyed had planted wet season rice in 2011, which, for comparability reasons, eliminated "damage to crops" as an indicator for the index. Thus, when using the Affect Index to interpret the survey's findings, it is important to do so in conjunction with the other underlying characteristics (i.e. ecological zone, wealth, and income sources) to allow a more nuanced understanding of their meaning. What the Affect Index seems to have identified, however, is important: its categories represent an increasing vulnerability to external shocks.[20] In point, while some households lost considerable portions of their wet season crops due to the floods,it was also these households that, by the very nature of having been able to grow wet season crops (having access to land, financial resources, etc.), were more capable of responding to such losses.

As evidence of the different response options available to households, the pattern of migration from households after the floods—those in the lowest three wealth quintiles were more than twice as likely to have had a member migrate out, for which the floods were the primary reason cited—suggests that it was largely driven by economic considerations. Further supporting this narrative are the findings that 1) 10 percent of households considered severely affected by the floods had fewer income earners at the time of the survey compared to before the floods; and 2) at least 60 percent of the poorest households reported being directly dependent on the labour market for cash income, both of which imply that these households were being forced to generate income wherever and however they could find it.

Given the above findings, it is not surprising that the self-reported difficulties faced by the poorest and most vulnerable households differed considerably from those in wealthier quintiles.In addition to medical care and food costs, the poorest and most vulnerable households were disproportionately struggling with their debt load and the physical damage to their homes. In contrast, households in the middle wealth categories—those most likely to have grown wet season crops—most frequently reported damage to their land as the primary difficulty they had faced in the months since the floods.

11.2 ECONOMIC IMPACT

As discussed above, the survey findings suggest that the floods created increased economic pressures for many households, especially the poorest and most vulnerable. Two-thirds of all households reported experiencing a decrease in their income in the months since the floods; among the poorest and most vulnerable this figure was even higher. Therefore, generating new and complementary sources of income represents, for these households, an important (and positive) means of coping with the floods negative effects.

Useful to a deeper understanding of the floods' potential economic impact, and for the design of recovery programmes, was the finding that the diversity of income activities for poorer households was much more limited compared to that of wealthier households.

19 One might assume that, particularly in the immediate stages of a flood, access to wood for boiling water would be difficult to obtain, making the availability of water treatment kits for households at-risk of flooding an even higher priority.

20 As a result, throughout Section 11 the phrase "most vulnerable" is used frequently to denote those households identified as severely affected by the floods according to the Affect Index.

Four income activities (self-employed, agricultural and non-agricultural wage labour, and fishing) were identified by at least 20 percent of the poorest households as a primary means of generating cash in the month before the survey. In contrast, just one activity (self-employed) was identified by at least 20 percent of households in the middle, fourth, and richest wealth quintiles.

It should be noted that there was some evidence the labour market, particularly in the agricultural sector, experienced an increase in demand due to above normal dry season planting. Conversations in various communities during survey fieldwork revealed that the floods' damage to crops had forced many farmers who did not normally cultivate dry season crops to do so. And data from the district and commune market assessments (see Appendix 5) show that the terms of trade for agricultural day labourers, particularly in the Plains ecological zone, were better than historical trends would have predicted, implying an improvement in the supply/demand labour ratio. Combined, these findings suggest that, as a way of coping with the floods' effects, more farmers cultivated land during the dry season and, as a result, provided additional labour opportunities that may have served to buffer some poor households from the worst of economic possibilities immediately following the floods.

However, given that such a large proportion of the poorest and most vulnerable households were experiencing increased financial pressures due to the floods, and that the agricultural labour market will likely normalize during the 2012 planting season, there are and will be considerable need for income generating activities for these households throughout 2012. Further supporting this conclusion are the findings that, even at the time of the survey, when the agricultural labour market was presumably quite strong, between 10 and 15 percent of the poorest and most vulnerable households with school-aged children were depending on their children to help cope with their economic burdens.

These findings underscore that the 2011 floods created additional opportunities for, and likely increased the potential effectiveness of, recovery programmes that aim to alleviate those financial pressures—by directing assistance through the labour market, such as public works programmes—the poorest and most vulnerable households are experiencing. Given the wide range of vulnerabilities faced by households living near the lake and rivers, and the high dependency by many of these households on daily wages, recovery public works programmes are encouraged to explore multi-faceted channels and more frequent disbursement modalities for this assistance.

Furthermore, recovery programmes designed to protect children and to improve school attendance must consider the economic context within which these households, particularly those affected by the floods, are being forced to rely upon child labour.

11.3 AGRICULTURE, LIVESTOCK, & FISHING

The Post-flood Survey findings indicate that many households cultivating crops during the 2011 wet season within 250 meters of the peak-flood boundary suffered serious negative effects. Before considering the extent of these losses, it should be noted that conversations with village chiefs and community members revealed that many households living in very close proximity to the lake and rivers did not traditionally cultivate wet season rice; the reason primarily cited being that, even during normal years, these fields were sometimes inundated with water to some extent. Indeed, the Post-flood Survey found that just 40 percent of households in flood-affected areas of the Plains zone had cultivated rice during the 2011 wet season. Without these precautionary planting habits—established in response to historical weather and environmental conditions—the 2011 floods could have damaged the crops of many more households.In addition, that the cultivation patterns of households living in areas most likely affected by the floods differ somewhat from the population as a whole serves to remind that extrapolations of the floods' impact to the entire agricultural sector in these ecological zones should be avoided.

Even allowing that the scale of crop damage in these areas could have been worse, the floods still dramatically impacted the 70 percent of households

[21] The 2011/2012 agricultural report from MAFF largely confirms these findings; overall dry season production was up 22% compared to 2010/2011 [3].

Table 72. Total Expenditure by Type of Loan (wealth)

Proportion of total monthly household cash expenditures by pre- and post-flood loan status (month: mid-Dec to mid/end-Jan).
Cambodia Post-flood Relief and Recovery Survey, January 2012.

	Poorest				Second				Middle				Fourth				Richest			
	No loan	Non-flood	Flood	R[1]	No loan	Non-flood	Flood	R	No loan	Non-flood	Flood	R	No loan	Non-flood	Flood	R	No loan	Non-flood	Flood	R
Food	60.1	43.9	44.0	0.00	51.4	42.1	40.7	-0.03	44.3	40.0	35.8	-0.11	46.5	39.6	34.3	-0.13	43.0	34.6	32.9	-0.05
Ceremonies	10.8	9.0	7.5	-0.17	16.0	11.1	9.9	-0.11	17.7	14.1	11.1	-0.21	16.8	14.7	11.3	-0.23	18.9	14.0	15.0	0.07
Loans	***	13.3	16.2	0.22	***	15.0	13.6	-0.09	***	13.6	14.8	0.09	***	10.1	13.5	0.34	***	13.9	14.9	0.07
Medical	7.6	13.2	8.6	**-0.35**	9.2	9.3	9.2	-0.01	9.9	7.9	9.0	0.14	8.6	9.1	9.8	0.08	7.0	8.4	6.4	-0.24
Agri. inputs	2.2	5.9	8.0	0.36	1.5	4.6	8.7	**0.89**	4.7	6.3	10.0	**0.59**	3.6	6.4	11.0	**0.72**	3.5	6.0	8.9	0.48
Education	5.2	3.7	4.0	0.08	4.7	4.5	4.1	-0.09	4.7	5.5	5.2	-0.05	5.5	7.3	5.6	-0.23	7.8	6.3	6.2	-0.02

[1] R = 1 - (flood/non-flood).

who did cultivate during the 2011 wet season. Just 66 percent of all households planting wet season rice in these areas were able to harvest anything; barely half of Plains households planting wet season rice managed any harvest. The yield for those farmers who did manage to harvest anything was less than half the 2010 yields reported for these zones [19], indicating considerable damage to even those crops that were salvaged. Broadly speaking, the findings suggest that the floods affected wet season rice crops in the Tonle Sap ecological zone slightly more, in relative terms. Households in the Tonle Sap appeared to be better off, in absolute terms, because they cultivated larger areas in general; this helps explain why these households were in a better position to sell some of their harvest and had more in stock at the time of the survey. These findings are further supported by the data showing that households in the Tonle Sap were using just 18 percent of their food expenditures towards rice, while households in the Plains were using 26 percent.

As discussed earlier, a primary response to the floods' impact among households in the middle and upper wealth quintiles was to plant dry season rice. During conversations with communities, a common complaint raised was the expensive costs of seeds, fertilizer, and irrigation required to grow dry season rice. And although the survey did not capture the reason households were planting dry season crops (i.e. was it in response to the floods or that they traditionally planted during the dry season), an analysis of the expenditure patterns by wealth quintile according to loan status supports the anecdotal finding that the middle wealth groups were disproportionately using post-flood loans to buy agricultural inputs (see Table 72).

The implications of households taking on additional debt to finance dry season rice cultivation seem important to consider. It is common for many farming households in Cambodia to borrow money to plant their wet season crops and then repay the money after that season's harvest has been sold. Because households affected by the 2011 floods suffered such dramatic losses to their 2011 wet season harvests, and because many of these households took out additional loans to buy agricultural inputs for dry season planting, there is considerable financial pressure on them to have a successful dry season harvest. The situation seems even more tenuous for those households who took out

loans for dry season planting in spite of not normally cultivating during this time. It is unclear what effect the (presumably) increased amount of dry season rice coming onto the market will have on the price paid to farmers for paddy rice. Recent policies in Thailand and sub-national differences in production may or may not influence the price paid as well. It was clear from conversations with farmers during the survey, however, that they are depending on prices at least similar to those offered the previous year to help compensate for their increased financial burden. In the short-term, therefore, it is important to monitor the prices paid for dry season paddy rice; substantial deviations from historical prices will undoubtedly affect these farmers' ability to meet their increased financial obligations. In the medium- to long-term, the coping strategies employed by farmers in response to (or anticipation of) the floods—taking out loans to finance dry season planting, being risk-averse in locations near the lake and rivers—emphasize the need for more robust protection mechanisms for small-scale farmers.

11.4 LOANS & DEBT

The information on household debt and expenditure patterns allows a more complete understanding of the ways that households responded to the floods' effects. Half of the poorest households (48 percent) had at least one flood-related loan compared to less than a quarter of the richest households (22 percent). This finding is consistent with that showing that nearly 75 percent of the poorest households reported their income had decreased since the floods.

More informative still were the patterns that emerged after analysing the reasons households gave for taking on their largest loan and the ways in which they were directing their expenditures based upon their loan status. When households with any loans were asked why they had borrowed the money, the most common responses were to buy food and agricultural inputs, and to support the development of their businesses (Table 44). Furthermore, when the same responses were analyzed by the type of loan households had (i.e. flood-related or only pre-flood), it emerged that households with flood-related loans—across both zones and all wealth quintiles—were significantly more likely to report that the main reason for the loan was to buy food. Households in the upper wealth quintiles with flood-related loans were also significantly more likely to report that their loan was for agricultural inputs and to support the development of their businesses than those with only pre-flood loans. These findings support a narrative that the primary reason households were taking on debt after the floods was to buy food; a secondary purpose was to enable wealthier households to support their productive agricultural and business activities.

Additional patterns emerged after analysing the proportion of monthly cash expenditures households were directing to various food and non-food items according to their loan status. Households which had taken out any loans were significantly more likely to use a *smaller* proportion of their cash expenditures on food, ceremonies, energy, communication, and personal hygiene; instead, they were using a *larger* proportion of their expenditures towards agricultural inputs (see Table 69, 70). The proportion of spending on productive agricultural inputs increased the most for households in the second and poorest quintiles (2.4 and 4.0 times), suggesting that the marginal effects of any loan (or, by extension, financial assistance via cash transfers or public works programmes) on productive activities is greatest for poorer households. That is to say, when poorer households have extra cash, they commit less, proportionally, to food and invest the additional money into productive activities; and the benefit of this additional cash on productive activities is greatest, proportionally, for the poorest households.[22]

After analysing the expenditure data more fully, they reveal that households with flood-related loans were using smaller proportions of their expenditures on ceremonies and larger proportions on agricultural inputs; households in the Tonle Sap appeared slightly more capable of directing their flood-related loan money into agricultural inputs than those in the Plains (0.8 vs. 0.5 times), though this likely results from the fact that households without loans in the Tonle Sap were spending less on food (rice) in general (Table 71, 72). The difference in agricultural expenditure patterns appears mainly among the second, middle, and fourth wealth quintiles, which is largely consistent with the self-reported reasons for their loans. There is also

[22] The survey did not collect expenditure data for other productive activities, such as expenses that might be related to small businesses or activities of the "self-employed", but one suspects that the tendency to convert extra cash into productive investment would also apply to those activities as well.

weaker evidence to suggest that households with flood-related loans were directing a larger proportion of their expenditures towards repairing their homes than those with only pre-flood loans; this difference appears to be most pronounced in the Plains zone.

The expenditure findings suggest there are additional implications for programmes designed to financially assist households during the recovery phase.They imply that households, especially the poorest, will first direct additional income towards covering inelastic costs (which in Cambodia appear to include, for all but the poorest households, ceremonies). It is conceivable that households' expenditure behavior with grants (i.e. money they do not repay) could differ from that predicted by their use of loans—they might be more likely, for example, to buy a higher quality diet with the extra cash. Nevertheless, the findings appear to confirm that the poorest and most vulnerable households' economic behavior is largely rational, making them most likely to direct cash towards investment in productive activities. Therefore, recovery programmes that seek to improve households' investment in productive activities (agricultural as well as self-employment/small business) with financial assistance will see the greatest marginal benefits from the poorest households.

11.5 FOOD SECURITY

Standardized indicators collected during the survey suggest that food insecurity was most associated with the poorest and most vulnerable households, though the overall food security situation in flood-affected areas appeared stable. The four primary indicators (FCS, HFIAS, CSI, and HHS) were significantly associated with wealth, the measure of vulnerability implied by the Affect Index, and various maternal and child nutritional status indicators (Table 77, 78). In absolute terms, the Food Consumption Score suggests that the overall quality and diversity of diet among households was not alarming. Even as poor households directed a greater proportion of their food expenditures towards rice, they were still managing more than 25 percent on fish and meat. The HFIAS, which better identifies the access component of food security, is also consistent with the total proportion of all expenses households within different wealth groups directed towards food; poorer households were using a larger proportion of their money to cover food expenses, and these households were also the most likely to be, from a food access definition, moderately and severely food insecure. The CSI findings further reveal the increased vulnerability of labour market-dependent households to external shocks while the proportion of households reporting their income had decreased since the floods was similar among "self-employed" and "agricultural wage labour"(≥ 60 percent for each group), the mean CSI for the latter was more than three times that of the former.

Figure 4 shows the total amount households spent on all food during the week prior to the survey according to their loan status. The data suggest that households spent around 60,000 riel on a basic diet, not including own production.[23] That a basic diet is, in an economic sense, inelastic is perhaps not surprising, but it has implications for recovery programme design, as it suggests that once the poorest and most vulnerable households reach a certain minimum caloric threshold, they are able to redirect their money and energy towards other productive activities. In addition, that the mean FCS was not different according to loans status within wealth quintiles, and the mean HFIAS was greater among middle and upper wealth groups with loans, further supports the narrative that loans were taken out by those with reduced access to food (e.g. as a result of crop destruction), and also produced diets comparable in quality and diversity to those eaten by households without loans (Figures 5 and 6).

More surprising, perhaps, was the finding that households were not using a significantly different proportion of their expenditures on food according to the type of loan they had (Table 71, 72).At first this appears to contradict the findings discussed earlier, whereby households with flood-related loans were more likely to report the main reason was to buy food than those with only pre-flood loans. Figure 7 helps reconcile these seemingly incongruous findings. Outside of the top wealth quintile, households receiving flood-related loans *were* spending more money on rice than households with only pre-flood loans. The difference in rice expenditures can probably be interpreted as compensation for the

[23] That households in both the second and middle quintiles matched this threshold without loans supports the idea of a basic food basket; also supporting the idea is the finding that households with loans use progressively smaller proportions of their expenditures on food as wealth increases (see Table 70).

Figure 4. Median Monthly Food Expenditure (Riel)

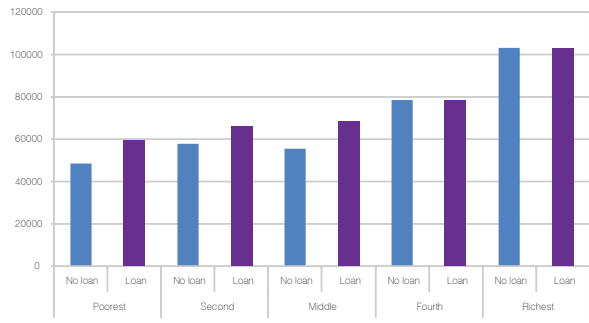
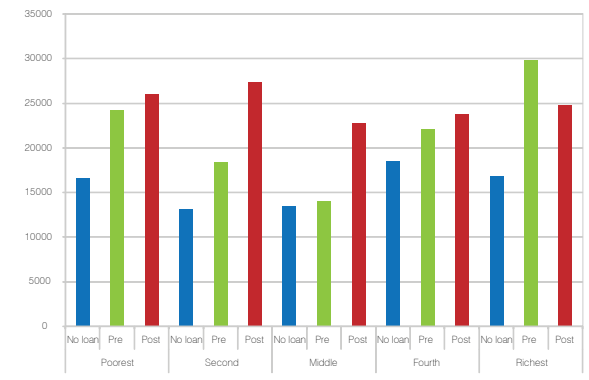


Figure 7. Median Monthly Rice Expenditure by Loan Status (Riel)



amount of rice normally produced by these households but which was lost as a result of the floods.[24] That the difference in weekly rice expenditures is greatest among the second and middle quintiles also seems to support that these households were most dependent on their own production for their rice consumption.

11.6 HEALTH & NUTRITION

Because of their particular vulnerability during natural disasters and emergencies, there was justifiable concern among stakeholders as to the 2011 floods' impact on the health and nutritional status of women and children living in flood-affected areas. However, there did not appear to be a serious deterioration among a common (but limited) set of indicators used for assessing the overall health and nutritional status of these two populations at the time of the survey. However, these findings, when considered within the larger context of many households' poor financial situation, suggest that the floods' effects on health and nutrition may yet manifest in time.

Vaccination coverage rates among children under 5 were consistently high before the floods, and because the floods did not prompt any large-scale displacement and congregation of households, that there was no reported outbreak of measles or other communicable diseases in children is well-explained. Additionally, the high rate of vitamin A coverage in children under 5 reflects the great effort by Cambodia's public health system, occurring as it did just two months after a bi-annual national supplementation campaign. Indeed, these high coverage rates assuredly helped mitigate many of the potential threats the floods posed to the health and nutritional status of children in affected areas.

The prevalence of recent illness among children under-5 found in the survey was somewhat higher than that reported in the 2010 CDHS. The patterns observed, however—strong associations between recent illness and household wealth, maternal education, and child age—are consistent with those found in other national surveys, suggesting that the increase is likely a product of seasonal fluctuations and some underlying differences between the sampled areas and the ecological zones as a whole. The proportion of children taken to a health facility or medical provider for treatment was also comparable to that from the 2010 CDHS, which suggests that any effects the floods might have had on the health system were not preventing households from accessing treatment at the time of the survey. These health-seeking behavior findings are consistent with those related to debt and household expenditures as well. That medical costs was among the main difficulties households reported they had faced since the floods; medical expenditures were among the four largest sources to which households were directing their cash in the month before the survey; and 20 percent of all households with loans (and 25 percent of the poorest) reported that a primary reason for taking on the debt was to pay for medical costs—all confirm that accessing health care is both a high priority for rural households and a significant source of psychological and financial pressure in the aftermath of the floods. These findings reveal that, though many of the poorest and most vulnerable households are likely eligible to receive subsidized health care (though ID Poor, Health Equity Funds, etc.), many are still directing considerable

[24] Another, perhaps less plausible, explanation for this finding could be that those households which had only pre-flood loans had little or none of the original loan money at the time of the survey. For example, the median size of pre-flood loans among the poorest quintile households was $250, and the median total expenditure for these households in the month prior to the survey was $160.

resources to cover these basic treatments. Especially now that a standardized benefits package has been agreed upon for qualified households, the widespread communication of these benefits throughout the health system and to the poorest and most vulnerable households is essential for ensuring optimal programme participation.

The acute malnutrition figures for children aged 6–59 months do not suggest that there is immediate need for curative nutrition interventions in flood-affected areas (i.e. therapeutic feeding). Other findings from the survey—that access to traditional water and sanitation sources were not disrupted, households were not experiencing high levels of food insecurity, and exclusive breastfeeding rates were comparable to pre-flood levels—all help to explain why an acute malnutrition situation has not developed in the months since the floods. Yet the Post-flood Survey findings do underscore that chronic malnutrition remains a problem in Cambodia, and they emphasize just how complex that problem is: height-for-age z-scores were found to be significantly associated with child age, maternal nutrition, especially maternal height, maternal education, and household wealth. Moreover, chronically malnourished children are more susceptible to disease and the effects of external shocks, and their condition represents not just a current problem, but one with far-reaching economic and development implications as well. Given that the coping capacity of households in flood-affected areas of the Plains and Tonle Sap is currently stretched and the stability of their financial situation, particularly in the short- to medium-term, is extremely uncertain, the continued provision of preventative nutrition support (e.g., vitamin A supplementation, micronutrient fortification of foods, and home gardening projects, among others) is considered a vital gap-filling strategy for protecting these households and children.

In fact, there is concern that the apparent stability of these health and nutrition measures, to the extent that it has been maintained due to the better care and diets that elevated incomes allow, may steadily weaken if the tenuous financial situation that many households are experiencing deteriorates. Should their financial situation deteriorate—which is possible for any number of reasons, including being unable to repay their loans, to generate additional income, or even as a result of another external shock—it is without question that, in time, there would be seen an associated deterioration in the health and (acute) nutritional status of these households and their children. Thus, without additional financial support, in the form of targeted social safety net activities, the poorest and most vulnerable households, made increasingly so as a result of the floods, may soon be forced to prioritise their expenditures away from medical care and better quality diets, the effects of which would only be seen after time has allowed the negative consequences to be fully realised.

11.7 ASSISTANCE & PRIORITY NEEDS

The types of assistance households reported receiving since the floods met some of their apparent needs and very clearly fell short of others. Strong arguments justifying the four most common types of assistance received—viz. food rations, clothes/blankets, water treatment kits, and cooking utensils—could easily be made during and in the immediate aftermath of the floods; these responses undoubtedly addressed the most pressing needs of households living in flood-affected areas of the Plains and Tonle Sap.[25] Because it is impossible to determine whether the assistance received was as a direct result of the floods or part of a routine programme, there is some difficulty assessing whether the targeting of these types of assistance was efficient (also, the Affect Index itself has some limitations as a benchmark for targeting). However, it does appear that overall, though some types of assistance were slightly better at reaching those most in need, a general pattern suggesting targeting was observed.

What these findings better reveal, however, are the considerable gaps between other household needs in the months since the floods and the types of assistance delivered. Among the most pressing needs for households, triangulated from findings in several areas of the survey, were better access to health care, increased sources of income, and agricultural inputs, none of which were made available to flood-affected households at the level required during this period. Not surprisingly, these were among the most reported reasons for households taking out loans after the floods. Because the floods primarily disrupted households'

[25] For simplicity, mosquito nets have not been considered as it seems likely they were not distributed as a direct response to the 2011 floods.

livelihoods (i.e. their crops and other sources of income), their main response was to take measures to repair these livelihoods (specifically by replanting wet or cultivating dry season rice) and to replace their lost cash income to cover their biggest monthly expenses (food, medical care, and loans). Therefore, disaster preparedness plans, and future relief phase responses in general, will do well by aiming to mitigate an external shock's impact on livelihoods and incomes through targeted supports (agricultural inputs, credit for self-employed, etc.) and financial assistance[26] for large monthly expenses.[27]

11.8 LIMITATIONS

All exercises in household data collection are subject to known and unknown deficiencies—which cannot always be accounted for during the design, fieldwork, cleaning and analysis stages—that could potentially bias the findings. A primary limitation of the Post-flood Relief and Recovery Survey was that there were some areas affected by the 2011 floods that could not be surveyed. Some areas in Kratie and Stung Treng reportedly faced very serious effects from the floods, but given the logistical, budgetary, and time implications associated with including these areas, it was not considered possible to visit households there. As a result, and as mentioned in separate sections of this report, the findings presented herein are only representative for households living within 250 meters of the peak-flood boundary as photographed by satellite in late September 2011. Therefore, extrapolating these findings to areas not considered part of the survey sampling frame will result in specious results.

Another limitation of the Post-flood Survey was that enumerators used a variation of the EPI method for sampling households within sampled villages. A more ideal sampling method would have required listing all households in the village (or from a segment of the village) and then randomly or systematically choosing them from the list generated. While the improved EPI method used was practiced extensively, monitored, and universally followed by enumerators, it does not represent the "gold standard" for household selection within the village and can possibly bias the survey results to some extent because it is more likely to sample households living close to one another.

It is also likely that the time-specific nature of some questions in the survey—several asked respondents to recall events three or more months in the past—could have resulted in recall bias, whereby actual conditions and events were not remembered correctly. The impact of this bias is generally considered less problematic than the selection bias mentioned immediately above, but because some indicators were created using this recalled information, it nonetheless warrants mentioning.

A fourth limitation that was only realised after survey teams were in the field was that the types of crops households were growing in the 2011/2012 dry season were not captured; only the amount of land cultivated. As a result, it was not possible to determine the amount of dry season rice that was being planted and whether this represented a change for households from the 2011 wet season.

Finally, questions related to household debt were largely borrowed from a survey being conducted concurrently by the Access to Finance Consortium for reasons of comparability. That more extensive questionnaire was condensed for time considerations, and as a result, only information about a household's largest loan was collected in the Post-flood Survey. That is to say, households were not specifically asked how they were spending their flood-related loan money. A fairly strong attempt was made to break down household expenditure patterns by loan type to better understand spending behaviours, but flood-loan-specific questions would have made these results, presented in the Section 11.4, more robust.

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[26] It is quite clear from the survey's findings that households universally sought credit as a primary means of coping with the floods' effects. It is also clear that, while the cost of borrowing from MFI was fairly consistent across wealth quintiles, the poorest households, who were most likely to borrow money, were also least likely to borrow from banks, and most likely to borrow from private lenders, which charged considerably higher rates to finance all loans. Therefore better access to affordable financing/income replacement for the poorest households, through cash transfers, community savings groups, and/or stronger protections and regulations in the private lending sector, is needed. What is not clear is how much the reliance on expensive sources of financing is simply normative, and how much is a result of these households not having alternative sources of financing.

[27] As discussed above, another potentially powerful means of addressing the burden of medical expenses is the standardization and communication of benefits to households eligible for social safety net programmes. Another consideration for future relief phase responses is to enable a time-bound expansion of eligibility for households demonstrating need (i.e. for households who were not eligible pre-shock).

CONCLUSIONS

The effects of the 2011 floods on households in Cambodia living within 250 meters of the peak-flood boundary were extensive in scope and depth. The findings from the 2012 Post-flood Relief and Recovery Survey contained herein provide the most comprehensive picture yet available of the extent to which these households were affected. In particular, these findings suggest that households experienced the floods' effects quite differently, though in many ways just as painfully, depending on various underlying factors, the most notable of these being household wealth and source of livelihood and income. The overall measures indicative of community well-being suggest that, in the months since the waters began receding, most households have found ways of coping with the additional, in some cases substantial, burdens with which they have been saddled by the floods. What is also apparent is that the coping strategies that many of these households turned to as a result of the floods—especially the poorest but also those in the middle wealth groups as well—have placed them in a more tenuous financial situation. Their ability to escape from this situation, and indeed the likelihood that they will be able to effectively endure a future shock, will depend in large part on whether 1) they receive the external support that is needed (the rationale for which is delineated within this report), and 2) government and development partners use and learn from the experiences provided by the 2011 floods to scale-up their emergency preparations and tailor their current and future response activities to match the specific needs of broad, but fundamentally different, cross-sections of the affected population.

RECOMMENDATIONS

1) Because the effective communication of information to households is vital during emergencies, emergency communication plans should avoid relying upon a single medium for information dissemination (e.g., television). Existing emergency communication plans should test and strengthen, or implement if they do not already have, a word-of-mouth system to ensure optimal coverage and saturation (e.g., from commune chief to village chief/VHV or someone else within the village dedicated for such a purpose). Moreover, emergency partners should consider adding and testing an SMS system that takes advantage of households' high ownership of mobile phones.

2) Partners interested in helping the poorest households and reducing the impact of future natural disasters (e.g., household displacement and its associated economic losses) are encouraged to support the poorest households' ability to improve their housing structures.

3) WASH-related preparedness and recovery efforts will best be directed towards hygiene education, as well as strategic prepositioning and continued distribution of soap and water treatment materials in high-risk and flood-affected areas.

4) Survey findings underscore that the 2011 floods created additional opportunities for, and likely increased the potential effectiveness of, recovery programmes that aim to alleviate financial pressures—by directing assistance through the labour market, such as public works programmes—the poorest and most vulnerable households are experiencing. Given the wide range of vulnerabilities faced by households living near the lake and rivers, and the high dependency by many of these households on daily wages, recovery public works programmes are encouraged to explore multi-faceted channels and more frequent disbursement modalities for this assistance.

5) The price paid to farmers for dry season paddy should be closely monitored: substantial deviations from historical prices will undoubtedly affect farmers' ability to meet their increased financial burdens resulting from the floods.

6) In the medium- to long-term, the coping strategies employed by farmers in response to (or anticipation of) the floods—taking out loans to finance dry season planting, being risk-averse in locations near the lake and rivers—emphasize the need for more robust protection mechanisms for small-scale farmers.

7) Survey findings reveal that, though many of the poorest and most vulnerable households are likely eligible to receive subsidized health care (though IDPoor, Health Equity Funds, etc.), many are still directing considerable resources to cover these basic treatments. Especially now that a standardized benefits package has been agreed upon for qualified households, the widespread communication of these benefits throughout the health system and to the poorest and most vulnerable households is essential for ensuring optimal programme participation.

8) Recovery programmes that seek to protect children and to improve school attendance should be designed in ways that recognize the economic context within which households, particularly those affected by the floods, are being forced to rely upon child labour.

9) Recovery programmes that seek to improve households' investment in productive activities (agricultural as well as self-employment/small business) with financial assistance will see the greatest marginal benefits from the poorest households.

10) Additional financial support, in the form of targeted social safety net activities, is needed by the poorest and most vulnerable households to protect against the deterioration of the health and nutritional status of their families, particularly children under 5.

11) Given that the coping capacity of households in flood-affected areas of the Plains and Tonle Sap is currently stretched and the stability of their financial situation, particularly in the short- to medium-term, is extremely uncertain, the continued provision of preventative nutrition support (e.g., vitamin A supplementation, micro-nutrient fortification of foods, and home gardening projects, among others) is considered a vital gap-filling strategy for protecting these households and children.

12) Disaster preparedness plans, and future relief phase responses in general, will do well by aiming to mitigate an external shock's impact on livelihoods and incomes through targeted supports (agricultural inputs, credit for self-employed, etc.) and financial assistance for large monthly expenses.

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APPENDIX

i

CAMBODIA POST-FLOOD RELIEF AND RECOVERY SURVEY JANUARY 2012

TRAINING SCHEDULE

Venue: ACT's office, Phnom Penh
Duration: 4 days
Date: January 5-8, 2011
Participants: 28 people
Facilitators: HKI Trainers (Ly Sok Hoing, Sao Sovan Vannak, Noun Ty and Sim Chhoeun)

	Topic	Facilitator
Day one: January 5, 2012		
08:00 - 08:45 (45 min)	- Registration and Participant's introduction - Agreement between HKI and Data Collector	Sao Sovan Vannak
08:45-10:00 (75 min)	- Survey goal and objectives - Methodology	Aaron,WFP
10:00-10:15 (15 min)	**Tea break**	Aaron,WFP
10:15-10:45 (30 min)	- Review of main roles and responsibilities of the interviewers, Field Editors and Field supervisors	Sok Hoing
10:45-12:00 (75 min)	- Introduction to child age calendar - Practice on how to calculate child age - Questions and feedback on practicing of child age calculation	Sao Sovan Vannak
12:00-13:30 (90 min)	**Lunch break**	
13:30-15:00 (90 min)	- Review of questionnaire for household from Section 1 to Section 4 - Highlight definitions and terms used and explain what answers we want from each question	Sok Hoing
15:00-15:15 (15 min)	**Tea break**	
15:15-16:45 (75 min)	- Review of questionnaire for household from Section 5 to Section 8 - Highlight definitions and terms used and explain what answers we want from each question	Sok Hoing
Day two: January 6, 2012		
08:00-08:30 (30 min)	Review day 1 session	Ms. Sok Hoing
08:30 - 10:00 (90 min)	- Review of questionnaire for household from Section 9 to Section 12 - Highlight definitions and terms used and explain what answers we want from each question	Sao Sovannak
10:00- 10:15 (15 min)	**Tea break**	

10:00- 12:00 (120 min)	- Review of questionnaire for Children from Section 1 to Section 6 - Highlight definitions and terms used and explain what answers we want from each question	Sim Chhoeun
12:00-13:30 (90 min)	**Lunch break**	
13:30-14:30 (60 min)	- Introduction on how to use SECA scale - Video show on how to accurately weight a child and mother - Practice on how to use weighing scale - Questions and feedback	Noun Ty
14:30-15:30 (60 min)	- Introduction to recumbent length and height - Video show on how to accurately measure the child using length board and mother using Microtoises - Practice on how to measure child and mother - Questions and feedback	Noun Ty
15:30-15:45 (15 min)	**Tea break**	
15:45-16:45 (60 min)	- Introduction to MUAC - Video show on how to accurately measure MUAC of the child - Practice on how to measure child's MUAC - Question and feedback	Sao Sovannak
16:45-17:00 (15 min)	**Questions and Answers for day 2**	
Day three: January 7, 2012		
08:00-08:30 (30 min)	Review day 2 session	Sok Hoing
08:30-12:00 (210 min)	- Practice on how to do anthropometric measurement on children and mothers - Show the result of measurement - Questions and feedback	ALL
12:00-13:30 (90 min)	**Lunch break**	
	- Conducting an effective interview - Completion of the questionnaire - Demonstration of Materials - Checking completed questionnaires	Sok Hoing
14:00 – 15:00 (60 min)	- In class practice of interview using the questionnaire (each participant selects one partner to practice data collection and records answer in the questionnaire. - Questions and feedback on the completion of questionnaire	ALL
15:00 - 15:15(15 min)	**Tea Break**	
15:15-17:00 (105min)	- Preparation of survey schedule and logistic - Conclusions and feedback	ALL
Day four: January 8, 2012		
7:00 – 16:00 (10 hours)	- Pre-test the questionnaires in the field (Kampong Tralach OD). Data collectors will be divided into two teams to go to two different villages. They will conduct real interviews to complete one questionnaire and also do anthropometry on children and mother. They need to record the timing to see how much time they need to do one interview.	ALL
16:00-17:00 (60 min)	Feedback from the field pre-test on the questionnaire and others	ALL

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CAMBODIA POST-FLOOD RELIEF AND RECOVERY SURVEY JANUARY 2012

FIELDWORK PLAN

FIELDWORK PLAN					
No	PROVINCE	DISTRICT	COMMUNE	VILLAGE	DATE
1	TAKEO	Angkor Borei	Ba Srae	Roka	10/1/2012
2		Prey Kabbas	Kampong Reab	Kanhchil	10/1/2012
3		Krong Doun Kaev	Roka Knong	Phum Muoy	10/1/2012
4		Kiri Vong	Preah Bat ChoanCheung	Traeuy Tonloab	10/1/2012
5		Borei Cholsar	Bourei Cholsar	Snay Duouch	10/1/2012
6		Kaoh Andaet	Pech Sar	Chong Angkar	10/1/2012
7	KANDAL	S'ang	Prasat	Lekh Buon	11/1/2012
8		S'ang	Preaek Koy	Preaek Snay	11/1/2012
9		S'ang	Svay Prateal	Paraen Leu	11/1/2012
10		S'ang	Ta Ion	Preaek Ta Aek	11/1/2012
11		S'ang	Tuek Vil	Preaek Reang	11/1/2012
12		Kandal Stueng	Cheung Kaeub	Prachum Angk	11/1/2012
13		S'ang	Kaoh Anlong Chen	Chong Kaoh	12/1/2012
14		Kaoh Thum	Chrouy Ta Kaev	Chrouy Ta Kaev'Lek	12/1/2012
15		Kaoh Thum	Leuk Daek	Khleang Lech	12/1/2012
16		Kaoh Thum	Preaek Sdei	Pouthi Reamea	12/1/2012
17		Kaoh Thum	Sampov Lun	Kampong Thkol	12/1/2012
18		Kien Svay	Dei Edth	Sdau Kanlaeng	12/1/2012
19		Lvea Aem	Akreiy Ksatr	Akreiy Ksatr	12/1/2012
20		Lvea Aem	Peam Oknha Ong	Veal Thum	12/1/2012
21		Lvea Aem	Thma Kor	Thma Kor	12/1/2012
22		Popnhea Lueu	Phnum Bat	Kamchat Preay	12/1/2012
23		Khsach Kandal	Kaoh Oknha Tei	Kaoh Touch	12/1/2012
24		Popnhea Lueu	Preaek Ta Kov	Preaek Ta Kov	12/1/2012
25		Kein Svay	Kokir Thum	Pou Miev	13/01/12
26		Kein Svay	Samraong Thum	Preaek Ta Kaev	13/01/12
27		Leuk Daek	Peam Reang	Peam Reang Leu	13/01/12
28		Mukh Kampul	Kaoh Dach	Kaoh Dach	13/01/12
29		Mukh Kampul	Preaek Dambang	Sameakki	13/01/12
30		Mukh Kampul	Sambuor Meas	Chrey Muoy Roy	13/01/12
31		Popnhea Lueu	Kampong Luong	Khleang Sbaek	13/01/12
32		Popnhea Lueu	Samraong	Kruos	13/01/12
33		Khsach Kandal	Sithor	Kampong Lvea	13/01/12
34		Khsach Kandal	Bak Dav	Preaek Chruk	13/01/12
35		Khsach Kandal	Vihear Suork	Svay Meas	13/01/12

FIELDWORK PLAN					
No	PROVINCE	DISTRICT	COMMUNE	VILLAGE	DATE
36	PREY VENG	Pea Reang	Kampong Popil	Bat Santrea	13/01/12
37		Pea Reang	Kampong Ruessei	Chrey Krohuem	14/01/12
38		Pea Reang	Prey Sralet	Krang	14/01/12
39		Pea Reang	Kampong Ruessei	Kampong Ruessei	14/01/12
40		Sithor Kandal	Pnov Ti Muoy	Phat Sandaong	14/01/12
41		Svay Antor	Popueus	Thnal Chey	14/01/12
42		Kampong Leav	Prey Kanlaong	Poipueus	14/01/12
43		Krong Prey Veng	Kampong Leav	Phum Lek Prambei	14/01/12
44		Peam Ro	Pa Baong	Ba Baong	14/01/12
45		Peam Ro	Preaek Khsay Ka	Preaek Khsay	15/01/12
46		Peam Chor	Kaoh Roka	Kaoh Roka	15/01/12
47		Peam Chor	Preaek Sambuor	Khpob	15/01/12
48		Ba Phnum	Cheung Phnum	Svay Samseb	15/01/12
49		Ba Phnum	Sdau Kaong	Thnoang	15/01/12
50		Preah Sdach	Angkor Reach	Boeng Edth	15/01/12
51		Preah Sdach	Boeng Daol	Thkaol	15/01/12
52		Preah Sdach	Lvea	Lvea	15/01/12
53		Preah Sdach	Sena Reach Otdam	Kdam Puk	16/01/12
54		Kampong Trabaek	Thkov	Ta Muong	16/01/12
55		Kampong Trabaek	Cheang Daek	Angkrong	16/01/12
56	SVAY RIENG	Svay Chrum	Chamlang	Chambak Kuy	16/01/12
57		Kampong Rou	Nhor	Svay Anat	16/01/12
58		Kampong Rou	Svay Ta Yean	Prey Thlok	16/01/12
59		Svay Teab	Prasout	Pou Vong	16/01/12
60		Krong Bovet	Prasat	Prasat	16/01/12
61		Svay Chrum	Thlok	Thum	17/01/12
62		Rumduol	Sangke	Kouk Srama	17/01/12
63	KAMPONG CHAM	Kaoh Soutin	Pongro	Pongro Kaeut	17/01/12
64		Ou Reang Ov	Mien	Mien	17/01/12
65		Tboung Khmum	Peam Chileang	Chheu Teal Touch	17/01/12
66		Krong Kampong Cham	Kampong Cham	Phum Ti Dabbei	17/01/12
67		Kampong Siem	Kaoh Mitt	Kaoh Paen Ka	17/01/12
68		Stueng Trang	Preaek Bak	Preaek Preah Angk	17/01/12
69		Srei Santhor	Preaek Dambouk	Ta Mol	18/01/12
70		Kaoh Soutin	Moha Khnhoung	Mohasiek Leu	18/01/12
71		Krouch Chhmar	Kampong Treas	Phum Ti Bei	18/01/12
72		Krouch Chhmar	Roka Khnaor	Phum Ti Muoy	18/01/12
73		Kang Meas	Peam Chi Kang	Kaoh Touch	18/01/12
74		Kang Meas	Roka Ar	Preaek Liv Ti Bei	18/01/12
75		Kang Meas	Angkor Ban	Angkor Ban Ti Bei	18/01/12
76		Kang Meas	Sour Kong	Anlong Ak Lech	18/01/12
77		Srei Santhor	Khnar Sa	Trea Sa	19/01/12
78		Srei Santhor	Tong Tralach	Khting	19/01/12
79		Batheay	Chbar Ampov	Chbar Ampov	19/01/12
80		Batheay	Sambour	Sambour	19/01/12
81		Batheay	Tang Krasang	Khvet	19/01/12
82		Cheung Prey	Prey Char	Siem Baoy	19/01/12

FIELDWORK PLAN					
No	PROVINCE	DISTRICT	COMMUNE	VILLAGE	DATE
83	KAMPONG THOM	Baray	Ballangk	Tapeang Svay	19/01/12
84		Baray	Chhhuk Khsach	Kdam Ha	19/01/12
85		Krong Stueng Saen	Kampong Thum	Phum Ti Pram Muoy	20/01/12
86		Krong Stueng Saen	Srayov	Srayoiv Cheung	20/01/12
87		Baray	Tnaot Chum	Banteay Chas	20/01/12
88		Kampong Svay	Kampong Kou	Sdei Bitmeas	20/01/12
89		Kampong Svay	Kdei Doung	Peam Kraeng	20/01/12
90		Santuk	Boeng Lvea	Boeng Lvea	20/01/12
91		Santuk	Pnov	Pnov	20/01/12
92		Santuk	Tang Krasang	Sangkom Thmei	20/01/12
93		Kampong Svay	San Kor	Veal	21/01/12
94		Kampong Svay	Tbaeng	Tram Khla	21/01/12
95		Stoung	Chamnar Kraom	Preah Neangkoal	21/01/12
96		Stoung	Chamnar Leu	Phlaoch	21/01/12
97		Stoung	Pralay	Angk Khloam	21/01/12
98		Stoung	Samprouch	Lvea	21/01/12
99		Prasat Sambour	Koul	Ou Ta Siev	21/01/12
100		Sandan	Chheu Teal	Samret	21/01/12
101	SIEM REAP	Chi Kraeng	Chi Kraeng	Kampong Snao Kaeut	22/01/12
102		Chi Kraeng	Lveaeng Ruessei	Kbal Kduoch	22/01/12
103		Chi Kraeng	Spean Tnaot	Thnal Louk	22/01/12
104		Soutr Nikom	Khchas	Kouk Sangkae	22/01/12
105		Soutr Nikom	Dan Run	Kouk Ruessei Tboung	22/01/12
106		Prasat Bakong	Kampong Phluk	Kouk Kdol	22/01/12
107		Krong Siem Reab	Sambuor	Veal	22/01/12
108		Krong Siem Reab	Krabei Riel	Khnar	22/01/12
109		Angkor Chum	Doun Peaeng	Beng	23/01/12
110		Angkor Chum	Ta Saom	Kouk Thmei	23/01/12
111		Srei Snam	Prei	Prei Pir	23/01/12
112		Kralanh	Krouch Kor	Reul	23/01/12
113		Kralanh	Saen Sokh	Ta Sokh	23/01/12
114		Puok	Kaev Poar	Kamphem	23/01/12
115		Puok	Mukh Paen	Ta Trav	23/01/12
116		Puok	Reul	Prolit	23/01/12
117		Kralanh	Sranal	Kouk Tnaot	24/01/12

FIELDWORK PLAN					
No	PROVINCE	DISTRICT	COMMUNE	VILLAGE	DATE
118	BANTEAY MEANCHEY	Phnum Srok	Paoy Char	Paoy Ta Ong	24/01/12
119		Preah Netr Preah	Phnum Lieb	Rumduol	24/01/12
120		Preah Netr Preah	Tuek Chour	Smach	24/01/12
121		Preah Netr Preah	Chob Veari	Phmum Chonhcheang	24/01/12
122		Preah Netr Preah	Chhnuor Mean Chey	Sanraong Touch	24/01/12
123		Preah Netr Preah	Bos Sbov	Khvab	24/01/12
124		Preah Netr Preah	Preah Netr Preah	Paoy Samraong	24/01/12
125		Thma Puok	Kouk Romiet	Kouk Romiet	25/01/12
126		Thma Puok	Kumru	Prey Veaeng	25/01/12
127		Svay Chek	Ta Phou	Baray	25/01/12
128		Ou Chrov	Kuttasat	Kaoh Char	25/01/12
129		Ou Chrov	Soengh	Kandal	25/01/12
130		Krong Serei Saophoan	Tuek Thla	Dei Lou	25/01/12
131		Krong Serei Saophoan	Mkak	Ta Ma	25/01/12
132		Krong Serei Saophoan	Kampong Svay	Phum Pir	25/01/12
133		Mongkol Borei	Russei Kraok	Praek Ropov	26/01/12
134		Mongkol Borei	Koy Maeng	Koy Maeng	26/01/12
135		Mongkol Borei	Banteay Neang	Prey Changha Kaeut	26/01/12
136		Mongkol Borei	Bat Trang	Bat Trang Thum Lech	26/01/12
137		Mongkol Borei	Soea	Kouk Samraong	26/01/12
138	BATTAMBANG	Bovel	Ampil Pram Daeun	Boeng Snuol	26/01/12
139		Thma Koul	Kouk Khmum	Chranieng	26/01/12
140		Thma Koul	Ta Pung	Ang Tboung	26/01/12
141		Thma Koul	Chrey	Ka Kou	27/01/12
142		Aek Phnum	Preaek Khpob	Khvet	27/01/12
143		Aek Phnum	Preaek Norint	Ansang Sak	27/01/12
144		Aek Phnum	Peam Aek	Preaek Chdaor	27/01/12
145		Banan	Snoeng	Sambuor Meas	27/01/12
146		Banan	Phnum Sampov	Chaeng Kdar	27/01/12
147		Krong Battambang	Chamkar Samraong	Chamkar Samraong Muoy	27/01/12
148		Sangke	Ta Pon	Basaet	27/01/12
149		Moung Ruessei	Prey Touch	Prey Touch	28/01/12
150		Sangke	Kampong Pring	Kach Roteh	28/01/12
151		Aek Phnum	Kaoh Chiveang	Kbal Taol	29/01/12
152	PURSAT	Bakan	Ou Ta Paong	Ta Nai	28/01/12
153		Bakan	Ou Ta Paong	Phsar Andaet	28/01/12
154		Bakan	Poeng Bat Kandaol	Bat Trach	28/01/12
155		Kandieng	Kanhchor	Phlov Luong	28/01/12
156		Krakor	Kampong Luong	Phum Muoy	28/01/12
157	KAMPONG CHHNANG	Baribour	Chhnok Tru	Chhnok tru	29/01/12
158		Kampong Tralach	Kampong Tralach	Preaek Kanlang	29/01/12
159		Krong Kampong Chhang	Phsar Chhang	Chong Kaoh	29/01/12
160		Rolea B'ier	Svay Chrum	Thnal Ta Saeng	29/01/12
161		Kampong Leaeng	Kampong Hau	Stueng Sandaek	29/01/12
162		Kampong Leaeng	Trangel	Trapeang Meas	29/01/12
163		Chol Kiri	Chol Sar	Ruessei Dangkuoch	29/01/12
164		Chol Kiri	Peam Chhkaok	Peam Chhkaok	29/01/12

CAMBODIA POST-FLOOD RELIEF AND RECOVERY SURVEY JANUARY 2012

HOUSEHOLD QUESTIONNAIRE

Province:		Province Code	☐☐
District:		District Code Commune Code	☐☐ ☐☐
Commune:		Village Code	☐☐
Village:		Cluster Number Household Number	☐☐☐ ☐☐

We are conducting a survey of the effects of the recent floods on families in Cambodia. We would like to ask you some questions about your family. The interview usually takes 30 minutes to complete. Any information that you provide will be kept strictly confidential and will not be shown to other people. This is voluntary and you can choose not to answer any or all of the questions if you want. However, we hope that you will participate since your views are important.

Do you have any questions?

	Yes ☐☐		No ☐ → Refused	
Date of Interview:	Day	☐☐	Result of Interview	
	Month	☐☐	Completed	1
	Year	**2012**	No competent respondent at home	2
			Entire household absent for extended period of time	3
			Dwelling destroyed	4
			Refused.....	5
			Other (specify).....	6
Team Number		☐☐	Comments:	
Enumerator ID		☐☐		
Total # of children under 5		☐☐		
Total # of completed under 5		☐☐		

Team Editor	Field Supervisor	First Entry	Second Entry
Name _____ ☐☐	Name _____ ☐☐	☐☐	☐☐
Date _____	Date _____		

SECTION 1: HOUSEHOLD SITUATION

01	At any time in the last 4 months (i.e. since Pchum Ben) did your household have to move to another location as a result of the recent floods? Probe: Spent at least one night away as a direct result of the floods.	Yes, outside community..... Yes, within community..... No.....	1 2 3	→ 07
02	What was the main reason your household had to move?	House flooded/damaged/destroyed..... To access medical treatment..... To find income opportunities..... To be with/care for affected relatives..... Other (specify): _____	1 2 3 4 6	
03	What is the current living situation for this household?	Within community, at home..... Within community, other..... Outside community.....	1 2 3	 → 05 → 06
04	For how long were you displaced from your home due to the floods?	Less than 1 week..... Between 1 and 3 weeks..... Between 3 and 6 weeks..... More than 6 weeks.....	1 2 3 4	→ 07 → 07 → 07 → 07
05	If household is living within community but not at home: Where are you currently living?	Living in new permanenthome..... Living in temporary shelter/tent..... Living at school/pagoda/community space..... Living with neighbors..... No shelter/open sky..... Other (specify): _____	1 2 3 4 5 6	
06	If still displaced from your home, when do you think you will be able to return?	Within 2 weeks..... Within 1 month..... More than 1 month..... Not planning to return..... Other (specify): _____ DK.....	1 2 3 4 6 8	

SECTION 2: INFORMATION & COMMUNICATION

07	At any time in the last 4 months (i.e. since Pchum Ben) did your household receive information on the following topics:			Y	N	DK
	A Water levels, need for relocation, weather, etc. B Accessing water/sanitation/hygiene support, kits, etc. C How/where to obtain important medical services D Situation/condition of local schools, calendar E Obtaining food/rice rations	A Flood situation..... B Water/sanitation..... C Health care..... D Schools..... E Food/rice.....		1 1 1 1 1	2 2 2 2 2	8 8 8 8 8
08	How did you receive the important information for your household during the recent floods? *Do not prompt.* *Record all mentioned.*	Television..... Radio..... Newspaper..... Mobile phone..... Word of mouth..... Other (specify):_____				A B C D E F
09	Specifically from whom did this important information come from? *Do not prompt.* *Record all mentioned.*	Village chief..... Commune council..... NGO..... Cambodia Red Cross..... Villager/relative..... Other (specify):_____				A B C D E F
10	In the event of a future emergency, what do you consider the best way to receive important/helpful information?		**1st Choice**		**2nd Choice**	
	Second best? *Choose from response options in* ***Q08****.*		A ☐		B ☐	

SECTION 3: HOUSEHOLD COMPOSITION & EDUCATION

11	Who is the head of this household?	Male	1
		Female	2
12	How old is the head of household?	☐☐ Years	
13	Is this household currently hosting people as a result of the floods? That is, people who are staying here now but were not members of the household over the past 6 months.	Yes	1
		No	2
14	How many total persons usually live in this household? *NB: This does not include people the household is currently hosting.*	☐☐ Years	

15 Determine the number of persons usually living in this household by age category and sex.

Write "00" if there are none.

***Ensure that Total **(Q15A–Q15H)** equals **Q14**.*	Male		Female	
Children aged less than 5 years	A	☐☐	B	☐☐
Children aged between 5 and 14 years	C	☐☐	D	☐☐
Persons aged between 15 and 64 years	E	☐☐	F	☐☐
Elderly aged 65+	G	☐☐	H	☐☐

16 *Please tell me the names of all children aged less than 5 years who usually live in this household*

1	4
2	5
3	6

17	How many pregnant and/or lactating women (PLW) are there in the household?	☐☐
18	How many members (15–64 years) have been sick or not fully functional for at least three months during the last 12 months? *Write "00" if there are none.*	☐☐

19 Check **Q15C** and **Q15D:**

One or more children aged between 5 and 14 years ? ↓ — None ☐ → 23

		Male		Female	
20	How many children aged between 5 and 14 years are currently attending school (including pre-school)?	A	☐☐	B	☐☐

21 Check **Q20A** and **Q20B**:

At least one child not currently attending school? ? ↓ — All children currently attending school ☐ → 21

22 *What is the main reason why these children are not currently attending school?*

		Male	Female
1	Lack of textbooks	A	B
2	Lack of school uniforms		

	3	Lack of materials (pens, notebooks, etc.)	1	☐	1	☐
	4	Lack of transport				
	5	School still closed	2	☐	2	☐
	6	No teacher present				
	7	Child working to support income activities	3	☐	3	☐
	8	Still displaced from household/community				
	9	Cannot pay fees	4	☐	4	☐
	10	Other (specify)				

SECTION 4: WATER & SANITATION

23	What is the current main source of drinking water for members of your household?	PIPED WATER Piped into dwelling ..... 11 Piped into yard/plot ..... 12 Public taps/standpipe ..... 13 TUBE WELL OR BOREHOLE ..... 21 DUG WELL Protected well ..... 31 Unprotected well ..... 32 WATER FROM SPRING Protected spring ..... 41 Unprotected spring ..... 42 RAINWATER ..... 51 TANKER TRUCK ..... 61 CART WITH SMALL TANK ..... 71 SURFACE WATER (RIVER/DAM) ..... 81 BOTTLED WATER ..... 91 Other (specify): 96	
24	Is this the usual source of drinking water for members of your household at this time of year (dry season)?	Yes ..... 1 No 2	
25	Where is this current water source located?	In own dwelling ..... 1 In own yard/plot ..... 2 Elsewhere 3	→ 28 → 28
26	*How long does it take to go there, get water, and come back?*	Minutes ..... ☐☐☐ DK 998	
27	Is this more time, about the same, or less time than usual at this time of year (dry season)?	More time than usual ..... 1 About the same ..... 2 Less time than usual 3	
28	Are you doing anything to the water to make it safer to drink?	Yes ..... 1 No ..... 2 DK 3	→ 30 → 30
29	What are doing to make the water safer to drink? *Anything else?* *Do not prompt.* *Record all mentioned.*	Boil ..... A Add bleach/chlorine ..... B Strain through a cloth ..... C Use water filter (ceramic/sand/etc.) ..... D Solar disinfection ..... E Let it stand and settle ..... F Other (specify): _____ G DK ..... H	

30	What kind of toilet facility are members of your household currently using?	FLUSH/POUR FLUSH TOILET Flush to piped sewer system Flush to septic tank Flush to pit latrine Flush to somewhere else Flush, don't know where PIT LATRINE Ventilated improved pit latrine Pit latrine with slab Pit latrine without slab/open pit COMPOSTING TOILET BUCKET TOILET HANGING TOILET/LATRINE NO FACILITY/BUSH/FIELD Other (specify):_____	 11 12 13 14 15 21 22 23 31 41 51 61 96	
31	Is this the usual toilet facility for members of your household at this time of year?	Yes No	1 2	

	Check Q30: Is household currently using bush/field? No ☐↓	Yes ☐→34		
32	Do you currently share this toilet facility with other households?	Yes No	1 2	 → 34
33	How many households use this toilet facility?	Number of households More than 10 households DK	0☐ 95 98	
34	Please show me where members of your household most often wash their hands.	OBSERVED NOT OBSERVED Not in dwelling/plot/yard No permission to see Other (specify):_____	1 2 3 6	 → 37 → 37 → 37
35	Observe presence of water at the specific place for handwashing. *Verify by checking the tap/pump, basin, bucket, water container or similar objects for presence of water.*	Water is vailable Water is not vailable	1 2	
36	Record if soap or detergent is present at the specific place for handwashing. *Record all that apply.*	Bar soap Detergent (powder/liquid/paste) Liquid soap Ash/mud/sand Not able/does not show	A B C D E	→ 39 → 39 → 39 → 39
37	Do you have any soap or detergent in your household for washing hands?	Yes No	1 2	 → 39
38	Can you please show it to me? *Record all that apply.*	Bar soap Detergent (powder/liquid/paste) Liquid soap Ash/mud/sand Not able/does not show	A B C D E	

39	Has this household been identified as poor through the identification of Poor Households process conducted by village representatives, and been placed on the List of Poor Households or received an Equity Card or Priority Access Card? *Ask to see the Equity/Priority Access Card.*	Yes, ID Poor Card seen Yes, Equity/Priority Access Card seen Yes, Other Card seen Yes, Card not seen No DK	1 2 3 4 5 8

SECTION 5: FOOD CONSUMPTION SCORE

		Meals	Number		Quantity
		A	B		C
40	Yesterday, how many meals were eaten by the adults living in the household? Is this number less than, about the same, or more than usual for this time of year? Was the quantity eaten less than, about the same, or more than usual for this time of year?	☐	Less Same More	1 2 3	Less Same More
41	Yesterday, how many meals were eaten by the children aged less than 5 years living in the household? Is this number less than, about the same, or more than usual for this time of year? Was the quantity eaten less than, about the same, or more than usual for this time of year? *Record "99" if no children under 5 in household.*	☐☐	Less Same More	1 2 3	Less Same More

42 *Please tell me how many days in the past week (beginning from yesterday) your household has eaten the following foods and what was the source of these foods.*

Record "0" for items not eaten over the last 7 days.

Record "99" for second source if only one source.

NB: If less than 15g of fish or meatshared by household, record as Condiments

Food Source Codes

01	Own production	06	Exchange of items for food
02	Fishing, hunting, gathering	07	Received as gift
03	Purchase	08	Food aid
04	Borrowed	09	Other (specify)
05	Exchange of labor for food		

	Food Item	Number of days eaten over last 7 days	Main Source	Second Source
A	Rice	☐	☐☐	☐☐
B	Maize	☐	☐☐	☐☐
C	Bread	☐	☐☐	☐☐
D	Cassava	☐	☐☐	☐☐
E	Sweet Potato, Potato, Yam	☐	☐☐	☐☐
F	Beans, Groundnut, other pulses	☐	☐☐	☐☐
G	Fish	☐	☐☐	☐☐
H	Other aquatic animals	☐	☐☐	☐☐
I	Meat (beef, pork, chicken)	☐	☐☐	☐☐
J	Wild meat	☐	☐☐	☐☐
K	Eggs	☐	☐☐	☐☐
L	Vegetables (incl. leafy)	☐	☐☐	☐☐
M	Fruits	☐	☐☐	☐☐
N	Sugar/sweets	☐	☐☐	☐☐
O	Vegetable oil, animal fats	☐	☐☐	☐☐
P	Milk products	☐	☐☐	☐☐
Q	Prahok	☐	☐☐	☐☐
R	Condiments or seasonings	☐	☐☐	☐☐

SECTION 6: WEALTH

43 Please tell me if your household had any of the following assets before the floods, whether they were damaged, destroyed or lost during the floods, an estimate of when you plan to repair or replace the destroyed asset, and the approximate cost/value to replace or repair the asset.

Codes for Planned Time to Repair/Replace Asset (Q43y)

1 Less than 1 month
2 1–3 months
3 3–6 months
4 More than 6 months
5 Already repaired/replaced
6 Cannot afford to repair/replace
8 DK

NB: If response for (y) is "6" or "8", skip to next asset

If respondent cannot estimate cost, record "999998".

		Before floods		Damaged or destroyed			Repair or replace	Estimated cost
		W.		X.			Y.	
		Y	N	Y	N	DK		RIELS
A	Radio	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
B	Television	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
C	Cell phone	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
D	Bicycle	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
E	Motorbike	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
F	Car/taxi	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
G	Sewing machine	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
H	Boat	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
I	Battery	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
J	Cart	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
K	Plough	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
L	Hand tractor	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
M	Tractor	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
N	Thresher	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
O	Rice mill	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
P	Fishing nets	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
Q	Water filter	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
R	Water pump	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
S	Table	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
T	Chair	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
U	Bed/mattress	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐
V	Jewelry, gold, etc	1	2↓	1	2↓	8↓	☐	☐☐☐☐☐☐

44	What type of fuel is your household currently using for cooking?	Electricity Wood LPG Charcoal Biogas Straw/shrubs/grass Other (specify):_____	1 2 3 4 5 6 7
45	Compared to before the floods, is it more difficult, about the same, or less difficult to access fuel for cooking?	More difficult About the same Less difficult	1 2 3

46 Can you please tell me whether your floor was damaged or destroyed during the floods, an estimate of when you plan to repair or replace it, how you plan to repair or replace it, whether the necessary materials are locally/readily available, and how much you estimate that has/will cost?

Main material of floor		Damaged or destroyed			Repair or replace	How	
A		B			C	D	
NATURAL FLOOR		Yes	1		☐	Better than before	1
Earth, sand, clay	11	No	2	→47		Same as before	2
Dung	12	DK	8	→47	*NB	Less than before	3
RUDIMENTARY FLOOR		**Materials available**			**Estimated Cost**		
Wood planks	21	E			F	**NB: If response for **Q46C** is "6" or "8", skip to **Q47**.*	
Palm, bamboo	22	Yes	1		☐☐☐☐☐☐	*If respondent cannot estimate cost, record "999998".*	
FINISHED FLOOR		No	2				
Parquet, polished wood	31	DK	8		RIELS		
Vinyl or asphalt strips	32						
Ceramic tiles	33						
Cement tiles	34						
Cement	35						
FLOATING HOUSE	41						
Other (specify): _____	96						

Codes for Planned Time to Repair/Replace Floor (Q46C)	
1 Less than 1 month	5 Already repaired/replaced
2 1–3 months	6 Cannot afford to repair/replace
3 3–6 months	8 DK
4 More than 6 months	

47 Can you please tell me whether your roof was damaged or destroyed during the floods, an estimate of when you plan to repair or replace it, how you plan to repair or replace it, whether the necessary materials are locally/readily available, and how much you estimate that has/will cost?

Main material of roof		Damaged or destroyed			Repair or replace	How	
A		B			C	D	
NATURAL ROOFING		Yes	1		☐	Better than before	1
No roof	11	No	2	→48		Same as before	2
Bamboo/palm/thatch	12	DK	8	→48	*NB	Less than before	3
RUDIMENTARY ROOFING		**Materials available**			**Estimated Cost**		
Rustic mat	21	E			F	**NB: If response for **Q47C** is "6" or "8", skip to **Q48**.*	
Wood planks	22						
Cardboard	23	Yes	1		☐☐☐☐☐☐	If respondent cannot estimate cost, record "999998".	
Plastic sheet	24	No	2				
FINISHED ROOFING		DK	8		RIELS		
Metal	31						
Wood	32						
Calamine/cement fiber	33						
Ceramic tiles	34						
Clay tiles	35						
Cement	36						
Other (specify): _____	96						

Codes for Planned Time to Repair/Replace Roof (Q47C)	
1 Less than 1 month	5 Already repaired/replaced
2 1–3 months	6 Cannot afford to repair/replace
3 3–6 months	8 DK
4 More than 6 months	

48 Can you please tell me whether your walls were damaged or destroyed during the floods, an estimate of when you plan to repair or replace them, how you plan to repair or replace them, whether the necessary materials are locally/readily available, and how much you estimate that has/will cost?

Main material of roof		Damaged or destroyed			Repair or replace	How	
A		B			C	D	
		Yes	1		☐	Better than before	1
NATURAL WALLS		No	2	→49		Same as before	2
No walls	11	DK	8	→49	*NB	Less than before	3
Palm/bamboo/thatch	12	**Materials available**			**Estimated Cost**		
Dirt	13	E			F	**NB: If response for **Q48C** is "6" or "8", skip to **Q49**.*	
RUDIMENTARY WALLS					☐☐☐☐☐☐ RIELS	*If respondent cannot estimate cost, record "999998".*	
Bamboo with mud	21	Yes	1				
Straw with mud	22	No	2				
Stone with mud	23	DK	8				
Uncovered adobe	24						
Plywood	25				**Codes for Planned Time to Repair/Replace Walls (Q48C)**		
Cardboard	26				1 Less than 1 month	5 Already repaired/replaced	
Reused wood	27				2 1–3 months	6 Cannot afford to repair/replace	
Metal	28				3 3–6 months	8 DK	
FINISHED WALLS					4 More than 6 months		
Cement	31						
Stone with cement	32						
Bricks	33						
Cement blocks	34						
Covered Adobe	35						
Wood planks/shingles	36						
Other (specify): _____	96						

SECTION 7: AGRICULTURE SITUATION

49	Did this household cultivate any land/fields and/or a home garden this past wet season?	Yes ..... 1 No 2				→58
50	What is the main crop you cultivated on this land?	**Rice**	**Chamkar**	**Home Garden**	**Vegetable Garden**	
	01 Rice (wet season) 05 Cassava 02 Maize 06 Beans/peanuts 03 Permanent (e.g. mango) 09 Other (specify) 04 Vegetable 97 N/A	**A** □□	**B** □□	**C** □□	**D** □□	
51	How much total area did you cultivate this wet season?	□□□.□ ha	□□□.□ ha	□□□.□ m²	□□□.□ m²	
52	What proportion of this crop has been damaged or lost?	□□□ %	□□□ %	□□□ %	□□□ %	
53	How much did/will you harvest this from this wet season?	□□□□.□ kg	□□□□.□ kg	□□□.□ kg	□□.□ kg	
54	What proportion of this wet season's harvest do you expect to sell, out of total?	□□ %	□□ %	□□ %	□□ %	
55	Is this more than usual, about the same, or less than usual for your wet season harvest?	More than usual ..... 1 About the same. ..... 2 Less than usual 3	More than usual ..... 1 About the same. ..... 2 Less than usual 3	More than usual ..... 1 About the same. ..... 2 Less than usual 3	More than usual ..... 1 About the same. ..... 2 Less than usual 3	
56	How much of this wet season's harvest do you have in stock currently?	□□□□.□ kg	□□□□.□ kg	□□□.□ kg	□□.□ kg	
57	*How long will this stock last for your family consumption?* *If less than 1 month, write '00.'*	□□ months	□□ months	□□ months	□□ months	
58	Are you cultivating land/fields and/or a home garden currently (i.e. dry season)?	Yes ..... 1 No ..... 2 →61				
59	How much total area you cultivating in the current dry season?	□□□.□ ha	□□□.□ ha	□□□.□ m²	□□□.□ m²	
60	Is this more than usual, about the same, or less than usual?	More than usual ..... 1 About the same. ..... 2 Less than usual 3	More than usual ..... 1 About the same. ..... 2 Less than usual 3	More than usual ..... 1 About the same. ..... 2 Less than usual 3	More than usual ..... 1 About the same. ..... 2 Less than usual 3	

61	How much of stock rice seed do you have for next wet season?	□□□.□ kg		
62	Is this more than usual, about the same, or less than usual?	More than usual..... About the same..... Less than usual.....	1 2 3	
63	What kind of seed storage system was this household using before the floods?	Traditional..... Plastic bags..... Plastic container with lid..... Metallic silo..... None.....	1 2 3 4 5	
64	Did you have access to water for irrigation before the floods?	Yes..... No.....	1 2	→67
65	What kinds did you have access to? Do NOT prompt. Record all mentioned.	Private ponds..... Community ponds..... Irrigation canals..... River..... Other (specify): _____	A B C D E	
66	Were these irrigation sources damaged or destroyed during the floods?	Yes..... No..... DK.....	1 2 8	
67	Do you currently have access to water for irrigation?	Yes..... No..... DK.....	1 2 8	

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