Post-Nargis Periodic Review II

A report prepared by the Tripartite Core Group comprised of representatives of the Government of the Union of Myanmar, the Association of Southeast Asian Nations and the United Nations with the support of the Humanitarian and Development Community.

July 2009
FOREWORD

Cyclone Nargis, perhaps the greatest natural disaster in the history of Myanmar, struck the coast of the country on 2 May 2008. Moving across the Ayeyarwady Delta and then southern Yangon Division over a day and a half, the storm affected more than 7 million people, who suffered loss of family, home and livelihoods.

Since the tragedy, the Government of the Union of Myanmar (GoUM), the United Nations (UN), local and international non-government organisations (INGOs), local community-based organisations (CBOs), communities and private citizens have made extensive efforts to respond to the needs of the people whose lives were turned upside down by the cyclone. Much of the support continues one year on.

In September 2008, the Tripartite Core Group (TCG), consisting of the Association of Southeast Asian Nations (ASEAN), the GoUM and the UN, initiated a series of assessments or ‘reviews’ among the cyclone-affected population to gauge relief and recovery efforts, identify people’s needs and facilitate strategic decision making regarding further support. The TCG produced the findings from the first assessment in its first Periodic Review report in December 2008.

A second assessment followed one year after the cyclone to look at the progress of the recovery efforts. This second Periodic Review presents those findings. Prepared jointly by members of the Tripartite Core Group, both reports offer a ‘snapshot’ of the situation at a point in time among the affected population. This second Periodic Review, produced from an analysis of data collected between 7 May and 2 June 2009 in worst-affected townships of the Ayeyarwady and Yangon Divisions, is intended to assist those who have been involved in the relief and recovery effort to assess the progress made by the humanitarian community, and the needs of the affected population.

The second assessment used the same methodology as the first Periodic Review, which was based on the Village Tract Assessment (VTA) conducted in June 2008.

The Tripartite Core Group wishes to thank all those involved in the second Periodic Review, and its members hope that this report will enable those involved in the humanitarian response make more informed strategic decisions regarding their assistance programmes.

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The Tripartite Core Group wishes to express its appreciation for the continued participation and contributions of our partners in this essential process of monitoring and assessing the relief and recovery efforts in Cyclone Nargis-affected areas. The ASEAN Humanitarian Task Force, the ministries of the GoUM and the agencies of the UN have contributed to the success of the review, as have many national and international non-government and community-based organisations that made their staff available to work as trainers and as enumerators for the data collection (see annex 5.1). UN cluster leaders also provided expertise in informing the process. We also extend our thanks for the generous financial support from the donor community.

We thank the Periodic Review team members who compiled, analysed and produced the data in this report.

We particularly give our heart-felt thanks to all the people in the affected communities for participating in the surveys that form the basis of this report. This report would not have been possible without their contribution.

The Tripartite Core Group gratefully acknowledges the financial support given to the Periodic Review.

“This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of The Tripartite Core Group and can in no way be taken to reflect the views of the European Union.”
# Table of Contents

**FOREWORD** ................................. 1

**ACKNOWLEDGEMENTS** ....................... II

**LIST OF TABLES** .............................. V

**LIST OF FIGURES** ............................. VI

**LIST OF ABBREVIATIONS AND ACRONYMS** .............................. VIII

**EXECUTIVE SUMMARY** ............................... IX

**CHAPTER 1: INTRODUCTION** ............................ 1

1.1 BACKGROUND ..................................... 1

1.2 CYCLONE NARGIS RESPONSE ............................ 1

1.3 THE PERIODIC REVIEW PROCESS ....................... 2

1.3.1 VILLAGE TRACT ASSESSMENT AND POST-NARGIS JOINT ASSESSMENT .......... 2

1.3.2 PERIODIC REVIEW I ............................ 3

1.3.3 SOCIAL IMPACT MONITORING .......................... 3

1.3.4 POST-NARGIS RECOVERY AND PREPAREDNESS PLAN .......................... 3

1.4 INTERPRETING RESULTS ............................ 4

1.4.1 INDICATORS – DEFINITION AND USE .......................... 4

1.4.2 DATA INTERPRETATION AND USE .......................... 4

1.5 SAMPLING DESIGN AND SAMPLE CHARACTERISTICS ....................... 5

**FINDINGS** ........................................

**CHAPTER 2: HEALTHY LIVES** ............................ 9

2.1 HEALTH ........................................ 9

2.1.1 HEALTH FACILITIES ............................ 9

2.1.2 CHILD HEALTH .................................... 12

2.2 WATER, SANITATION AND HYGIENE (WASH) ................. 18

2.2.1 WATER ........................................ 19

2.2.2 SANITATION ..................................... 25

2.3 FOOD SECURITY ...................................... 31

2.4 CHAPTER CONCLUSION ............................... 33

**CHAPTER MAPS** ...................................... 36

**CHAPTER 3: PRODUCTIVE LIVES** ............................ 69

3.1 LIVELIHOODS ....................................... 69

3.1.1 TYPES OF LIVELIHOOD ............................ 69

3.1.2 CROPS ........................................ 74

3.1.3 FISHING ......................................... 77

3.1.4 LIVESTOCK ....................................... 81

3.2 SHELTER ........................................ 83

3.2.1 SHELTER DAMAGE .................................. 83

3.2.2 SHELTER REPAIR STATUS ............................ 84

3.2.3 ADEQUACY OF SHELTER CONDITIONS .......................... 85

3.2.4 SHELTER PREPAREDNESS ............................ 87

3.2.5 SHELTER RELIEF ITEMS ............................ 88
Post-Nargis Periodic Review II

3.3 EDUCATION ........................................... 89
3.3.1 SCHOOL ATTENDANCE ........................................... 89
3.3.2 REASONS FOR SCHOOL NON-ATTENDANCE ................................. 90
3.3.3 RELIEF ITEMS: PRIVATE EDUCATIONAL ITEMS ................................. 92

3.4 CHAPTER CONCLUSION ........................................... 93
CHAPTER MAPS ........................................... 95

CHAPTER 4: PROTECTED LIVES ........................................... 123
4.1 WOMEN ........................................... 123
4.1.1 DIFFERENCES BETWEEN HOUSEHOLDS HEADED BY WOMEN AND BY MEN ........................................... 123
4.1.2 RECRUITMENT OF WOMEN FOR OUTSIDE WORK PURPOSES ................................. 124
4.1.3 VIOLENCE AGAINST WOMEN OF ALL AGES ........................................... 125

4.2 CHILDREN ........................................... 126

4.3 PERSONS WITH A DISABILITY ........................................... 127

4.4 RETURN, INTEGRATION AND RESETTLEMENT ........................................... 128
4.4.1 HOUSEHOLDS THAT MOVE WITHIN OR BETWEEN VILLAGES ........................................... 128
4.4.2 PERSONAL IDENTIFICATION DOCUMENTATION ........................................... 130

4.5 CHAPTER CONCLUSION ........................................... 132
CHAPTER MAPS ........................................... 134

CHAPTER 5: ANNEXES

ANNEX 5.1 CONTRIBUTING AGENCIES ........................................... 143

ANNEX 5.2 METHODOLOGY ........................................... 144
5.2.1 QUESTIONNAIRE AND INTERVIEW PROCESS ........................................... 144
5.2.2 SURVEY DESIGN ........................................... 144
5.2.3 DATA MANAGEMENT ........................................... 146
5.2.4 MAPPING AREA-BASED ESTIMATES ........................................... 146

ANNEX 5.3 QUESTIONNAIRE (ENGLISH) ........................................... 148

ANNEX 5.4 LIST OF AFFECTED TOWNSHIPS ........................................... 170

BIBLIOGRAPHY ........................................... 172

* map only presented in smaller size.
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>PR II SAMPLE CHARACTERISTICS</td>
<td>7</td>
</tr>
<tr>
<td>Table 3.1</td>
<td>TOWNSHIP ESTIMATES FOR MONSOON PADOY PLANTING</td>
<td>76</td>
</tr>
<tr>
<td>Table 3.2</td>
<td>TOWNSHIP ESTIMATES FOR FISHING GEAR</td>
<td>79</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

FIGURE 1.1 : MYANMAR* 1
FIGURE 1.2 : IMPROVED ACCESS TO SANITATION FACILITY* 5
FIGURE 1.3 : SAMPLING AREA HEXAGONAL GRID* 6
FIGURE 1.4 : PRIMARY HEALTH CARE FACILITIES WITHIN ONE HOUR TRAVEL TIME 36
FIGURE 1.5 : MEDICINE AVAILABLE ALL OR MOST OF THE TIME 37
FIGURE 1.6 : HEALTH PERSONNEL AVAILABLE ALL OR MOST OF THE TIME 38
FIGURE 1.7 : REASONS FOR NON-ATTENDANCE AT PRIMARY HEALTH CARE FACILITIES 12
FIGURE 1.8 : GLOBAL ACUTE MALNUTRITION 39
FIGURE 1.9 : GLOBAL ACUTE MALNUTRITION PLUS THOSE AT RISK 40
FIGURE 1.10 : COVERAGE OF MEASLES VACCINATION AMONG CHILDREN (6 MONTHS TO 5 YEARS) 41
FIGURE 1.11 : COVERAGE OF DPT(3x) VACCINATION AMONG CHILDREN (6 MONTHS TO 5 YEARS) 42
FIGURE 1.12 : DIARRHOEA INCIDENCE AMONG CHILDREN (6 MONTHS TO 5 YEARS) 43
FIGURE 1.13 : DIARRHOEA TREATMENT METHODS 17
FIGURE 1.14 : FEVER INCIDENCE AMONG CHILDREN (6 MONTHS TO 5 YEARS) 44
FIGURE 1.15 : IMPROVED SANITATION AND DIARRHOEA/ FEVER INCIDENCE 45
FIGURE 1.16 : WATER TREATED ADEQUATELY AND DIARRHOEA / FEVER INCIDENCE 46
FIGURE 1.17 : WATER SOURCES IN THE DRY AND RAINY SEASONS 20
FIGURE 1.18 : USE OF IMPROVED DRINKING WATER SOURCES IN THE RAINY SEASON 47
FIGURE 1.19 : USE OF IMPROVED DRINKING WATER SOURCES IN THE DRY SEASON 48
FIGURE 1.20 : WATER TREATED ADEQUATELY 49
FIGURE 1.21 : WATER TREATMENT METHODS 22
FIGURE 1.22 : DRINKING WATER QUANTITY IN THE RAINY SEASON 50
FIGURE 1.23 : DRINKING WATER QUANTITY IN THE DRY SEASON 51
FIGURE 1.24 : WATER SOURCE WITHIN COMPOUND DURING THE RAINY SEASON 52
FIGURE 1.25 : WATER SOURCE WITHIN COMPOUND DURING THE DRY SEASON 53
FIGURE 1.26 : WATER STORAGE AVAILABLE 54
FIGURE 1.27 : WATER ITEMS RECEIVED 55
FIGURE 1.28 : WATER ITEMS STILL NEEDED 56
FIGURE 1.29 : IMPROVED SANITATION FACILITIES 57
FIGURE 1.30 : TYPES OF SANITATION FACILITIES 27
FIGURE 1.31 : ADEQUATE DISPOSAL OF CHILD Faeces 58
FIGURE 1.32 : METHODS OF CHILD Faeces DISPOSAL 28
FIGURE 1.33 : METHODS OF SOLID WASTE DISPOSAL 28
FIGURE 1.34 : SOAP PRESENCE IN HOUSEHOLDS 59
FIGURE 1.35 : WASHING HANDS BEFORE FOOD PREPARATION 60
FIGURE 1.36 : HYGIENE ITEMS RECEIVED 61
FIGURE 1.37 : HYGIENE MESSAGING RECEIVED 62
FIGURE 1.38 : LATRINES RECEIVED 63
FIGURE 1.39 : PROPORTION OF HOUSEHOLDS WITH POOR FOOD CONSUMPTION 64
FIGURE 1.40 : MODERATE TO SEVERE FOOD INSECURITY 65
FIGURE 1.41 : RECEIVED FOOD ASSISTANCE SINCE CYCLONE NARGIS 66
FIGURE 1.42 : FOOD AID DEPENDENCE AT PRESENT 67
FIGURE 1.43 : MAIN HOUSEHOLD INCOME SOURCES BEFORE AND AFTER CYCLONE NARGIS 71
FIGURE 1.44 : INCOME SOURCES 95
FIGURE 1.45 : PROPORTION OF HOUSEHOLDS CULTIVATING MONSOON PADDY AT THE TIME OF THE SURVEY 96
FIGURE 1.46 : MAIN ACTIVITIES OF HOUSEHOLD MEMBERS BEFORE AND AFTER CYCLONE NARGIS 73
FIGURE 1.47 : CURRENT MAIN ACTIVITIES OF MEN AND WOMEN 74
FIGURE 1.48 : ACRES OF MONSOON PADDY PER LANDHOLDER BEFORE CYCLONE NARGIS 97
FIGURE 1.49 : REASONS FOR REDUCED MONSOON PADDY ACREAGE 76
figure 3.8 : reduced home garden size after cyclone Nargis 98
figure 3.9 : crop items received through relief assistance 99
figure 3.10 : proportion of households owning boats 100
figure 3.11 : proportion of households owning fishing gear 101
figure 3.12 : boats owned per household before cyclone Nargis 102
figure 3.13 : income sources in areas with reported fishing gear reduction 103
figure 3.14 : fishing gear received 104
figure 3.15 : fishing gear needs at present with income sources 105
figure 3.16 : boats received 106
figure 3.17 : boat needs 107
figure 3.18 : chickens lost 108
figure 3.19 : livestock received 109
figure 3.20 : livestock needs 110
figure 3.21 : completely or severely damaged shelters 111
figure 3.22 : level of repair among households 84
figure 3.23 : shelter repair status 112
figure 3.24 : main reason for inability to repair shelter 85
figure 3.25c : plastic, tarpaulin or canvas is used as a wall or roof 113
figure 3.26 : insufficient shelter area 114
figure 3.27 : inadequate shelter conditions 115
figure 3.28 : preparedness score for storms or flooding 116
figure 3.29 : safe shelter within 0.5 mile of home 117
figure 3.30 : households that had received shelter items 118
figure 3.31 : shelter needs 119
figure 3.32 : school attendance for children aged 5–10 years 120
figure 3.33 : school attendance for children aged 11–15 years 121
figure 3.34 : reasons for school non-attendance among children aged 5–10 years 90
figure 3.35 : reasons for school non-attendance among children aged 11–15 years 91
figure 3.36 : education cost burden 92
figure 3.37 : received education items 122
figure 4.1 : women of all ages approached with an offer to work elsewhere 134
figure 4.2 : type of outside work offered to women, as reported by women in surveyed households 125
figure 4.3 : violence against women of all ages ‘sometimes’ or ‘often’ 135
figure 4.4 : location where acts of violence would most likely occur 126
figure 4.5 : children younger than 18 living without their natural mother and/or father 136
figure 4.6 : disabled person in a household 137
figure 4.7 : living in same compound as before cyclone Nargis 138
figure 4.8 : lived in different village/ward before cyclone Nargis 139
figure 4.9 : reasons for displacement 130
figure 4.10 : future migration plans 130
figure 4.11 : currently without NRC 140
figure 4.12 : loss of a NRC since cyclone Nargis 141
figure 4.13 : rights without a national registration card (NRC) 132
figure 5.1 : the sampling area of townships worst affected by the cyclone, divided into equal-sized areas which do not overlap, using a hexagonal lattice* 144
figure 5.2 : the hexagonal lattice tile* 145
List of Abbreviations and Acronyms

ASEAN Association of Southeast Asian Nations
CSAS Centric systematic area sampling
DALA Damage and loss assessment
DTP Diphtheria, tetanus and pertussis
GBV Gender-based violence
GPS global positioning system
INGO international non-governmental organisation
IASC Inter-Agency Standing Committee
IDP Internally displaced person
LNGO local non-governmental organisation
MIMU Myanmar Information Management Unit
MNGO Myanmar non-governmental organisation
MUAC mid-upper arm circumference
NRC national registration card
NGO non-governmental organisation
OCHA United Nations Office for the Coordination of Humanitarian Affairs
PONJA Post-Nargis Joint Assessment
PONREPP Post-Nargis Recovery and Preparedness Plan
PR I, PR II Periodic Review I, Periodic Review II
PTA parent–teacher association
SAG Periodic Review Strategic Advisory Group
SIM social impact monitoring
TAG Periodic Review Technical Advisory Group
TCG Tripartite Core Group
VTA Village Tract Assessment
WASH water, sanitation and hygiene
WHO World Health Organisation
UN United Nations
UNICEF United Nations Children’s Fund

Conversions
1,000 kyat = approximately US$1
1 pyi = 2.13 kg of milled rice (approximately 2 litres or 4.69 pounds)
**EXECUTIVE SUMMARY**

One year after Cyclone Nargis considerable progress has been achieved towards easing the hardships and physical devastation that the Category 3 cyclone\(^1\) inflicted in the Ayeyarwady and Yangon Divisions of Myanmar in May 2008. Although traces of the devastation that disrupted the lives of approximately 2.4 million people and killed another 140,000\(^2\) still linger among the fields and villages of the cyclone-affected region, the resilience of the affected population amid adverse seasonal and economic conditions is evident, as demonstrated by their efforts to rebuild their lives, homes and communities.

The sustained humanitarian response that was rolled out in the immediate aftermath of the disaster has moved out of the emergency relief phase into addressing the medium- and long-term recovery needs of the affected communities. Still, it remains apparent that continued humanitarian assistance is vital to the sustained, longer-term recovery of the cyclone-affected region.

In this context, the second Periodic Review (PR II) undertaken by the Tripartite Core Group endeavours to present a set of useful indicators that correspond to the needs of medium- to long-term recovery programming.

The PR II aims to provide a baseline for strategic decision-making and for actors involved in the rehabilitation process to gauge their activities and monitor progress according to a set of indicators. It presents data, culled from a survey of 2,931 households in areas that were hardest hit by the disaster to show their rate of recovery and continued needs, one year later. The PR II also builds on the first Periodic Review and other key surveys that cover the same geographic area. As such, it highlights geographic trends and focuses on specific areas that require immediate or intensified intervention.

The survey’s results are presented in three interlinked chapters: Healthy Lives, Productive Lives and Protected Lives. When taken together, these serve as the building blocks for medium- and long-term recovery in cyclone-affected areas of Myanmar.

The PR II found that, overall, the majority of the sampled villages have returned to a situation similar to what it was before the cyclone. Considerable headway in recovery and rehabilitation is evident regarding basic needs, such as food, nutrition, water, sanitation and hygiene. Other basic needs, such as shelter, however, have not yet returned to pre-disaster conditions and thus require increased and immediate efforts.

There remains a conspicuous widespread need for adequate and safe shelter among 74 per cent of the households. More importantly, 90 per cent of the households do not consider their shelter safe from extreme weather disturbances, such as another cyclone. Although the proportion of households that use plastic, tarpaulin or canvas for the roof or walls of their house has declined since the aftermath period of the cyclone, 53 per cent consider their dwelling is hotter, wetter and/or more crowded compared to their home prior to the disaster. Around 4 per cent of the households are still displaced and have not been able to return to the same village where they lived before the disaster.

Livelihoods also remain insecure compared to before Cyclone Nargis hit last year. The majority, or 58 per cent, of surveyed households depend on agriculture and related activities, while 46 per cent rely on casual labour, which may also be linked closely to farming and fishing. Confronted with a scarcity of capital and farming inputs, households found themselves hard pressed to engage in farming activities, which is affecting their capacity to earn income and provide sustenance for their families. At the same time, it is also affecting income opportunities for those who derive their main income from casual labour tied to the agriculture industry.

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\(^1\) According to the Saffir-Simpson scale as reported by OCHA (June 2008) Situation Report p. 1

\(^2\) TCG (June 2008) Post Nargis Joint Assessment, p.1
Although a smaller proportion of households still rely on food aid as their main source of nutrients, pockets of severe food shortage and thus dependence on food aid remain high in the hardest-hit areas, such as Labutta, Bogale and Pyapon Townships. Households in the cyclone-affected areas continue to encounter challenges in regaining and strengthening their livelihoods.

Post-disaster efforts implemented in the aftermath of Cyclone Nargis were geared towards restoring conditions to the same level as prior to the disaster; however, such conditions were weak and needed to be further strengthened. Instead of bringing conditions back to pre-cyclone levels, the PR II reveals several opportunities to work on the longer-term challenge of ‘building back better’.

These opportunities are most profound in the following sectors: water, sanitation and hygiene, healthcare, shelter, child education and support for vulnerable populations. Although substantial progress has been made to restore access to clean water and proper sanitation facilities, most households still use unimproved water sources, particularly during the dry season; 32 per cent treat their water inadequately, while only 43 per cent use adequate sanitation facilities. These conditions lead to frequent incidence of diarrhoea among children.

A serious concern with respect to the provision of health-care services remains the low birth attendance by professional health personnel. Only 32 per cent of the sampled births were attended by skilled health personnel and the majority of births, or 87 per cent were delivered at home. While medicine and health personnel were mostly reported to be available in health clinics, a major concern is that in some areas in particular along the southern coast, it still takes more than one hour to reach the nearest primary health-care facility.

While school attendance among children aged 5–10 years has remained at a high level, or 85 per cent, the same cannot be said for older children aged 11–15 years with 69 per cent attending schools on average. Though education is recognised as necessary to enhance the productivity of the population in the long-term, households find it too difficult to send older children to school because of the education cost burden and the need for older children to look after others at home or to work. These considerations, among others, have also resulted in delays in age-appropriate education in cyclone-affected areas, with around 27 per cent of the younger age group delayed by at least one year in their expected school levels and 13 per cent of the older group delayed by three years.

To address the overwhelming need for adequate and safe shelter among cyclone-affected communities, efforts need to be undertaken to incorporate disaster-risk reduction methods in the repair and reconstruction of houses. The PR II shows that the surveyed households only scored an average of 2.1 (on a scale of 0 to 5) in disaster preparedness, thus reinforcing the need to further expand awareness of disaster-risk reduction and mitigation methods in Myanmar.

Although protection issues are less visible and more difficult to identify, compared with other humanitarian concerns during and after natural disasters, they are no less important in rehabilitation and recovery efforts. The PR II covered certain issues specific to vulnerable groups that are rarely reported, such as violence against women as well as land tenure and ownership in the cyclone-affected areas. For example, violence against women has been mentioned to occur at least sometimes by 20 per cent of the women in the sampled households and female-headed households tend to struggle more with food shortages than male-headed households. Further assessments, however, are needed to analyse these issues in-depth and to identify obstacles that may impede cyclone-affected households in the long-term recovery and reintegration efforts in the coming years.

Data from the PR II reinforces the intention that in going forward, it is essential to build on the success of the various multi-sector efforts led by ASEAN, the GoM, and the UN, in collaboration with the humanitarian community. These activities have laid the groundwork and paved the way in providing recovery and sustaining the momentum towards successfully addressing longer-term challenges.
CHAPTER 1:

INTRODUCTION

1.1: BACKGROUND

Cyclone Nargis struck the Ayeyarwady Delta of lower Myanmar in the late afternoon of 2 May 2008 (figure 1.1). Through the night and into the next day it roared inland and eastwards, towards Yangon, the country’s most populous city. When the storm was over, the disaster was just beginning: Nargis severely affected the lives of approximately 2.4 million of the more than 7 million people living in the region. An estimated 140,000 people were killed or went missing and the lives and livelihoods of the survivors were upended. The cyclone was accompanied by winds over 200 km per hour (108 knots) and a tidal storm surge up to 3.6 m (12 foot), each causing different types of damage (see figure 1.2). Approximately 800,000 people were displaced, 450,000 homes destroyed and substantial amounts of food stocks, livelihood-related equipment, infrastructure and paddy (and seed stock) were all similarly lost.\(^1\)

The scale and scope of the destruction required a sustained humanitarian response. A year after the cyclone, a portion of this response was still in the emergency relief phase although actions had expanded to the medium- and long-term recovery needs of the affected population. The resilience and resourcefulness of the people living through the disaster has been remarkable, evidenced by their efforts to rebuild their lives, homes and communities. However, it is apparent that continued humanitarian assistance is vital for the sustained, longer-term recovery of these communities.

1.2: CYCLONE NARGIS RESPONSE

After the ruinous storm dissipated, ASEAN, the GoUM, the UN, the local and international NGO community, small community-based organisations and thousands of civic-minded individuals made intense efforts to provide for the relief and recovery needs of the affected population. Before many national and international NGOs could begin their programmes, individuals throughout the country joined together spontaneously to form community groups to provide assistance. One year on, considerable progress has been made towards easing the hardship and physical devastation that the cyclone inflicted. This is largely due to the close cooperation between the authorities, relief agencies and local communities.

The GoUM has responded with a number of programmes and has coordinated closely with the TCG and the humanitarian community to enable and provide aid to the affected townships. ASEAN, as the regional body, stepped in to provide coordination and technical assistance to the GoUM, UN agencies and humanitarian community. For the first time since its inception, the regional bloc helped put in place a transparent aid mechanism and facilitated effective needs assessments and necessary follow-up on recovery plans. ASEAN’s post-Nargis regional intermediary model could be replicated by other regional bodies in other emergency situations.

\(^1\) Government of the Union of Myanmar (31 October 2008) Integrated Monitoring Matrix, Myanmar Information Management Unit,
The UN has worked in cooperation with ASEAN to coordinate the largest joint relief and recovery effort in the history of Myanmar. The UN implemented the humanitarian emergency cluster system, which included participation from the GoUM and international and local NGOs, and which employed a multi-sector coordinating approach in managing the humanitarian assistance roll-out.

1.3: The Periodic Review Process

The TCG instituted the Periodic Review as a process of assessing, monitoring and reporting on the situation and needs of the people and communities affected by the cyclone. The goal of the review process is to generate data that humanitarian actors can use in their strategic planning and in targeting their assistance, thereby accelerating the recovery among the affected population.

The Periodic Review process began in September 2008. Following the Periodic Review I report released in December 2008, the Periodic Review II reports on the second round of assessments carried out from 7 May to 2 June 2009.

The Periodic Review provides an objective and neutral appraisal of the relief and recovery operations and the current priority needs at the household level. Each round of assessments aims to show the needs at a particular point in time; as a series, they show the progress of recovery over the first one and a half years after Cyclone Nargis. Together with earlier assessments, such as the Village Tract Assessment (VTA) and the Damage and Loss Assessment (DALA), the Periodic Review provides a powerful tool that has been designed to assist all stakeholders involved in Cyclone Nargis-related humanitarian assistance when planning their interventions and activities. In addition, it provides guidance to the donor community for tailoring funding commitments to the needs of the ultimate beneficiaries – the people affected by Cyclone Nargis.

Inclusiveness, cooperation and consultation have been fundamental components of the preparation and production processes of the Periodic Review reports. The Periodic Review team consulted closely with representatives from the UN thematic clusters2 throughout the review process, from creating the survey design, selecting indicators, setting thresholds and in analysing data. The Periodic Review team also received guidance from the Technical Advisory Group (TAG) and the Strategic Advisory Group (SAG), both of which were composed of members representing the three components of the TCG.

The TAG provides technical advice and background information to the review teams on methodology while also advising on the scientific aspects and applications of the Periodic Review. The SAG provides strategic advice to ensure that the Periodic Review succeeds in mobilizing resources and effectively communicates progress of the Review among stakeholders. The TCG has final editorial control over the Periodic Review II (PR II) report.

The PR II builds on the first Periodic Review, which in turn was based on the Village Tract Assessment conducted in June 2008; to ensure comparability, the PR II covers the same geographical region and makes use of the same indicators. With each round of assessments, the methodology has been reviewed and questions added to improve the quality of data and to reflect the stage of response, in this case, the moving away from relief activities and into medium- and long-term recovery.

1.3.1 Village Tract Assessment and Post-Nargis Joint Assessment

In the immediate aftermath of Cyclone Nargis, a multiparty assessment mission under the auspices of the TCG, initiated the Post-Nargis Joint Assessment (PONJA)3 to determine the full scale of the disaster and requirements for both immediate humanitarian assistance needs and medium- to long-term recovery. The assessment was conducted in the southern parts of Ayeyarwady and Yangon Divisions from 10–19 June 2008; it consisted of two components: the VTA, which focused on

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2 In emergency situations, the UN can implement a cluster system to respond to various aspects of the response; the system ‘clusters’ agencies typically work in specific areas, with one agency taking the lead role. The UN cluster themes include health, education, logistics, nutrition shelter, early recovery, water and sanitation and hygiene, agriculture, nutrition, emergency communications and protection.

The VTA is a baseline assessment that identified the vulnerabilities and capacities in the areas hit hardest by the cyclone. Specifically, the assessment identified relief and early recovery priorities for intervention by collecting information on a range of sectors (the UN clusters), in a number of communities across the affected region. The VTA formed the basis for the Periodic Review humanitarian assessment reports that followed, although the indicators and data analysis methods were refined with each new report. Data from the VTA were incorporated into the PONJA, which was the first TCG-led assessment and report released to the public.

1.3.2 Periodic Review I

The PR I, the first report presenting the results of the Periodic Review assessment, was published six months after Cyclone Nargis swept across lower Myanmar. It highlighted that while there were good results for access to health care in the affected areas and improvements in child nutrition, large proportions of households still lived in inadequate shelters. Further, it was apparent that many communities were a long way from recovering from their losses, which in many cases will take several years.

While the assistance delivered in the aftermath of the cyclone resulted in positive impacts, the PR I found that the depth and geographical coverage was not yet sufficient to meet all needs. The report also showed that many of the challenges that the cyclone-affected communities were experiencing were interlinked and cut across sectors; for example, when combined, the interactions between the health system, nutrition, food, shelter and sanitation led to improved health outcomes. To effectively address the complexity of that interdependence, the PR I recommended greater coordination and horizontal integration of programming to address the needs of the cyclone-affected communities.

1.3.3 Social Impact Monitoring

The report on Social Impact Monitoring (SIM), produced in January 2009 by the TCG, used qualitative research to examine the impacts of Cyclone Nargis in 40 villages in 8 townships. It assessed the social dimensions of the impacts of the cyclone and of aid delivery from the perspectives of affected communities six months after the storm and the start of the relief effort. It focused on three areas: the effectiveness of aid; the impacts of the cyclone and humanitarian aid on the socio-economic structure of village life; and impacts on social relations and cohesion.

The SIM is part of a comprehensive results framework and monitoring system initiated by the TCG in September 2008, to ensure that the relief and recovery efforts of all partners would effectively address the needs of the affected population and to report on the scale of these efforts. The framework included three components: results monitoring, aid tracking, and community monitoring. The SIM was a qualitative social monitoring tool to examine the impacts of Cyclone Nargis and the aid effort, and was designed as a to be complimentary to the Periodic Review reports which focused on quantitative results.

1.3.4 Post-Nargis Recovery and Preparedness Plan

The Post-Nargis Recovery and Preparedness Plan (PONREPP) outlined a strategy to promote recovery in Nargis-affected areas within the first three years after the disaster, from January 2009 to December 2011. The TCG produced the report with the assistance of the humanitarian community. PONREPP provides a framework aimed to ensure a smooth transition from the emergency relief response to the medium- and long-term recovery programming. However, the PONREPP is an indicative plan – not a detailed programme of response or action. Its purpose is to provide sufficient information so that all stakeholders can respond to the medium-term needs of the cyclone-affected population and to guide the review of their activities. The implementation of the PONREPP complements the Government’s reconstruction plan while continuing to uphold its community-based approach and consultative mechanisms to strengthen aid coordination and effectiveness.
Introduction

The PONREPP is a vital framework for the medium- and long-term recovery process in the cyclone-affected areas. Thus, PR II readers may wish to know how the findings and lessons drawn from this report guide the implementation of PONREPP in the future.

As previously noted, both Periodic Reviews followed the divisions of the UN cluster system (using areas such as health, education, food, nutrition, etc.). To streamline this arrangement, the PONREPP combined several of the cluster divisions into three large thematic groups: ‘productive lives’, concerning livelihoods; ‘healthy lives’, dealing with education, health, water, sanitation and hygiene (WASH); and ‘protected lives’, relevant to disaster-risk reduction, the environment, protection and vulnerable groups. Thus, the organisation of data in this PR II report follows the PONREPP’s cluster division. However, the cluster-based indicators of the PR II are not identical with those of the PONREPP (although under the health cluster they are the same).

As part of the Periodic Review's evolution, an attempt has been made in this PR II report to present a set of indicators that are more useful and that correspond to the PONREPP. Thus, the PR II provides insight for actors involved in the recovery process to gauge their actions and monitor progress according to the indicators.

1.4: Interpreting Results

The Periodic Review process monitors ‘indicators’ on the status of cyclone-affected people over a period of time in a set geographical area. The purpose of this monitoring is to obtain a picture of change or progress that can inform the decisions of various humanitarian partners when developing, evaluating, or adjusting their assistance strategies. For some indicators, the Periodic Review assesses needs, while for others it assesses performance (see annex 5.2 for more detail on methodology).

Findings are mainly presented by clusters. In summary, they provide a one-year post-Nargis ‘snapshot’ of the needs and received assistance, from the perspective of the households. Where possible, results from the PR I are used to make comparisons as a way of monitoring the progress in meeting the needs of the population. However, direct comparisons are not always possible between the three assessments due to slight differences in methods and questions.

1.4.1 Indicators – Definition and use

An ‘indicator’ is a measurement of variation on a specific topic or question that differs across people, households or communities. It may require the answer to a single question, or it may derive from a set of answers to several questions that are combined. For example, the measure of the indicator ‘access to an improved sanitation facility’ is derived from a combination of two questions: 1) whether or not the type of sanitation facility used by the household is considered adequate, which includes pour-flush latrines connected to a sewer, septic tank or pit; ventilated improved pit latrines; pit latrines with a slab or platform cover; or composting latrines; and 2) whether or not the facility is shared with other households.

The answers to these two questions are combined, and the indicator assessment is based on the following logic: If the type of sanitation facility is adequate and is not shared with other households, then the household is considered as having access to an improved sanitation facility. The variables and logic used to create the definition of an indicator are called the ‘criteria of the indicator’. In some contexts, indicators may be associated with a standard that includes a specified threshold, such as the definition of malnutrition.

The enumerators collected the PR II measurements through a questionnaire (with mostly yes-or-no questions) or by using quick and straightforward physical measurement and observation. The questionnaire can be found in annex 5.3.

1.4.2 Data interpretation and use

This report presents data both in text and visual format (maps and histograms). Maps show the distribution of indicator estimates over the survey area and are accompanied by histograms showing
the distribution of the estimates at the level of sampled communities. The maps and histograms illustrate information based on the responses of household members to the PR II questionnaire (or other measurements, where applicable).

To allow the reader to quickly distinguish between better- and worse-off areas, the maps contain colour shadings that reflect the variation of the estimates over the geographic area. As such, these maps allow stakeholders to identify interventions that should be given priority for each geographical area. Figure 1.2 includes an example of a map showing the proportion of households that have access to an improved sanitation facility.

**Figure 1.2: Improved access to sanitation facility**

Each map contains the following elements:

1. **Title** – General description of the mapped indicator.

2. **Histogram** – A histogram is a graphical display of tabulated frequencies, shown as bars. In the PR II the histograms show frequencies or densities (y-axis) for the different proportions of households (x-axis). Each histogram also includes the un-weighted mean.

3. **Legend** – The colours used on these maps are consistent, with red always representing the poorest result and dark green representing the best result. A gradation of orange, light green and yellow represent values between the extremes of the collected data.

4. **Data range** – The histogram and legend show the highest and lowest of the indicator ranges. These are most often 0 and 100 per cent, but the range is restricted for some indicators because the extreme values might change.

5. **Map frame** – Each indicator is mapped across the survey area and is presented in the text as a figure that includes a map and a histogram. The colours on the map represent estimated proportions of households or, in some cases, individuals meeting the criteria associated with a given indicator.

6. **Scale bar** – The scale bar and text illustrates how many ground units are represented by a map unit; for example, ‘one inch equals 10 miles’.

7. **North arrow** – The north arrow shows the orientation of the map to true north.

The smaller PR II maps presented in this report are presented again in full-page size in the ‘chapter maps’ sections at the end of the three ‘findings’ chapters.

### 1.5: Sampling design and sample characteristics

The PR II assessed the same sample area as the VTA and the PR I, which was defined as the worst affected townships, but it did not cover the same communities (see annex 5.4 for list of affected townships). For selecting the areas to be included in the survey, ‘affected’ was defined as the loss of
life and/or property that had an impact on the livelihood of the individual, family or community. It did not take into consideration the ability to cope with the damage and destruction.

The PR II used a two-stage sampling design in which the primary sampling units were communities sampled from the cyclone-effected area, the secondary sampling units were households within the selected primary sampling units. Primary sampling units were selected using Centric Systematic Area Sampling (CSAS), which involves dividing the sample area into non-overlapping and equal-sized hexagon areas (figure 1.3). The community located closest to the centre of each area was selected for the sampling. The hexagonal sampling method provided a way in which variations in a situation and the continuing needs of communities could be represented in easy-to-understand maps (annex 5.2 provides greater detail of the sampling methodology).

Figure 1.3: Sampling Area Hexagonal Grid

A total of 2,931 households in 105 villages in 30 townships were selected and assessed during May 2009. The average number of sampled households per village was 29. The sample of 2,931 households included a total number of 14,429 household members, with an average of 5 members per household. The average population size of the sampled communities was 1,041 persons, based on reports from the village leaders; applying the average number of 5 persons in the sampled households, there are roughly 210 households per sampled village.

The following table 1.1 provides more details on the PR II sample characteristics.
### Table 1.1: PR II sample characteristics

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total villages sampled</td>
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<td></td>
</tr>
<tr>
<td>Average village population sampled</td>
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<td></td>
</tr>
<tr>
<td>Total households sampled</td>
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<td>Children</td>
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<td></td>
</tr>
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<td>6 months or younger</td>
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<td>1.3%</td>
</tr>
<tr>
<td>6 months – 5 years</td>
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<tr>
<td>5–15 years</td>
<td>3351</td>
<td>23.2%</td>
</tr>
<tr>
<td>15 years or younger</td>
<td>4744</td>
<td>32.9%</td>
</tr>
<tr>
<td>18 years or younger</td>
<td>5721</td>
<td>39.6%</td>
</tr>
<tr>
<td>Between 65 and 110 cms</td>
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<td>11.7%</td>
</tr>
<tr>
<td>Mid-aged persons</td>
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<td></td>
</tr>
<tr>
<td>19 - 59 years</td>
<td>7665</td>
<td>53.1%</td>
</tr>
<tr>
<td>Elderly persons</td>
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<td></td>
</tr>
<tr>
<td>60 years or older</td>
<td>1043</td>
<td>7.2%</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Women</td>
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<td>50.0%</td>
</tr>
<tr>
<td>Men</td>
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<td>50.0%</td>
</tr>
<tr>
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<tr>
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<tr>
<td>Other</td>
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<td>0.4%</td>
</tr>
<tr>
<td>Other</td>
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Findings
Chapter II: Healthy Lives
CHAPTER 2:

HEALTHY LIVES

Cyclone Nargis wreaked havoc in Ayeyarwady and Yangon Divisions and drastically impacted on one of the country’s most important assets: the health of its people. The disaster caused both physical and psychological harm, and undermined the availability of health care, disease-prevention services, nutritious food, clean water and sanitary facilities.

Recognizing that healthy lives are the basic building blocks in reconstructing disaster-affected communities, various groups and organizations implemented programmes to restore and enhance healthy living conditions in the affected area. This chapter provides an analysis of the continuing health needs of the people in these communities one year after Cyclone Nargis.

2.1: HEALTH

Cyclone Nargis drastically affected the health care system in the affected area by increasing the health care needs, and decreasing the ability of families to pay for treatment. Activities geared towards improving the health conditions of affected villages attempted to address gaps in service provision and cover the health care needs that emerged in the aftermath of the disaster.

This section presents quantitative data describing the current level of health care needs in the affected communities, principally among children and women of child-bearing age. The following three components were used to gauge whether the health care needs in affected villages are being met:

- Indicators of availability, access and use of health services
- Factors impacting maternal health
- Status of child health.

Links between health, water and sanitation, as well as food and nutrition are drawn upon where relevant.

2.1.1 HEALTH FACILITIES

Factors that affect the delivery of health services in the cyclone affected area are based on the following three dimensions: i) access, ii) availability, and iii) the use of services by the affected population.

ACCESS TO HEALTH FACILITIES

Accessibility of health care services can be determined by the proportion of households reporting that the nearest health facility is within one hour travel by local means of transportation from their home.

Of the households surveyed, 75 per cent stated that the nearest health facility was within one hour from their home. This is similar to the 77 per cent reported in the PR I.

However, geographical variations in access are significant. Areas of particular concern, shown in red in figure 2.1, are mostly in the coastal areas of Bogale and Pyapon. On average, only half of the surveyed households in these two townships reported that they could reach a health facility within one hour. In some villages in these two townships every household surveyed reported that there are no health facilities that could be reached within one hour.
**Healthy lives**

Figure 2.1: Primary Health Care facilities within one hour travel time

![Map of Primary Health Care facilities within one hour travel time](image)

**Service availability at health facilities**

Access to medical treatment at health facilities by itself is not a sufficient indicator of the functionality of a health care system. Thus, the PR II assessed the availability of services at the point of delivery to determine whether villagers in the affected townships are provided with adequate health care. To generate the data the heads of households were asked to quantify the degree to which health care providers were available at the health facility they visited. They were also asked whether medicines needed were available at the health facility during their visit. Overall, 85 per cent of households included in the survey reported that medicine was available at all times or most of the time, an improvement to the 76 per cent reported in PR I.

In terms of geographical variation fewer surveyed households south of Labutta Town reported the availability of medicines at health facilities compared with other areas, as shown in yellow in figure 2.2. In contrast, most of the surveyed households in southern Bogale Township, reported that medicines were available at all or most of the time.

Figure 2.2: Medicine available all or most of the time

![Map of Medicine availability all or most of the time](image)

Although medicine availability in health facilities varied across the villages included in the survey, the availability of health personnel in the facilities is consistently high with an average 91 per cent across the entire affected area, as shown in green in figure 2.3. Very few households reported that health personnel were not available.
Use of health facilities

Access and availability of health services illustrates the supply side, while the number of visits and reasons for not visiting health facilities reflect the demand side. Overall, each household head in the affected area visited a health facility approximately 1.9 times in the past year or since Cyclone Nargis struck.

A per capita use rate of 1.9 treatments per episode per year, in the absence of very high levels of disease burden, meets the benchmark set out in the health cluster’s Joint Plan of Action. However, it falls short of the optimal standard set in the SPHERE humanitarian standards guidelines in which an average of 4 new consultations per person per year is the suggested benchmark among populations in an unstable context.

Figure 2.4 illustrates the underlying factors that explain why household heads in the affected townships had not visited a health facility since the Cyclone Nargis disaster. The majority of the household heads reported that they did not visit a health facility due to their good health. These cases have been excluded, and figure 2.4 focuses only on those individuals who were unwell but did not visit a health facility. The Figure shows use of household remedies (which include traditional treatment and herbal preparations) to cure health problems as the main reason for not going to a health facility, followed by the distance of the facility from the village, and financial barriers that limited the affordability of health services.
Focus: Reproductive health services

Unattended births at home constitute a considerable risk for pregnant women. Public health practitioners highly recommend that pregnant women deliver their babies in a health facility supervised by a qualified health provider to reduce the incidence of morbidity and mortality among women during childbirth. To gauge the adequacy of health services for pregnant women in the affected townships PR II assessed birth attendance, as well as the frequency of maternal and neonatal post-partum checks, in all households in which at least one birth occurred since Cyclone Nargis.

Overall post-cyclone birth attendance by skilled health personnel, which include doctors, health assistants, nurses and midwives, was low, at 32 per cent, while the majority of deliveries, or 87 per cent, occurred at home. Regarding the post-natal period, 35 per cent of women reported that their health was checked by skilled health personnel within 4 to 6 weeks after child birth; 67 per cent of newborns received a neonatal check-up by a health care provider or a traditional birth attendant within the 4 to 6 weeks after the birth. Due to small numbers of sampled births since Cyclone Nargis at village levels, geographical patterns with respect to birth attendance rates by skilled personnel and post-natal checkups cannot be estimated with sufficient accuracy, and therefore no maps are presented here.

2.1.2 Child health

To assess the health status of children in the affected area after Cyclone Nargis the PR II looked at the coverage of health interventions, such as, vaccination against measles and diphtheria, pertussis and tetanus (DPT). It also looked at child health care practices, such as, exclusive breastfeeding of infants younger than 6 months and the incidence of communicable diseases among young children. These indicators are known to be important interventions that lead to reduced morbidity and mortality in young children.
Children mentioned in this chapter refer to those aged between 6 months and 5 years unless indicated otherwise. Children from this age group were identified by height, with those measuring between 65 and 110 cm considered in the survey. The average sample size captured in PR II was 16 children per village.

**Child Nutrition**

Providing adequate nutrition during the crucial neonatal, infancy and childhood period ensures optimal physical and mental development in children. Inadequate nutrition is a key risk factor and often causes death in children younger than five.

To gauge whether children in affected townships were getting sufficient nutrition the PR II looked at breastfeeding practices and the estimated prevalence of childhood malnutrition. With respect to breastfeeding practices it assessed the proportion of exclusively breastfed children younger than 6 months, as reported by the child’s main caregiver. This is in line with the World Health Organization (WHO) recommendation that mothers exclusively breastfeed their children from the first hour after birth until the age of 6 months. Data shows that of the 186 children younger than 6 months included in the survey around 43 per cent were exclusively breastfed.

Children aged 6 months to 5 years were assessed for malnutrition based on a mid-upper arm circumference (MUAC) of less than 125 mm, and/or the presence of bilateral pitting oedema (retention of water in the body’s tissues in both feet). This is consistent with the definition of global acute malnutrition (GAM) when measured using the MUAC.

The survey findings indicate GAM in the affected area at an estimated 2 per cent, which constitutes a slight improvement over the 5 per cent reported in the PR I (figure 2.5). The proportions of GAM in villages in the PR II range from 0 to 25 per cent.

![Figure 2.5: Global acute malnutrition](image)

The second indicator for child malnutrition captured the proportion of children aged 6 months to 5 years who were malnourished, or were at risk of becoming malnourished, as indicated by a MUAC measurement of less than 135 mm, and/or the presence of bilateral pitting oedema in both feet.

Overall, the average proportion of surveyed households with malnourished children and those at risk of becoming malnourished was 13 per cent. The range of proportions, however, varied widely, from zero to 40 per cent. Geographically, higher concentrations of child malnutrition, or those at risk, lived in Myaungmya, Ngapudaw and Pathein Townships and in areas north of Yangon (figure 2.6).
**CHILD VACCINATION**

Disease prevention is a key element of public health programming, and vaccination is a crucial tool in disease prevention, particularly among young children. Therefore, the PR II assessed the coverage of measles and DPT vaccinations among young children living in the affected townships.

Measles, a highly contagious respiratory viral infection, is easily transmitted between persons through airborne droplets. When the disease strikes, the highest mortality rates are in children younger than 5 years. During the acute phase of the disease, co-infection with other respiratory pathogens often leads to pneumonia and long-term chronic chest disease. Thus, immunisation against measles is imperative to ensure good health protection of young children.

Full measles immunisation coverage requires 2 doses, the first administered at age 6 – 15 months and the second up to the age of 5 years. For the purpose of this report, the PR II assessed the proportion of children aged 6 months and 5 years who had been vaccinated at least once against measles.

Overall, 88 per cent of children were vaccinated against measles, similar to the 91 per cent reported in the PR I. A high proportion of vaccination coverage is necessary to create ‘herd immunity’, which is the resistance of a group or community to invasion by the spread of an infectious agent. It results from the lower probability of the agent being transmitted from an infected person to a susceptible person when a high proportion of people are immunized. The benefits of herd immunity begin at around 80 per cent coverage. However, the overall figure of 91 per cent falls slightly short of the Health Cluster Joint Plan of Action target, which is set at a minimum of 95 per cent measles vaccination coverage for children in the affected communities, aged 6 months to 10 years.

Measles vaccination coverage in villages throughout the affected area ranges between a low of 36 per cent to a high of 100 per cent. Geographical variations show that the western townships, such as Ngapudaw and Pathein, as well as the southern parts of Bogale, Dedaye and Pyapon had relatively lower measles vaccination coverage compared with the other areas (figure 2.7).
Figure 2.7: Coverage of measles vaccination among children (6 months to 5 years)

The PR II also gauged the coverage of DPT vaccination among children in the affected townships. Full DPT immunisation coverage requires three doses, administered at the ages of 6 months, 9 months and 18 months. The PR II assessed the proportion of children aged between 6 months and 5 years who had received the 3 doses of DPT vaccine.

Overall, the coverage of DPT vaccination in the affected area was 66 per cent. Geographical variations ranged widely among the 105 villages included in the sample, from below 20 per cent in 3 villages to 100 per cent coverage in 6 villages (figure 2.8). Importantly, the villages in southern Bogale, Dedaye and Pyapon Townships that had relatively low DPT vaccination coverage also showed low measles vaccination coverage.

Figure 2.8: Coverage of DPT3 vaccination among children (6 months to 5 years)

The discrepancy in vaccination coverage between measles and DTP is partially due to the DTP vaccination schedule, which requires 3 encounters with health personnel over a shorter time period as opposed to the 2 measles vaccinations over longer periods.

Disease incidence among children

The PR II assessed ‘most reported episodes of diarrhoea and fever’ as proxy indicators for the health status of children younger than 5 years. Although fever is a non-specific indicator, it can provide an indirect estimate of the communicable disease burden load in children. And, although the accuracy of reporting fever episodes is subject to many variables, patterns over time and comparison with findings from the PR I can show trends and minimize errors in reporting.
Diarrhoea is an intestinal disorder characterised by watery and frequent bowel movement occurring at least 3 times in a 24-hour period. Diarrhoea results in the rapid depletion of water and sodium, which, if not rapidly replaced, can lead to dehydration or death. Damage to the gut wall lining resulting from repeated diarrhoea episodes also predisposes vulnerable population groups, such as children, to malnutrition.

The PR II gauged the incidence of diarrhoea in children between 6 months and 5 years during the 14 days preceding the survey interview, as reported by the child’s main caregiver. For indicators of disease incidence, a low incidence rate is the desired result and is shown in green on the following map.

Overall, 14 per cent of children in the cyclone affected area suffered diarrhoea during the 14 days preceding the interview. This was slightly lower than the 16 per cent reported in the PR I. However, any comparison with respect to the incidence of diarrhoea between the two surveys should account for the fact that they were conducted during different seasons – PR I during the rainy season and PR II during the dry season.

Similar to findings in the PR I, villages in Myaungmya, Ngapudaw, Wakema Townships and the western part of Labutta Township show higher incidence rates of diarrhoea among children compared with areas in other townships. In these areas, on average, 1 out of 5 children in these areas suffered from diarrhoea within 14 days prior to the survey. The highest incidence rate of diarrhoea at community level reached 50 per cent, indicated in dark red in figure 2.9.

Figure 2.9: Diarrhoea incidence among children (6 months to 5 years)

If treated inappropriately, diarrhoea in children can cause under-nutrition and death. Appropriate treatment methods focus on maintaining the consumption of liquids and oral rehydration therapy. In the PR II, 51 per cent of children with diarrhoea during the 14 days preceding the interview received oral rehydration therapy that the WHO considers one of the most appropriate. The frequency of the different diarrhoea treatment methods are shown in Figure 2.10.
Another indicator that illustrates the incidence of infectious disease among children in general is fever. Similar to diarrhoea incidence, the PR II looked at the incidence of fever in children between 6 months and 5 years during the 14 days prior to the survey interview, as recalled by a child’s caregiver.

Overall, incidence of fever in children in the affected townships declined to 21 per cent, compared with the 40 per cent incidence rate reported in the PR I. Therefore, 1 in every 5 children suffered from fever in the 14 days preceding the survey interview, compared with 2 in 5 during the 14 days prior to the PR I interviews in November 2008.

Although this figure shows a certain degree of progress, some villages reported substantially higher fever incidence as compared with the overall rate. Some villages reported zero incidences while others, such as those in Dedaye and Ngapudaw Townships, reported a 60 per cent fever incidence among children. This clustering is common for infectious diseases. Areas of concern are Dedaye and Ngapudaw (shown in orange across the townships in figure 2.11) where on average 1 in 4 children suffered from fever.

**Figure 2.11: Fever incidence among children (6 months to 5 years)**
Taken together, the indicators of fever and diarrhoea suggest an important infectious disease issue in the central and western areas of the affected area, mainly in the townships of Myaungmya and Ngapudaw.

Diarrhoea as well as fever episodes are often triggered by unsafe drinking water, inadequate sanitation standards, and poor hygiene. Data from the PR II are consistent with these findings. Figures 2.12 and 2.13 show, for example, that areas with high incidence of diarrhoea or fever coincide with areas in which households use unimproved sanitation facilities or do not treat their drinking water adequately.

**2.2: WATER, SANITATION AND HYGIENE (WASH)**

Cyclone Nargis drastically impacted water supply, sanitation, and hygiene practices in the cyclone affected area. The main water sources, such as community ponds and household rainwater-harvesting systems were severely damaged. Roughly 13 per cent of ponds in Yangon Division and 43 per cent of ponds in the Ayeyarwady Delta\(^1\) were inundated during the storm surge, leaving them salinated and unusable.

Destruction of dwellings also resulted in extensive damage to household sanitation facilities, such as latrines. As a result, around 40 per cent of the population were forced to switch to floating latrines and open defecation in the aftermath of the disaster. These posed problems, given the frequent use of river water for drinking, with more than 60 per cent of surveyed households reporting the use of unsafe water sources in the aftermath of the cyclone.\(^2\) In general, the contamination of water sources, lack of hygienic facilities, and crowding in cramped makeshift shelters substantially increased the risk of communicable diseases and diarrhoeal episodes.

In the first six months after the disaster reconstruction efforts focused on restoring ponds, hand-dug wells and household rainwater harvesting systems. Latrine sets were distributed and installed in villages, schools and health facilities to reduce the rate of unsanitary defecation.\(^3\)

The following section provides a follow-up assessment on the accessibility and quality of drinking water, the sanitary disposal of human waste and the hygiene practices in the cyclone affected townships, one year after the disaster.

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1 Tripartite Core Group, Post-Nargis Joint Assessment Report, July 2008, p 15
2 Tripartite Core Group, Post-Nargis Joint Assessment Report, July 2008, p. 16
3 Tripartite Core Group, Post-Nargis Joint Assessment Report, July 2008, pp. 43-45
2.2.1 Water

Household water use covers many activities, including washing, cooking and drinking. The PR II looked at whether households in the affected area have access to potable drinking water at the quantity that they need.

Drinking water quality

To determine drinking water quality at the household level water sources were divided into two types: improved and unimproved sources. Improved water sources entail water piped into the dwelling, plot or yard; public tap or standpipe; borehole or tube well; protected dug well; protected spring; rainwater collection; and bottled water. Unimproved water sources refer to unprotected wells; unprotected spring and water provided by carts with small tanks; water provided by a tanker truck; and water taken directly from rivers, ponds, streams, lakes, dams or irrigation channels.

The PR II assessed the proportion of surveyed households that use an improved drinking water source, as reported by the heads of these households, as well as delineating sources used during the dry and rainy seasons. Households in Myanmar typically rely on multiple water sources that are dependent on the season. In general, even within the same season or within a week, households may use different sources of drinking water.

Rainy season

The majority, or 65 per cent, of surveyed households in the affected area obtained drinking water from improved water sources during the rainy season. Figure 2.14 shows that during the rainy season rainwater collection was the most common source of drinking water, with 50 per cent household use, while surface water was the second most common water source, with 21 per cent of household use. Rainwater collection refers to harvesting rainwater from the roof and storing it in large containers within a household compound. Water storage containers are either large pots made of clay, ceramic jars or simple buckets.
Figure 2.14: Water sources in the dry and rainy seasons

Figure 2.15 highlights the difference in water-sourcing methods between households located in the coastal areas, from Kyauktan to Labutta Townships, and those located in the affected area in the northern part of the Delta and Yangon Division. While a large majority of households along the coast relied on rainwater collection within their compounds during the rainy season, most households in the northern Delta and Yangon Division used surface water from community ponds during the same season. Although these community ponds collect rainwater, they were generally unprotected against contaminated runoffs and animal faeces.

Figure 2.15: Use of improved drinking water sources in the rainy season
**Dry season**

The overall proportion of households using drinking water from improved sources dropped to 24 per cent during the dry season. With the absence of rain, households find it difficult to collect enough water for their daily needs and thus switch to unimproved sources, particularly surface water (see figure 2.14). The use of surface water was of particular concern because the storm surges caused by Cyclone Nargis resulted in increased salination in surface water. Figure 2.16 shows the geographical variation with respect to access to improved water sources during the dry season.

**Figure 2.16: Use of improved drinking water sources in the dry season**

A household that relies on unimproved sources can improve the water quality by treating the water for bacteriological contamination before use. Adequate treatment methods at the household level include boiling, adding bleach or chlorine, water filters and solar disinfection.

The PR II measured the proportion of households in the cyclone affected townships that treated their drinking water adequately by using one or more of the adequate methods previously stated. This question was not asked separately for the rainy and dry seasons based on the assumption that a household would use the same treatment method for water independent of the season.

Overall, 96 per cent of the surveyed households reported treating their drinking water before use. However, only 68 per cent reported using one or more of the above mentioned adequate treatment methods. These figures are similar to these from the PR I, which found that only 65 per cent of surveyed households in the affected area treated their drinking water adequately.

Figure 2.17 shows that there is little variation between the villages across the affected area with respect to use of adequate treatment methods. The low use of adequate water treatment methods can be a concern during the dry season when a majority of households, both in the coastal and inland areas, rely on unimproved water sources.
Figure 2.17: Water treated adequately

Figure 2.18 shows the proportions of surveyed households using different water treatment methods. The most common water treatment method in the affected area was straining the water through a cloth, 39 per cent, followed by boiling, 29 per cent, and letting the water stand and settle, 22 per cent.

Figure 2.18: Water treatment methods

Drinking water quantity

The PR II gauged whether households in the affected area had enough water for their daily needs. Household heads were asked whether each household member had at least 3 litres of drinking water available per day. This quantity is in line with the minimum amount of water recommended by SPHERE, which is 2.5 to 3 litres per person per day.4

During the rainy season, 72 per cent of the surveyed households in the affected area reported having 3 or more litres of drinking water for each household member per day. There was considerable variation among the villages, with estimates ranging from 14 to 100 per cent during the rainy season and from 34 to 100 per cent during the dry season.

Figures 2.19 and 2.20 show that villages in Labutta Township as well as Kawkhu, Kungyangon and Kyauktan in southern Yangon Division reported lower water quantities per person per day, compared with other areas during both seasons.

**Drinking water accessibility**

Household accessibility to water sources is also an important factor in measuring the adequacy of water supply in an area. According to the SPHERE standards, the maximum distance from any household to the nearest water point should be 500 metres.5

The PR II assessed household accessibility to water in the affected area using three indicators: First, it measured the proportion of households that have a main drinking water source within the home compound. Second, it measured the average distance between the household and the water source for those that do not have a main source within their home. Third, it measured the proportion of households that purchase water from an external provider. The data are disaggregated between the dry and rainy seasons when relevant.

Overall, 40 per cent of surveyed households in the affected area reported having a main drinking water source within their compound during the rainy season. However, this proportion dropped drastically to 9 per cent during the dry season. This large difference reflects the switch from rainwater collection during the rainy season to fetching surface water from ponds or rivers outside the household’s compound during the dry season.

Geographically, people in the northern affected townships rely on surface water outside of their compounds during rainy season, whereas households in the coastal area mostly depend on rainwater collection within their compounds. Figures 2.21 and 2.22 show the geographical variation of households during both seasons with respect to whether or not their water sources are located within their compounds. Meanwhile, the average travel time to the water source outside of a compound was 20 minutes during dry season and 10 minutes during rainy season.

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On the other hand, at least 15 per cent of the surveyed households reported buying drinking water either as a main source or in addition to other water sources. Furthermore, 44 per cent of these households reported spending 1,000 kyat per week for their water needs, while 31 per cent spent between 1,000 kyat and 2,000 kyat; and 31 per cent spent more than 2,000 kyat per week.

**Water storage**

Water storage is crucial for ensuring that each household has an ample water supply at any point in time, given that the majority of households in the affected area rely either on fetched water or collected rainwater for their daily needs. Thus, the PR II measured the gallons of water that a household could store in their existing containers.

Overall, each surveyed household in the affected area had the capacity to store 94 gallons of water at any given time (figure 2.23). The values, however, varied within a wide range, starting from a low of 16 gallons to a high of 244 gallons per household. Geographically, villages around Yangon had the capacity to store larger amounts of water compared with the rest of the affected villages surveyed.

**Relief efforts: Water distribution**

The PR II assessed whether households in the affected area received adequate water supply and water related items in the aftermath of Cyclone Nargis. Figure 2.24 illustrates the proportion of surveyed households that received water purification items, containers and/or pumps as part of...
the relief efforts in the aftermath of Cyclone Nargis. Overall, 34 per cent of surveyed households reported that they received such items. As shown in green in figure 2.24, the distribution focused on the southern townships along the coast, stretching from Labutta to Pyapon.

**Figure 2.24: Water items received**

Household heads were further asked which of the following they consider to be their most pressing needs: water, a water container or a pump. Overall, 7 per cent of the surveyed households considered water and water-related items as their most pressing need. However, the proportion ranged from a low of zero to a high of 30 per cent. Areas in which a high proportion of households considered water supply and water-related items as a pressing need are shown in red in figure 2.25.

**Figure 2.25: Water items still needed**

When taken together, the two indicators show that villages that do not consider water supply or water-related items as a pressing need are the same as those that received water and water-related items as part of relief efforts (map not shown). In contrast, villages located in the northern affected townships that received water-related relief items still considered water supply needs as a pressing concern.

### 2.2.2 Sanitation

Sanitation refers to the safe disposal of human waste, such as urine and faeces, wastewater and solid waste, as well as the maintenance of hygienic conditions. Appropriate sanitation facilities are essential in maintaining public health standards and preventing the spread of communicable diseases. Thus, the PR II assessed the three main components of sanitation in the affected area: i) disposal of human excreta, ii) disposal of solid waste, and iii) hygiene practices at the household level.
To gauge sanitation at the household level the PR II assessed the proportion of households in the affected area using adequate sanitation facilities, as reported by the heads of households. Sanitation facilities are classified into two types: improved and unimproved facilities. Improved or adequate facilities are those that can hygienically separate human excreta from human contact. These include pour-flush toilets or latrines that are connected to a sewer, a septic tank or a pit; ventilated improved pit latrines; pit latrines with a slab or platform cover; and composting toilets or latrines. Unimproved or inadequate facilities refer to flush or pour-flush toilets or latrines that directly discharge into an open sewer or ditch; pit latrines without a slab; bucket latrines; hanging toilets; open defecation; and shared improved toilet facilities.

Overall, 43 per cent of the surveyed households in the cyclone affected area reported using improved sanitation facilities, a slight improvement from 40 per cent as reported in the PR I. The proportions ranged widely, from a low of zero to a high of 97 per cent.

Figure 2.26 shows that fewer surveyed households in the southern townships reported using improved sanitation facilities. This indicates that on average, only 1 out of every 3 surveyed households in the Bogale, Labutta, Ngapudaw, and Pyapon Townships used improved sanitation facilities. These areas were in the direct path of Cyclone Nargis.

Figure 2.27 shows that pour-flush latrine connected to a pit was the most common type of sanitation facility reported and was used by 34 per cent of the surveyed households. This is followed by 22 per cent that said they did not use any facility, and 11 per cent that used a pit latrine without a slab.

Although many surveyed households used a pour-flush latrine connected to a pit, many of them shared the facility with other households. The proportion of surveyed households in the affected townships sharing their toilet facility with others remained high, at 26 per cent. Sharing a toilet facility automatically made it an unimproved facility.

Another crucial factor for ensuring public health standards in communities is the adequate disposal of children’s faeces. The level of excreta-related infection among children is frequently high. Hence, adequate disposal of children’s excreta can effectively prevent the spread of faecal-oral transmitted diseases. Adequate disposal methods include children using a toilet or latrine, disposing of children’s faeces into a toilet or latrine, or burying it. Leaving the faeces in an open area or throwing it into the garbage bin is considered inadequate.

To assess whether children’s faeces are properly disposed of, the PR II measured a proportion of households in the affected townships that used adequate disposal methods for the faeces of children younger than 5 years. The sample for this question covered all households with at least one child younger than 5 years. Overall, 59 per cent of surveyed households in the affected area reported
using adequate child faeces disposal methods. PR I also came to the same estimate of 59 per cent which suggests a lack of progress in this area. Figure 2.28 shows the areas in red (Bogale, Ngapudaw, and Pyapon Townships) where fewer households used adequate methods to dispose of child faeces.

**Figure 2.27: Types of sanitation facilities**

![Diagram showing percentages of different sanitation facilities](image)

**Figure 2.28: Adequate disposal of child faeces**

![Map showing adequacy of disposal](image)

Figure 2.29 shows that putting a child’s faeces into a toilet or latrine is the most common manner of disposal reported, it was used by 29 per cent of surveyed households in the affected area. This was followed by having the child use a toilet or latrine, a method reported by 26 per cent of households. Both of these methods are considered adequate. However, a large portion continue to use inadequate methods, with 25 per cent of households admitting to disposing of children’s faeces by throwing it into a drain or a ditch, and 15 per cent saying they left the faeces in the open.
Solid waste disposal

Solid waste refers to solid or semi-solid refuse usually produced from the preparation, handling, storage or sale of food. If disposed of inadequately, it can pollute land, water or air, and can serve as a breeding ground for disease-carrying insects and rodents. Adequate solid waste disposal methods included burying in the yard, composting, collection by scavengers, or a neighbourhood collection mechanism with local disposal. Inadequate methods included burning and open dumping in the yard, in the street, or in bodies of water.

To assess whether solid waste was properly disposed in the affected area the PR II looked at the solid waste disposal methods that households used and whether or not their methods were adequate. Overall, only 16 per cent of the surveyed households reported that they disposed their solid waste in an adequate manner. Figure 2.30 shows that the top three most common methods of disposal are all inadequate. Throwing solid waste into the river or stream was the most commonly reported manner of disposal, employed by 34 per cent of the households, followed by solid waste burning, a method used by 31 per cent of the households, and random throwing into the yard, a method used by 15 per cent of the households.
HYGIENE PRACTICES

Proper hygiene methods at the household level reduce the spread of pathogens through human contact and are considered the most effective way to prevent diarrhoea. These methods include washing of hands with soap after defecation, after cleaning a child’s bottom, before eating and before food preparation. To assess the hygienic practices among households in the affected townships the PR II asked about the availability of soap in each house, and frequency of soap use prior to food preparation.

Overall, a large majority, or 93 per cent, of the surveyed households in the affected area reported the presence of soap in the house (figure 2.31). This showed a 9 percentage point increase from the 84 per cent reported in the PR I. However, while availability of soap in households is important, it is just one side of the issue.

In the PR II only 61 per cent of surveyed households that reported having soap in the home said they washed their hands before preparing food. This is considerably lower than the 82 per cent reported in the PR I. Figure 2.32 shows the geographical variation in households washing their hands with soap before preparing their food. The low use of soap in certain villages coincides with the high incidence of diarrhoea among children in surveyed households in the same areas. This finding indicates that hand washing with soap can prevent diarrhoea. It also underscores the importance of integrating information and awareness campaigns in the distribution of relief items.
RELIEF EFFORTS

To gauge the adequacy of relief efforts in the sanitation sector the PR II looked at, households that received latrine construction items, hygiene-related materials, and corresponding information regarding proper hygiene methods.

Overall, 1 in 2 surveyed households in the affected area reported having received such items as soaps or ‘dignity kits’ which include sanitary napkins, underwear, clothing, shampoo as well as vitamin capsules. However, only 7 per cent of surveyed households received information regarding the use of these hygiene-related items.

Figure 2.33 and 2.34 show the variations in the proportions of households who received hygiene-related items and information regarding proper hygienic practices. The distribution of hygiene-related items and corresponding information on how to use these items were concentrated along the coastal villages. More than half of the surveyed households in Labutta and two-thirds in Bogale and Pyapon Townships received hygiene materials. Figure 2.33 also shows that a lower proportion of households in the northern townships received such items. The proportion of surveyed households that received corresponding information on how to use hygiene items ranged from 10 to 20 per cent, with a mean of 16 per cent for the same three areas, as shown in green in Figure 2.34.

With respect to latrine construction material, the overall proportion of households that reported having received such items was 10 per cent. Also, in the townships in the southern Delta area the distribution was limited as shown in figure 2.35.
2.3: Food security

Food and nutrition are the building blocks of the health and psychosocial well-being of a community. Thus, it is important to assess the impact of disasters on food and nutrition patterns among affected communities to understand the coping mechanisms of different affected social groups. Such knowledge can then be used to target, design, and implement appropriate strategies that will protect and promote good nutrition and household food security throughout relief and rehabilitation responses.

42 per cent of households in the affected area lost all food stocks during Cyclone Nargis.\textsuperscript{6} Households lost crops, livestock and equipment used to generate food, and consequently faced increased risk of malnutrition. Communication networks and physical access to food markets were disrupted, resulting in a drastic reduction in the variety of food choice available. As a result, the diet of people in these areas became more limited in the aftermath of the disaster.

To properly assess the food situation in the affected area one year after Cyclone Nargis and to identify the most vulnerable households that require food aid, the PR II examined the food consumption score, level of food insecurity and the adequacy of food assistance among households.

A food consumption score was derived from information on a household’s consumption of specific food items during a designated period. For the purpose of this report, households were asked to recall their food consumption in the 7 days prior to the survey interview. As expected, rice ranked highest on a daily consumption basis on average, followed by vegetables, such as tomatoes, lettuce or cucumbers, in 5 of the 7 possible days. This was followed by fish or seafood in 4 of the 7 days.

A threshold score of 42 was established to take into account the high daily consumption of sugar and oil among households in the affected area. Households with a dietary diversity score of 42 or more were considered as having adequate food consumption.

Overall, only 10 per cent of the surveyed households in the affected area reported a food consumption score below 42, with proportions ranging between a low of zero to a high of 50 per cent. This represented a modest drop from the overall 13 per cent estimate reported in the PR I. Villages that reported the poorest food consumption scores were mostly located in Myaungmya Township. Other areas with relatively low food consumption scores (shown in yellow in figure 2.36) are distributed across Ngapudaw, and Pyapon Townships as well as south of Bogale and Yangon towns. Villages in the western areas of Ngapudaw and Pathein Townships showed improved food consumption scores compared to estimates reported in the PR I.

\textbf{Figure 2.36: Proportion of households with poor food consumption}

\textsuperscript{6} Tripartite Core Group (July 2008) Post-Nargis Joint Assessment Report, p. 61
Healthy lives

It is important to take into account the following two factors in analysing food consumption scores in the cyclone affected area. First, most of the villages included in the survey continued to receive food aid; thus, a small proportion of households with high food consumption scores does not automatically mean that households have recovered and no longer need food aid. Second, households in the affected area usually have access to fish and seafood. Given that fish in a household’s diet had a large weight in calculating the food consumption score, it was easier for households in these areas to achieve a food score above 42 (considered high).

To gauge food insecurity, households were asked about their coping strategies in times of food shortages during the 7 days preceding the interview. While some households reported moderate coping mechanisms, such as choosing less expensive or unusual food items, others reported more severe coping practices, such as borrowing food from others, or having household members go without food for a period. For the purpose of this report, the proportion of households that reported moderate to severe coping strategies was used as an indicator for food insecurity.

Overall, 23 per cent of the surveyed households in the affected area reported using moderate to severe coping strategies to overcome their food shortages. This was almost at the same level (20 per cent) as reported in the PR I. The levels ranged between a low of zero to a high of 63 per cent within villages.

Geographically, the highest proportion of households with moderate to severe food- coping strategies were located in southern Wakema Township, as shown in red in figure 2.37. In comparison to the PR I, the food security situation in southern Yangon and southern Pathein Township had improved considerably. However, data from the PR II shows that new villages that experienced moderate or severe food insecurity have also emerged. These villages are located across Bogale, Labutta and Pyapon Townships (figure 2.37).

The proportion of households that report food production as one of their three main food sources shows a certain level of resilience in facing future food shortages. Overall, 40 per cent of the surveyed households in the affected area derive their food from their own production. However, the village proportions widely varied between zero and 78 per cent. Areas relying more heavily on their own production were located mostly in the north of the affected area, stretching from the western coast to Yangon City in the east. As expected, areas relying less on their own production included the southern townships of Bogale, Labutta and Pyapon as well as the area close to Yangon City.

**Relief items**

To assess the reach of food relief efforts in the aftermath of the cyclone, the PR II looked at households that had received food assistance since Cyclone Nargis. Overall, 49 per cent of the surveyed households reported having received food assistance. As shown in figure 2.38, most of the food assistance was concentrated in villages located along the path of the cyclone.
While food aid may be the most expedient way for communities to cope with food insecurity following a disaster, particularly of the magnitude of Cyclone Nargis, it is unsustainable to rely on aid as a main food source in the long term. One year after the cyclone struck, villages located in the most affected townships of Bogale, Labutta and Pyapon still continue to rely heavily on food aid as their main source of nutrition as shown in red in figure 2.39. While the overall average is estimated at 11 per cent, over half of the sampled households in Bogale and Labutta Townships mentioned food aid among their three most important sources of food.

2.4: Chapter conclusion

Data from the PR II show that while efforts, during the first year after the Cyclone Nargis disaster, have significantly helped the affected population in Ayeyarwady and Yangon Divisions regain healthy lives, there is a need to implement more concerted and targeted activities to address high-need areas. The PR II focused on access, availability and use of health services in the affected area, particularly on highlighting maternal and child health issues. It therefore provides broad conclusions regarding the levels of health service provision, and the health status of the affected villages, one year after the cyclone. The analysis of findings emphasizes significant geographical variations to indicate gaps in health service provision, and the variation of disease burden between villages.

Long-term solutions should be put in place to address the gaps in health care service delivery. While the availability of medicine and health personnel is generally satisfactory in primary health care facilities, the access to primary health care facilities is still low in several areas in the affected area, with travel times greater than one hour reported by the majority of households there. This is also partly reflected in the low birth attendance rate by skilled health personnel of 32 per cent and the delivery of almost 90 per cent of births at home instead of at health care facilities. There
were however areas of concern in the south eastern parts of Bogale and Pyapon Townships that had a greater distance to travel, or there were no available health facilities to speak of. Although availability of medicine was reported at 85 per cent for ‘all or most of the time’ by households, lower availability was more pronounced in villages throughout Labutta Township, and even lower availability in the north western regions of Ngapudaw Township.

Disease burden among young children, as indicated by the incidence of fever and diarrhoeal episodes, remains high. In the townships of Myaungmya, Ngapudaw, Wakema, and western Labutta an average of 1 out of 5 children suffered from diarrhoea during the 14 days preceding the interview. Some communities had as much as 50 per cent of households reporting diarrhoea among children.

A well-functioning public health service, with an efficient preventative health care component, can effectively address priority diseases and reduce gaps identified in the PR II. Community-level interventions, such as health volunteers linked to a primary health care system, can further improve the health situation in villages in the affected townships.

With regard to child nutrition, geographically, higher concentrations of child malnutrition, or children at risk lived in Myaungmya, Pathein, and Ngapudaw Townships, and in areas north of Yangon. Of the overall 88 per cent of children under 5 years old that were vaccinated against measles, geographical variations were more noticeable in the western townships, such as Ngapudaw and Pathein, these had relatively lower measles vaccination coverage in comparison with other areas. For children under 5 years old, those without DPT vaccination were more pronounced in the southern regions of the Bogale and Pyapon Townships. The incidence of diarrhoea among children under 5 years old was geographically more prevalent in the western affected regions, with areas of concern particularly in Myaungmya, Ngapudaw and Wakema Townships, and down through the western area of Labutta township. The incidence of fever in children under 5 years old was much more noticeable in the south western regions of the Delta in Ngapudaw and Labutta Townships.

Considerable efforts undertaken by various agencies and organisations to improve the water, sanitation and hygiene conditions in the affected area in the aftermath of Cyclone Nargis have begun to succeed. This is most notable in the increase in the proportion of surveyed households reporting access to clean drinking water and the increase in the proportion of those households that have the capacity to store adequate water supply at any given time. Activities undertaken to improve and restore sanitation facilities in villages affected by the cyclone have also resulted in the increase in the proportion of households that use improved sanitation facilities.

During the dry season, in the cyclone-affected area, there was a low use of adequate water treatment when households had to rely on unimproved water sources due to the absence of collected rain water. While the majority of households reported having 3 or more litres of drinking water per person per day, villages in Labutta Township, as well as Kawhmu, Kungyangon and Kyauktan in the south of Yangon Division, reported lower water quantity per person per day, compared with other affected areas in both the dry and rainy seasons. Geographically, villages around Yangon have the capacity to store larger amounts of water compared with the rest of the villages surveyed in other areas. Overall, as much as 40 per cent of surveyed households in the affected area reported having a main drinking water source within their compound during the rainy season. However, this proportion dropped drastically to 9 per cent during the dry season when fetching water from sources outside of the household compound becomes a time-consuming daily activity.

Geographically, fewer surveyed households in the southern townships reported using improved sanitation facilities. The survey results indicated that on average, only 1 out of every 3 surveyed households in the Bogale, Labutta, Ngapudaw, and Pyapon Townships used improved sanitation facilities. However, these areas also suffered the most destruction from Cyclone Nargis. Only 61 per cent of surveyed households reported washing their hands before preparing food, and geographically the areas that reported not washing their hands coincided with the same areas with a high incidence of diarrhoea among children. It is noteworthy that while 1 in 3 surveyed households received hygiene-related items such as soap or ‘dignity kits’, only 7 per cent received information on the use of hygiene-related items. Areas in the southern and eastern parts of the Delta that received a higher number of hygiene items and corresponding information, such as Bogale and Pyapon Townships,
showed a lower incidence of diarrhoea among children. The northern and western parts of the affected area such as Myaungmya and Ngapudaw Townships that received a lower number of hygiene items and corresponding information, also showed a higher incidence of diarrhoea among children.

Water and sanitation programmes, together with hygiene promotion, still require intensive interventions to improve the quality of life of the beneficiaries and prevent the outbreak of water-borne and water-washed diseases in the future. Although hygiene messaging has been received by affected communities, there is still a need for increased information and education programmes. The need for improved sanitation standards is supported by the PR II finding that the areas with higher incidences of diarrhoea among children largely coincide with the areas where sanitation standards were reported to be low.

One year after the cyclone struck, only a small proportion of surveyed households in the affected area suffered from severe food insecurity, however, pockets of severe food shortage remain. Villages that reported the poorest food consumption scores were mostly located throughout Myaungmya Township, with other relatively low scores distributed across Ngapudaw, Pyapon Townships and southern Bogale Township. Geographically, the highest number of households with moderate to severe food-coping strategies for overcoming food shortages, were found in the southern parts of Wakema Township. It should be noted however, that both Myaungmya and Wakema Townships have less access to large water ways for fishing and transportation than other southern townships of the Delta. Villages in the most affected townships of Bogale, Labutta, and Pyapon reported a reliance on food aid as their main source of nutrition.

A year after the devastation of Cyclone Nargis momentum is shifting from post-cyclone relief efforts to longer term recovery programmes. With assistance for livelihoods and income-generation activities the affected regions, that are naturally rich in agriculture and aquaculture resources, should be able to achieve improved levels of food security with a reduced dependence on food aid in the future. However, there remains a pressing need to make sure that the most vulnerable and food-insecure populations continue to receive assistance at least in the short term, but they should also be supported in their efforts to become independent of food aid in the longer term.
Figure 2.1: Primary Health Care facilities within one hour travel time

Legend

Gulf of Mattama (Gulf of Martaban)
Figure 2.2: Medicine available all or most of the time

Legend

100% 44%
Figure 2.3: Health personnel available all or most of the time

Legend

Gulf of Mattama
(Gulf of Martaban)
Figure 2.6: Global acute malnutrition plus those at risk

Legend

Mean: 13 %
Figure 2.7: Coverage of measles vaccination among children (6 months to 5 years).
Figure 2.8: Coverage of DPT3 vaccination among children (6 months to 5 years)
Figure 2.9: Diarrhoea incidence among children (6 months to 5 years)
Figure 2.11: Fever incidence among children (6 months to 5 years)
Figure 2.12: Improved sanitation and diarrhoea/ fever incidence

Legend

- Fever
- Diarrhoea

Gulf of Mattana (Gulf of Martaban)

High Incidences of Diarrhoea & Fever where Improved Household Sanitation Facilities Exist
Figure 2.13: Water treated adequately and diarrhoea / Fever incidence

Legend

- Legend:
  - Fever
  - Diarrhoea

- Gulf of Martaban

- Mean: 68%
Figure 2.15: Use of improved drinking water sources in the rainy season

Legend

Mean: 65%

0% 25% 50% 75% 100%

Bay of Bengal

Gulf of Martaban (Gulf of Martaban)
Figure 2.16: Use of improved drinking water sources in the dry season
Figure 2.17: Water treated adequately

Legend

0 5 10 20 Miles

Gulf of Mattama (Gulf of Martaban)

Mean: 68 %

37 % 53 % 69 % 84 % 100 %
Figure 2.19: Drinking water quantity in the rainy season

Legend

Gulf of Mattama (Gulf of Martaban)

Mean: 72%
Figure 2.20: Drinking water quantity in the dry season

Legend

Mean: 75%

Gulf of Martaban (Gulf of Mottama)
Figure 2.21: Water source within compound during the rainy season
Figure 2.22: Water source within compound during the dry season
Figure 2.23: Water storage available
Figure 2.24: Water items received since Nargis

Legend

Mean: 34%
Figure 2.25: Water items still needed
Figure 2.26: Improved sanitation facilities
Figure 2.28: Adequate disposal of child faeces
Figure 2.31: Soap presence in households
Figure 2.32: Washing hands before food preparation
Figure 2.33: Hygiene items received
Figure 2.34: Hygiene messaging received
Figure 2.35: Latrines received since Nargis
Figure 2.36: Proportion of households with poor food consumption

Legend

Mean: 10 %

Gulf of Mattama (Gulf of Martaban)
Figure 2.37: Moderate to severe food insecurity
Figure 2.38: Received food assistance since Cyclone Nargis

[Map showing received food assistance with color coding from 0% to 100%, with legend indicating percentage ranges.]

Legend:
- 100%
- 0%

Gulf of Mattama (Gulf of Martaban)

Mean: 45%
Figure 2.39: Food aid dependence at present

Legend

Mean: 11%

Gulf of Mattama (Gulf of Martaban)

Bay of Bengal
Chapter III: Productive Lives
CHAPTER 3:

PRODUCTIVE LIVES

The means of livelihood in the affected parts of Ayeyarwady and Yangon Divisions are a combination of activities that generate income, or are undertaken primarily to sustain a household. These activities have engendered intricate interactions and dependencies between people and resources. The majority of households in the cyclone-affected area engaged in agriculture-based pursuits, such as farming, fishing, forestry or livestock rearing. These activities were spread throughout the downstream and upstream sectors of the agricultural industry, from direct production to the provision of post-harvest, processing and delivery services. Households often engaged in different livelihood activities at the same time, diversifying their income sources and strengthening their resilience during adverse seasonal or economic conditions.

Cyclone Nargis, however, simultaneously destroyed the various sources of livelihood in the region and greatly reduced the capability of people to generate income and provide sustenance for their families. The natural disaster also destroyed a huge proportion of the population’s shelter, which further undermined the productivity of the affected population. The education system, which is closely tied to enhancing a population’s productivity, was left devoid of essential teaching and learning materials. Households that were hard pressed to generate income, prioritised basic needs over education and other expenses.

This chapter provides a closer look at how the surveyed households in the cyclone affected areas re-established their productive lives by the one-year anniversary of the disaster. Restoring livelihoods is an integral part of recovery efforts, but further assistance should also help the affected communities further reinforce their resistance against possible future shocks.

3.1: LIVELIHOODS

Seasonality, among other factors, drives the choice of livelihood activities in the cyclone-affected area. A household may engage in fishing for a certain period but then switch to another activity when the fishing season ends. Labour opportunities, access to natural resources, ecological and climate conditions, and the flow and availability of goods and cash also shape the choice of livelihood.

A large portion of livelihood activities, such as food production, generate minimal income but are undertaken for household sustenance. Surplus produce may be sold for cash, bartered for goods and services, or given to other households for goodwill and to foster stronger community ties. Households often engage in a two-pronged livelihood strategy: direct food production and the provision of labour or services for cash or income.

Most livelihood activities depend on access to credit. Households obtained funds for livelihood activities in various ways, such as through traditional credit mechanisms, microfinance activities, pawning goods and selling assets. Pawning often creates a debt cycle that households may find difficult to overcome, while selling assets usually reduces a household’s level of productivity and ability to cope with future financial needs.

3.1.1 TYPES OF LIVELIHOOD

The PR II assessed the relative importance of the different types of livelihoods in the area affected by Cyclone Nargis by looking primarily at the variation in main income sources and monsoon paddy cultivation to account for both income and subsistence activities.

Figure 3.1 shows that most of the surveyed households derived their income from multiple sources. The majority, or 58 per cent, of the household heads cited agriculture as one of their top three main income sources. Agricultural activities include crop production, fishing, aquaculture, livestock,
forestry, charcoal-making as well as seasonal crop and fishing labour. These do not include related paid daily labour that households may have listed under casual labour. Such casual labour was mentioned by 46 per cent, or every second household included in the survey. It is defined as paid daily labour irrespective of the type of activity linked to it. A number of households that reported casual labour but not agriculture among their three main income sources may still have devoted part of that casual labour to agriculture. Although the activities under casual labour cannot be disaggregated, it is nevertheless possible with the PR II data to provide a range of estimates for the proportion of households engaged in income-generating activities linked to agriculture; from 58 per cent (if none of the casual labour is attributed to agriculture) to 89 per cent (if all casual labour is attributed to agriculture).

Cyclone Nargis resulted in the loss or destruction of assets needed for agricultural production and thereby reduced the availability of agricultural work. With the loss of assets for many households, casual labour as a main income source gained prominence in lieu of asset-intensive income-generating activities, such as agriculture, fishing, shop-keeping or trading. A comparison between the income activity data reported in the PONJA and the PR I indicates that the proportion of households whose members engaged in casual labour increased during the first 6 months following the disaster, as their ability to participate in other income-generating activities, such as agricultural work or craft making, decreased. A comparison between the income activity data reported in PR II before Cyclone Nargis and at present further shows that the tendency to rely heavily on casual labour persisted one year after Cyclone Nargis. Figure 3.1 shows that casual labour, 46 per cent in the PR II survey, was still mentioned by a larger proportion of households as a main income source than before the cyclone at 43 per cent, while the importance of crop production, fishing as well as shop-keeping decreased by 2 to 3 percentage points on average.

Figure 3.1 also shows that crop production, fishing and livestock rearing ranked highest as the main income sources in the agriculture sector both before and after the cyclone. At present, crop production, fishing and aquaculture, and livestock rearing are mentioned among the top three income sources by 23, 15 or 5 per cent of households respectively. Approximately 17 per cent of the surveyed households directly named agriculture and fishing labour.

1 TCG (December 2008) Periodic Review 1, p. 47
Figure 3.1: Main household income sources before and after Cyclone Nargis

<table>
<thead>
<tr>
<th>Income Source</th>
<th>Before Nargis</th>
<th>At Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt production</td>
<td>0.34%</td>
<td>0.34%</td>
</tr>
<tr>
<td>Rent or lease of property</td>
<td>0.41%</td>
<td>0.51%</td>
</tr>
<tr>
<td>Forestry</td>
<td>0.89%</td>
<td>0.96%</td>
</tr>
<tr>
<td>Charcoal (manufacture &amp; sale)/firewood</td>
<td>0.92%</td>
<td>1.06%</td>
</tr>
<tr>
<td>Remittances</td>
<td>1.13%</td>
<td>1.33%</td>
</tr>
<tr>
<td>Private sector employee</td>
<td>1.16%</td>
<td>1.60%</td>
</tr>
<tr>
<td>Aquaculture (shrimp, prawn, crabs, etc)</td>
<td>1.84%</td>
<td>1.64%</td>
</tr>
<tr>
<td>Government employee</td>
<td>1.84%</td>
<td>1.77%</td>
</tr>
<tr>
<td>Gifts/family</td>
<td>1.67%</td>
<td>2.42%</td>
</tr>
<tr>
<td>Group labour (boss or member)</td>
<td>4.47%</td>
<td>4.23%</td>
</tr>
<tr>
<td>Livestock</td>
<td>4.64%</td>
<td>5.15%</td>
</tr>
<tr>
<td>Self-employed/craftperson/artisan</td>
<td>7.98%</td>
<td>8.63%</td>
</tr>
<tr>
<td>Trader/shopkeeper/village broker</td>
<td>12.56%</td>
<td>11.98%</td>
</tr>
<tr>
<td>Fishing</td>
<td>16.51%</td>
<td>14.77%</td>
</tr>
<tr>
<td>Agriculture and fishing labour</td>
<td>19.31%</td>
<td>27.37%</td>
</tr>
<tr>
<td>Crops</td>
<td>25.79%</td>
<td>23.00%</td>
</tr>
<tr>
<td>Casual labour (paid daily)</td>
<td>42.95%</td>
<td>46.09%</td>
</tr>
</tbody>
</table>

The area marked with colour-corresponding dots in figure 3.2 illustrates the geographical location of households that reported crop and fishing activities as their predominant or main income source. An income-generating activity is considered predominant in an area if at least 20 per cent of the households state that it was among their top three main income sources. Figure 3.2 focuses on crop production and fishing only, because other activities including livestock rearing rarely surpassed the necessary threshold of 20 per cent at village level, and if so, only in very small isolated areas.
Figure 3.2 shows that crops are the dominant income source from the northern portion of the affected area down to the area along the west coast and to Yangon Division in the east. The proportion of households that considered crops as their main source of income declined in areas closer to Yangon City. Fishing is the predominant income source in the southern townships of Bogale and Labutta and in a few other isolated areas along the coast.

In addition to income-generating activities, the PR II assessed subsistence livelihood activities. Subsistence activities, particularly food production, are crucial; 40 per cent of the households reported generating food from their own production.

Overall, 28 per cent of the surveyed households in the cyclone-affected area had land that they cultivated or planned to cultivate with monsoon paddy which is grown in the rainy season (shown in green in figure 3.3). The map’s green areas indicate where monsoon paddy production is most intensive.

The information from figures 3.2 and 3.3 is consistent. Villages in which 20 per cent of the surveyed households reported monsoon paddy as one of their three main income sources (figure 3.2) are also located in areas shaded in green (figure 3.3). Meanwhile, households that based their livelihoods on fishing rather than rice farming are concentrated in the southern part of the cyclone-affected area, as shown in red in figure 3.3.

In addition to income sources and availability of monsoon paddy, the PR II assessed the main activities of members within households, which include an array of possibilities, such as generating...
income and/or subsistence; doing housework; attending school; jobless; and pensioners. Unlike in the case of income sources, wherein household heads could list their 3 main sources, in this case those interviewed were asked to report only one main activity for each household member who is 10 years or older.

Figure 3.4 shows the proportion of household members that engaged in different groups of activities, as well as the shift in activities before and after the cyclone. While figure 3.2 focuses on income sources only, the activities in figure 3.4 include income-generating and subsistence activities. Therefore, for example, a household member who is a farmer in figure 3.4 may not generate income with his or her activity but may produce food for the household’s own consumption. Meanwhile, the household as a whole may derive their income from sources other than farming.

Figure 3.4: Main activities of household members before and after Cyclone Nargis

Overall, the majority, or 41 per cent, of household members were engaged in non-income-generating activities such as doing household work, attending school, being unemployed or a pensioner. This was slightly lower than the same percentage before the cyclone, which suggests that a number of household members had to engage in work outside of their home environment after the storm.

Apart from this change, the main activities of household members remained similar to what they were before the cyclone. Figure 3.2 shows that casual labour became more important as an income source for households compared to before the cyclone relative to farming, fishing or trading. While the importance of casual labour as an income source had increased after the cyclone, a similar shift towards casual labour in terms of the main activities of household members was not observed. The proportion of household members engaged in casual labour has largely remained unchanged compared to before the cyclone. This is in line with the observation that there were less income-earning opportunities in crops, fisheries, livestock rearing and in labour after the cyclone because many assets had been destroyed. Therefore, although people may have been working less in casual labour (in terms of number of days per year), it is more important to their income because other means of income had decreased.

Figure 3.4 further indicates that agriculture-related work dominated household activities, with 34 per cent of household members included in the sample engaged in such activities, followed by casual or daily labour at 11 per cent, and then non-agricultural activities at 10 per cent.

Figure 3.5 presents the main activities by sex for each household member aged 10 years and older. The majority, or 24 per cent, of male household members interviewed reported farming as their main activity, while the majority of female household members, or 37 per cent, reported housework as their main activity. On the other hand, a larger percentage of female household members, at 9 per cent (at the least), reported being unemployed, compared with 6 per cent of male members. More female members, at 7 per cent, were engaged in casual labour, compared with 6 per cent of the male members.

More male members, or 50 per cent of those surveyed, were engaged in direct agricultural production activities, compared with 19 per cent of the female members. These activities did not include
agriculture-related casual labour, which was the main activity for around 7 per cent of male and female household members, nor did they include housework, such as backyard gardening or raising small animals. This does not mean that women or girls do not participate in heavy labour in the cyclone-affected area; 9 per cent of them practiced farming as their main activity. However, women or girls were almost the only ones engaged in petty trade and were more likely to work as shop owners than men or boys. Almost a similar number of male and female household members were engaged in craft production and sale activities.

### Figure 3.5: Current main activities of men and women

<table>
<thead>
<tr>
<th>Activity</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt producer</td>
<td>14.17%</td>
<td>0.27%</td>
</tr>
<tr>
<td>Don't know</td>
<td>0.20%</td>
<td>0.04%</td>
</tr>
<tr>
<td>Pensioner</td>
<td>0.29%</td>
<td>0.13%</td>
</tr>
<tr>
<td>Livestock/poultry sellers</td>
<td>0.02%</td>
<td>0.31%</td>
</tr>
<tr>
<td>Domestic worker</td>
<td>0.88%</td>
<td>1.26%</td>
</tr>
<tr>
<td>Government employee</td>
<td>10.06%</td>
<td>1.94%</td>
</tr>
<tr>
<td>Fisher</td>
<td>9.65%</td>
<td>2.63%</td>
</tr>
<tr>
<td>Shop owner</td>
<td>4.31%</td>
<td>3.27%</td>
</tr>
<tr>
<td>Group labour (boss or member)</td>
<td>0.05%</td>
<td>3.52%</td>
</tr>
<tr>
<td>Other</td>
<td>0.32%</td>
<td>4.08%</td>
</tr>
<tr>
<td>Self employed/craftsperson/artisan</td>
<td>0.94%</td>
<td>1.32%</td>
</tr>
<tr>
<td>Petty trade</td>
<td>6.78%</td>
<td>4.08%</td>
</tr>
<tr>
<td>Seasonal agriculture labour</td>
<td>6.29%</td>
<td>7.07%</td>
</tr>
<tr>
<td>Casual Labour</td>
<td>6.63%</td>
<td>8.65%</td>
</tr>
<tr>
<td>Jobless/unemployed</td>
<td>14.98%</td>
<td>13.43%</td>
</tr>
<tr>
<td>Farmer</td>
<td>14.98%</td>
<td>6.95%</td>
</tr>
<tr>
<td>Go to school</td>
<td>0.27%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Household work/care for members</td>
<td>0.20%</td>
<td>0.13%</td>
</tr>
</tbody>
</table>

The dependency ratio at the household level provides additional insight on the dynamics between income- and non-income-generating activities. For the purpose of this report, a dependent population includes household members who are 10 years or younger, disabled, jobless or pensioners, and those who go to school, carry out housework or care for other household members.² The PR II estimated a 0.75 per cent average dependency ratio in the areas affected by Cyclone Nargis, which means that on average 4 income-generating individuals were supporting 3 dependents in the surveyed households.

#### 3.1.2 Crops

Farming is one of the main sources of livelihood in the cyclone affected areas. At least 20 per cent of the surveyed households in the central part of these areas, stretching from the western townships all the way to Yangon Division, considered farming as their main source of income (as shown in figure 3.4).

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² It should be noted though that a dependent may still undertake activities that contribute to the household livelihood or income; for example, a child, pensioner or jobless person catching fish for dinner or a woman who raises chickens and sells the eggs as part of her household activities.
When it comes to farming, rice is the single most important crop in the cyclone-affected region, and the Ayeyarwady Delta is regarded as the rice bowl of the country. Rice requires sufficient irrigation; thus, the majority of rice farmers plant the crop during the monsoon season.

Figure 3.6 shows that, before the cyclone, households in the central Delta area and south of Yangon cultivated larger tracts of land for monsoon paddy than in the western and central-north affected area. The average amount of land per household that cultivated monsoon paddy was 11.6 acres before the cyclone. Areas in which the average amount of cultivated land was higher are shown in green in figure 3.6.

![Figure 3.6: Acres of monsoon paddy per landholder before Cyclone Nargis](image)

Although the average size of landholdings for monsoon paddy was smaller in the northern part of the cyclone-affected area, salinity levels were lower and thus yields per acre were higher. Because of the salinity situation, rice farmers in the south need a much larger area to produce rice, compared with farmers in the north. Although some households expanded their landholdings in the aftermath of Cyclone Nargis, tracts of land remained uncultivated in some villages due to the absence of farmers and lack of assets and farming inputs needed for production.

One year after the disaster, 28 per cent of the surveyed households mentioned that they had land available for monsoon paddy cultivation. Each of these households reported planting an average of 10.1 acres of monsoon paddy. This represents an overall decline of 13 per cent from the average of 11.6 acres these households had prior to Cyclone Nargis. Only 8 per cent of households had land to cultivate summer paddy, and each of these households reported planting an average of 5.4 acres during the dry season.

Table 3.1 shows the townships that reported the biggest percentage declines, 10 per cent or more, in acreage planted with monsoon paddy one year after the cyclone. The average proportions of households that had planted monsoon paddy are also reported in order to gauge the severity of these large percentage losses. The four affected townships of Bogale, Labutta, Mawlamyineegyun and Pyapon, suffered from large percentage losses in acres that could be cultivated with monsoon paddy. However, the proportion of households that had cultivated monsoon paddy and the total number of acres available for monsoon paddy were also lower in these areas.
Table 3.1: Township estimates for monsoon paddy planting

<table>
<thead>
<tr>
<th>Township</th>
<th>Households that cultivated monsoon paddy before Cyclone Nargis</th>
<th>% change in acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pyapon</td>
<td>23.7%</td>
<td>-20.3%</td>
</tr>
<tr>
<td>Bogale</td>
<td>29.5%</td>
<td>-20.2%</td>
</tr>
<tr>
<td>Labutta</td>
<td>22.9%</td>
<td>-17.2%</td>
</tr>
<tr>
<td>Mawlamyinegyun</td>
<td>39.4%</td>
<td>-15.6%</td>
</tr>
<tr>
<td>Kyaiklat</td>
<td>41.0%</td>
<td>-14.9%</td>
</tr>
<tr>
<td>Twantay</td>
<td>24.2%</td>
<td>-14.1%</td>
</tr>
</tbody>
</table>

Among the households that reported planting less monsoon paddy one year after the Cyclone, the PR II found that 41 per cent cited the lack of capital or credit as the main inhibitor. Figure 3.7 shows the percentages for a list of reasons for reduced monsoon paddy cultivation. Other reasons included land spoiled due to salination, lack of animals or power tillers, and marketing or production problems.

Figure 3.7: Reasons for reduced monsoon paddy acreage

In addition to the larger-size paddy fields, home gardens also provided food for household consumption in the cyclone-affected area. Overall, 23 per cent of the households surveyed in the PR II reported that they used to cultivate or continue to cultivate home gardens. Among the households with home gardens, 31 per cent reported a decrease in garden size after Cyclone Nargis. Figure 3.8 shows that most of the gardens that declined in size were located along the path of the cyclone.
Overall, only 7 per cent of the surveyed households in the cyclone-affected area received crop-related relief items, such as agricultural equipment, seeds, fertiliser, draught animals, animal feed and fuel. Figure 3.9 shows that the proportion of households that reported having received such items was larger in Bogale, Labutta, Mawlamyinegyun and Pyapon Townships. Surveyed households that received crop-related relief items in these areas averaged 12 per cent, with village proportions ranging from a low of zero to a high of 34 per cent.

One year after the disaster, 32 per cent of the surveyed households in the cyclone-affected area continued to consider crop items or inputs as a pressing need. Areas that reported a high need for these supplies were concentrated in the northern part of the region.

The difference in the need for farming inputs between the northern and southern areas can be attributed to the varied cropping patterns in the Ayeyarwady Delta and other affected areas. The northern part has two cropping seasons for rice and for pulses, whereas the southern part only cultivated crops during the monsoon season. Monsoon cropping in the south had yet to begin at the time of the PR II survey, which may explain the lesser need for farming inputs.

### 3.1.3 Fishing

Fishing was the most common income source for households in the southern Delta area around Labutta Township (figure 3.2). It is also known that small-scale fishing is an important subsistence activity for many households, in particular during monsoon season when fishing in flooded rice fields
became an important source of food for home consumption. Fish, in addition to rice and vegetables, was among the most frequently consumed food types for households in the entire cyclone-affected area. The PR II found that households ate fish 4 days per week on average. For further information on food consumption in affected areas, see the chapter on ‘Healthy lives’.

The PR II assessed fishing activities as a source of livelihood in the cyclone-affected area by separately measuring the extent of ownership, loss, receipt and need of boats and fishing gear. Boats are not only used for fishing but also for transportation purposes throughout the Delta; thus, boat ownership alone does not necessarily indicate involvement in fishing. Similarly, many types of small-scale fishing gear do not require the use of a boat. Therefore, households without boats may still fish as a means of livelihood.

The green areas in figures 3.10 and 3.11 reflect the location of surveyed households that owned at least one boat of any kind and at least one type of fishing gear, respectively. When compared, the green area in the map showing boat ownership is much larger than the green area that shows fishing-gear ownership. This difference underlines the multipurpose nature of boats in the region and the suitability of fishing-gear ownership as an indicator for locating fishing activities.

Ownership of fishing gear was concentrated in the four southern-most townships of Bogale, Labutta, Mawlamyneegyun, and Pyapon. This is also the area in which fishing was mentioned among the top three income sources by at least 20 per cent of the surveyed households in the southern Delta (figure 3.2). The remainder of this section makes reference to this area in particular.

Before Cyclone Nargis, each surveyed household in the southern townships of Bogale, Labutta and Mawlamyneegyun owned an average of 0.54 boats, which means that one out of two households in those areas owned a boat. Areas shaded in green in figure 3.12 reflect the location of surveyed households that owned a boat prior to the disaster.
Overall, 20 per cent of the surveyed households in the region lost a boat because of the cyclone. In the townships of Bogale, Labutta and Mawlamyinegyun where the number of boats per household was higher than in other areas, the average proportion of loss was also high, at 28, 23 and 14 per cent, respectively. The swampy townships of Kyaiklat and Maubin, located west of Yangon, also had more boats per household than other areas before Cyclone Nargis and suffered higher than average rates of boat loss, at 22 per cent and 12 per cent, respectively.

A similar conclusion can be drawn for the loss of fishing gear in the southern part of the Delta. The townships of Bogale, Labutta, Mawlamyinegyun and Pyapon have the largest proportion of surveyed households that owned fishing gear prior to Cyclone Nargis. Among those townships, Labutta recorded the highest percentage loss of fishing gear, at 28 per cent (table 3.2). The high percentage loss in townships with low fishing gear ownership, such as Twantay, should be treated with caution because the data are based on low proportions of fishing-gear owners.

Table 3.2: Township estimates for fishing gear

<table>
<thead>
<tr>
<th>Township</th>
<th>Households with fishing gear before Cyclone Nargis</th>
<th>% change in fishing gear items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maubin</td>
<td>10.8%</td>
<td>-31.9%</td>
</tr>
<tr>
<td>Twantay</td>
<td>9.4%</td>
<td>-30.2%</td>
</tr>
<tr>
<td>Labutta</td>
<td>32.9%</td>
<td>-28.4%</td>
</tr>
<tr>
<td>Kayan</td>
<td>10.2%</td>
<td>-25.1%</td>
</tr>
<tr>
<td>Kyaiklat</td>
<td>11.9%</td>
<td>-24.6%</td>
</tr>
<tr>
<td>Thongwa</td>
<td>12.3%</td>
<td>-19.8%</td>
</tr>
<tr>
<td>Ngapudaw</td>
<td>11.0%</td>
<td>-18.2%</td>
</tr>
<tr>
<td>Kyauktan</td>
<td>12.6%</td>
<td>-11.0%</td>
</tr>
<tr>
<td>Bogale</td>
<td>33.0%</td>
<td>-10.3%</td>
</tr>
<tr>
<td>Pyapon</td>
<td>23.6%</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Wakema</td>
<td>16.7%</td>
<td>-10.2%</td>
</tr>
<tr>
<td>Kawhmu</td>
<td>13.5%</td>
<td>-9.8%</td>
</tr>
<tr>
<td>Pathein</td>
<td>8.9%</td>
<td>-6.4%</td>
</tr>
<tr>
<td>Dedaye</td>
<td>15.9%</td>
<td>-6.0%</td>
</tr>
<tr>
<td>Myaungmya</td>
<td>11.7%</td>
<td>-3.1%</td>
</tr>
<tr>
<td>Kungyangon</td>
<td>15.8%</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Mawlamyinegyun</td>
<td>25.2%</td>
<td>-1.9%</td>
</tr>
</tbody>
</table>
FOCUS: RELIEF ITEMS AND NEEDS

The PR II assessed the distribution of fishing-related relief items, such as boats and gear, in the areas affected by the cyclone and the level of need for such materials as expressed by each household. Figure 3.13 shows an overlap of the areas in which fishing and farming are the predominant income sources with the areas that reported loss of fishing gear.

Fishing is the predominant income source for people in the townships of Bogale, Labutta, Mawlamyinegyun and Pyapon. The overlap in figure 3.13 shows that areas where fishing was among the main income sources are also the same areas that experienced the highest percentage losses in fishing gear items.

Figure 3.13: Income sources in areas with reported fishing gear reduction

Figure 3.14 shows that the distribution of fishing gear items since Cyclone Nargis was concentrated in the southern part of the most affected townships. On average, only 6 per cent of surveyed households in Bogale, Labutta, Mawlamyinegyun and Pyapon Townships reported receiving fishing gear as a relief item. The proportion, however, increased in the villages located in the southern half of the townships, where 46 per cent of the households reported receiving fishing gear.

Figure 3.14: Fishing gear received
The four townships of Bogale, Labutta, Mawlamyinegyun and Pyapon were also the focal area for the distribution of boats in the aftermath of the disaster (figure 3.16). Across the four townships, 11 per cent of surveyed households reported having received boats. Still, 33 per cent of the surveyed households in the same area considered a boat as a pressing need to restore their livelihood activity (figures 3.17).

3.1.4 Livestock

Households in the cyclone-affected area use a variety of animals for different livelihood activities. Households that do not have landholdings raise pigs, ducks and chickens for sale and for home consumption. Rice-farming households with landholdings often own buffaloes for ploughing. Although some farmers own power tillers in lieu of buffaloes, small-scale farmers in the southern affected areas continue to use the beasts for their farming requirements. One power tiller can cultivate approximately 10 times the amount of land cultivated by a pair of buffalo in the same amount of time. Crop farmers also raise livestock to generate income and sustenance in between harvest periods.

To measure the extent of livestock loss in the cyclone-affected area, the PR II looked at the average number of chickens owned by each household in the survey before and after Cyclone Nargis.

Overall, the average number of chickens owned by each surveyed household that owned chickens was 8 a year after the Cyclone, in contrast with an average of 19 chickens before Cyclone Nargis.
This means that, on average, the surveyed households lost more than half of their chickens because of the disaster. Households that lost the most chickens were located in the direct path of the cyclone, such as in the townships of Bogale, Labutta, Pyapon and Mawlamyinegyun (as shown in red in figure 3.18). In some villages, the average loss of chickens reached a high of 70 per cent, while some households, particularly in Bogale and Labutta, reported losing all their chickens.

**Figure 3.18: Chickens lost**

<table>
<thead>
<tr>
<th>Relief items and needs</th>
</tr>
</thead>
</table>

The PR II focused on swine and poultry holdings in assessing the distribution of livestock as part of relief efforts and the need for such among cyclone-affected communities.

Overall, 3 per cent of the surveyed households had received either pigs or poultry as part of a relief package. The proportion is greater in Bogale, Dedaye, Kawhmu, Kungyangon, Labutta, Mawlamyinegyun, and Pyapon, where 7 per cent of households reported receiving such livestock (figure 3.19).

Some 5 per cent of households across the entire affected area consider pigs or poultry as one of their three most important needs. The proportion is greater in Bogale, Dedaye, Labutta, Mawlamyinegyun, Ngapudaw, and Pyapon Townships, where 8 per cent reported pigs or poultry as a pressing need (figure 3.20).

**Figure 3.19: Livestock received**

**Figure 3.20: Livestock needs**
3.2: Shelter

Prior to Cyclone Nargis, roughly 50 per cent of the surveyed households in the cyclone-affected areas lived in a house made of a combination of wood and bamboo, 35 per cent were all wooden, while only 15 per cent were made of brick or concrete. Most of the houses were not built to withstand extreme weather disturbances and therefore were destroyed by the strong winds and rising tidal waters brought on by the cyclone.

The PONJA reported that Cyclone Nargis affected an estimated 790,000 houses, of which 57 per cent were totally destroyed, 25 per cent partially damaged and 16 per cent slightly damaged. Only 2 per cent remained untouched by the disaster. This degree of destruction displaced as many as 800,000 people, who sought shelter with extended family, friends or in relief camps.3

Villages in the affected areas also suffered a high death toll, due to the absence of safe havens or structures in their community. In areas where safe havens exist, destroyed bridges and foot paths prevented people’s escape to such buildings.

To gauge the adequacy of shelter in the cyclone-affected area one year after the disaster, the PR II assessed whether houses that were rebuilt could withstand future hydro-meteorological shocks.

3.2.1 Shelter damage

The PR II assessed the degree of damage in shelter among households that still live in the same compound as they did before Cyclone Nargis, as it enables more accurate mapping of damaged shelters. Overall, 87 per cent of the surveyed households in the affected areas still live in the same compound where they resided prior to the disaster. The majority of the 13 per cent of households that do not live in the same compound are found in the southern townships of Bogale and Labutta (see section 4.4 in chapter 4: protected lives, for more details on displacement).

The shelters of households who reside in the same compound as they did before Cyclone Nargis were classified as ‘completely destroyed’, ‘severely damaged’, ‘sustained minor damage’, or ‘not damaged at all’. Figure 3.21 shows the areas in red in which the cyclone ‘completely destroyed’ or ‘severely damaged’ a higher proportion of shelters.

Figure 3.21: Completely or severely damaged shelters

Overall, the majority, or 63 per cent, of the surveyed households reported that Cyclone Nargis completely or severely damaged their home. Shelters that sustained the most damage are found in Bogale, Labutta, and Pyapon Townships. The proportions of completely or severely damaged shelters in those three areas range from a low of 60 to a high of 100 per cent.

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3 TCG (June 2008) Post-Nargis Joint Assessment, p. 13
3.2.2 Shelter repair status

The PR II assessed the status of shelter repair among households that continue to live in the same compound as before Cyclone Nargis and those that reported complete or severe damage to their house. Overall, 48 per cent among these households had fully repaired their home, 35 per cent had completed partial repairs, while 2 per cent reported no repairs at all (figure 3.22).

Figure 3.22: Level of repair among households

![Bar chart showing level of repair among households](image)

Figure 3.23 shows that the highest geographical concentration of partially repaired or un repaired shelters (illustrated in red and orange) is in Bogale, Labutta and Ngapudaw Townships.

Figure 3.23: Shelter repair status

![Map showing shelter repair status](image)

Households that were unable to fully repair their homes were asked to indicate the reason for their inability to do so. Figure 3.24 shows that the majority, or 93 per cent, of the households that reported severe and complete damage to their house could not undertake repairs due to the absence of cash. Another 50 per cent reported that lack of materials inhibited repairs.
3.2.3 Adequacy of shelter conditions

To assess the adequacy of shelter conditions in the cyclone-affected communities, the PR II looked at household use of plastic, tarpaulin or canvas as walls or roofing. The assessment also looked at surveyed households to see if they had a minimum shelter area of at least 36 sq feet (3.5 sq m) per person, as required under SPHERE humanitarian standards for a post-disaster situation\(^4\). Shelter area refers to the area covered by a roof in which people can eat and sleep.

The households in the survey area that lost their home to Cyclone Nargis used tarpaulin, canvas or plastic sheets distributed to rebuild their shelter immediately after the disaster. While tarpaulin, canvas and plastic may be the most practical means to restore basic shelter conditions in an emergency situation, these materials do not meet long-term requirements.

The proportion of surveyed households that continued to use tarpaulin, canvas or plastic as a roof or walls for their house had declined to 9 per cent from the 13 per cent reported in the PR I. Figures 3.25a and 3.25b show that areas in which houses were made of tarpaulin, canvas or plastic are noticeably smaller in the PR II compared with the red areas in the PR I.

areas, the adjustment of the colour display in 3.25b was necessary so that the colours in figures 3.25a and 3.25b reflect the same cut-off proportions to facilitate a clear comparison between PR I and PR II.

**Figure 3.25c: Plastic, tarpaulin or canvas is used as a wall or roof**

Overall, 23 per cent of the households included in the survey had insufficient shelter area per person, that is, less than 36 sq feet or 3.5 sq meters. The majority of the households with insufficient shelter space per person are concentrated along the coastal area of the affected area (figure 3.26).

**Figure 3.26: Insufficient shelter area**

Apart from the previous two indicators, which are based on shelter construction, the PR II assessed shelter adequacy based on the perception of the household head. Overall, 53 per cent of the surveyed households perceived their house as hotter, wetter or more crowded than before the disaster. Figure 3.27 shows that along the path of the cyclone over half of the households reported inferior shelter conditions one year after the disaster.
Beyond living space for a household, a shelter should provide protection against adverse weather conditions. The PR II used two methods to assess the capability of shelters in the cyclone-affected area to protect their inhabitants against unfavourable weather phenomena.

First, the PR II used a scorecard to determine whether disaster preparedness measures were considered during the construction of the house. These measures include building the house on raised ground, having trees or other plants close to the house to serve as a wind break, having the shorter side of the house face the direction of the wind, using a pitched roof and ensuring that the roof is water-tight. Based on these factors, each surveyed household was assigned a score between 0 (for not being prepared) and 5 (for good preparation).

The survey results indicate that houses in the cyclone-affected area have an average score of only 2.1 in terms of disaster preparedness. Figure 3.28 reflects that houses located in the western part of the affected area have a lower disaster preparedness score compared with those located in the northern part of the region.

Second, household heads were asked whether they perceived their own home as safe against rain, wind or storm surge. Only 10 per cent of the household heads considered their own house safe against extreme weather disturbances. Only 46 per cent of the household heads reported that they had access to a safe shelter within 0.5 miles of their house. Such safe shelters included their own home, a neighbour’s house, a public building, monastery or church. The majority of the households

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that did not have access to a safe shelter are located along the path of the cyclone in the southern area (shown in red in figure 3.29).

**Figure 3.29: Safe shelter within 0.5 mile of home**

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### 3.2.5 Shelter relief items

The household heads in the survey were asked whether they received appropriate shelter-related relief items, such as construction materials or tools, within the one-year period after Cyclone Nargis. Overall, 29 per cent of the surveyed households reported having received an emergency shelter kit, construction materials or construction tools. This constitutes an improvement from the 10 per cent that reported receipt of such items in the PR I.

While more households were reached in the distribution of shelter items, the PR II data show that the distribution area is approximately the same as in the PR I (figure 3.30). The distribution of shelter-related relief items was concentrated in Bogale, Dedaye, Labutta and Pyapon Townships, where 56 per cent of the surveyed households received such materials.

**Figure 3.30: Households that had received shelter items**

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Although there has been progress in the distribution of shelter-related relief items in high-need areas, 74 per cent of the surveyed households across the region still considered adequate shelter as one of their most pressing needs (figure 3.31). The levels of need within villages vary widely, from a low of 38 per cent to a high of 100 per cent.

Geographically, a large proportion, or at least 83 per cent, of the surveyed households around Yangon reported shelter as one of their most pressing needs, followed by households in the remote township of Labutta, at 78 per cent.
3.3: **Education**

Cyclone Nargis severely affected the education sector, destroying 4,000 schools, or roughly 60 per cent of the educational facilities in the affected area. Schools damaged by the cyclone were left with unusable sanitation facilities and suffered widespread loss of furniture and teaching materials.

Rebuilding schools and restoring the formal education system in the aftermath of a disaster are crucial in helping children in disaster-stricken communities regain a sense of normalcy and security and obtain the psychosocial support needed to overcome an unpleasant or traumatic experience. Restarting schools as quickly as possible prevents prolonged missed-learning opportunities that can have a long-term negative impact on children.

To assess the rehabilitation of the education system in the cyclone-affected villages, the PR II looked at the rate of school attendance among children aged 5–10 years and 11–15 years. The PR II sample included a total of 1,798 children aged 5–10 years, or 17 children on average per village. The sample size for children aged 11–15 years covered 1,383 children, or 14 children on average per village. The assessment enquired about the reason for non-attendance and the private education cost burden among the surveyed households.

### 3.3.1 School attendance

The PR II assessed the school attendance rate among children by interviewing the main caregivers in the surveyed households.

Overall, the school attendance rate among children aged 5–10 in the surveyed households was 86 per cent, similar to the rate in the PR I (figure 3.32). While overall estimates indicate non-improvement, areas in the township of Labutta that scored the lowest rates in the PR I managed to increase their school attendance rates in the PR II. The school attendance rate among children aged 11–15 among the surveyed households was 69 per cent (figure 3.33), slightly higher than the 63 per cent reported in the PR I. Aside from the increase in the overall rate, the lowest attendance rate for a village increased to 25 per cent in the PR II, compared with the 11 per cent in the PR I.

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In the basic education system in Myanmar children attend school levels that are appropriate for their age: at age 5, children are expected to start attending school; they spend 5 years at the primary level, 4 years at the middle level and two years at the higher level.

Data from the PR II show that around 27 per cent of school-aged children in the surveyed households were behind at least one year in their expected school level. This is the same rate reported in the PR I. Nearly 13 per cent of children were behind by at least three years.

3.3.2 Reasons for school non-attendance

When asked why children aged 5 to 10 years did not attend school, the majority of caregivers cited ‘other reasons’ for non-attendance, followed by the high cost of sending them to school (see figure 3.34). The data does not show any significant gender difference in the reasons for non-attendance.

Although the Government funds basic education in public schools in Myanmar, households shoulder supplementary costs, such as learning materials, uniforms, transportation, tuition costs and other related expenses.

Figure 3.34: Reasons for school non-attendance among children aged 5-10 years
The reasons for school non-attendance varied in the case of children aged 11 to 15 years (figure 3.35). Although the majority of the caregivers interviewed also mentioned the high cost for supplementary items as the main reason for non-attendance, it is closely followed by the requirement of children to work.

The data for this age group do reflect a gender difference. Caregivers reported that more girls than boys quit their schooling to work and to look after others in the household. While 8 per cent of the households with children in this age group reported that boys do not attend school because of the distance, this reason applied to only 4 per cent of the girls.

**Figure 3.35: Reasons for school non-attendance among children aged 11-15 years**

![Bar chart showing reasons for school non-attendance among children aged 11-15 years.](chart)

After putting the results from both age groups together, the PR II data clearly shows that a substantial proportion of children in both age groups, or 30 per cent of school-age children among the surveyed households in the affected areas, did not attend school because of the cost burden.

Figure 3.36 illustrates that 20 per cent of the surveyed households that had reported the high cost as the main reason for school non-attendance considered writing and stationery supplies as the main cost burden, followed by transportation and uniforms.
3.3.3 Relief items: Private educational items

The distribution of educational items to households with children is intended to help parents defray the cost of sending their children to school and may increase school attendance. It should be noted that the distribution of educational items only lowers household-incurred costs but does not cover the institutional costs of rebuilding and restoring school infrastructure and the cost of teachers’ salary. To assess the coverage and distribution of relief items related to education in the aftermath of Cyclone Nargis, the PR II measured the proportion of households with members who received education-related relief items at least once. These include essential learning kits, school-in-a-box, teacher kits, writing materials and textbooks. It should be noted here that most educational items distributed were distributed to children at schools rather than to caregivers and parents in houses.

Overall, 12 per cent of the surveyed households received some education-related items. The majority of the households that reported having received something are located in the southern part of the Delta and in the western coast (shown in green in figure 3.37). In these areas, at least 3 in 5 of the surveyed household members received some education relief items at least once since the cyclone. This is similar to the proportion reported in the PR I, except in Kungyangon Township, where more households reported having received education items in PR II.
3.4: Chapter conclusion

One year after Cyclone Nargis, the majority, or 59 per cent of the surveyed households reported agriculture-related activities in the livestock, fishing, forestry or crops subsectors, excluding casual labour, among their top three income sources. If all casual labour is allocated to agriculture, the proportion of households deriving income from agriculture increases to 89 per cent. Casual labour provided a major part of household income in 46 per cent of the households surveyed, with 7 per cent of women and 6 per cent of men listing their main activity as casual labour. However, the unemployment rate remains high, with 9 per cent of women and 6 per cent of men reporting they were unemployed.

The northern townships of the cyclone-affected area reported crop production and agricultural activities as their predominant source of income generation, while the southern townships considered fishing and aquaculture activities as their predominant source of income generation. However, it is important to note that both fishing and farming are also practiced by a large portion of the population as a means of subsistence production.

The townships of Bogale, Labutta, Mawlamyinegyun and Pyapon reported losses of a higher proportion of land for cultivating monsoon paddy rice due to damage from flooding and increased salinity levels. However the proportion of households that have land tenure to cultivate monsoon paddy is lower in these areas. Furthermore, a higher number of households in these four townships engage in fishing and aquaculture activities.

Overall, only 7 per cent of the surveyed households in the cyclone-affected area received crop-related relief items, such as agricultural equipment, seeds, fertiliser, draft animals, animal feed and fuel. The proportion of households that reported receiving such items was larger in Bogale, Labutta, Mawlamyinegyun, and Pyapon Townships in the south of the affected area. However, households in the northern affected area still reported higher need for farming inputs which coincides with the multi-pattern crop production and higher level of livelihoods linked to agriculture in the northern townships. Furthermore, households in the southern townships still reported higher need for fishing inputs, especially in the affected villages of Bogale, Labutta, Mawlamyinegyun and Pyapon Townships, which coincides with the prevalent aquaculture and fishing activities of these areas.

The PR II data show that crops, fishing and livestock inputs are still needed in specific target areas. 32 per cent of the surveyed households in the cyclone-affected area continue to consider crop items or inputs as a pressing need. Areas that reported a high need for these supplies are concentrated in the northern part of the region. In four southern townships, where fishing is predominant, 33 per cent of the surveyed households still considered boats as a pressing need, while 30 per cent reported fishing gear as a priority need to restore their livelihood activity. The PR II also reveals the need to support backyard production and associated home-food processing because households without a landholding relied on these activities for income and sustenance.

Substantial efforts are required to address crucial needs to restore productivity in the affected areas, especially in the shelter sector. Although 87 per cent of households reported returning to the same compounds that they used to occupy prior to the disaster, a large majority, or 74 per cent, of the surveyed households across the region still considered adequate shelter as one of their most pressing needs. 53 per cent of the households had not restored their house to pre-disaster conditions and thus regarded their dwelling hotter, wetter and/or more crowded than their home prior to the disaster. More importantly, only 10 per cent of the surveyed households consider their home safe against extreme weather disturbances, and only 46 per cent reported that they had access to a safe shelter within 0.5 miles from their house. These findings highlight the continued and persistent vulnerability of the affected areas to future extreme weather disturbances such as Cyclone Nargis.

Distribution of shelter-related relief items, such as emergency shelter kits, construction materials and construction tools, had improved when compared with findings in the PR I. Overall, 29 per cent of the households reported having received an emergency shelter kit. Considerable effort is needed to meet the overwhelming need for adequate shelter in the cyclone-affected areas.
One year after Cyclone Nargis only 13 per cent of surveyed households remain displaced or have not returned home. The highest percentage of displaced households remains in the southern townships of Bogale, Labutta, and Pyapon Townships. Shelters that sustained the most damage during Cyclone Nargis were also found in the townships of Labutta, Bogale and Pyapon. One year after the cyclone, the highest geographical concentration of partially repaired and/or unrepaired shelters were found in Bogale, Labutta, and Ngapudaw Townships. The highest number of households that continued to use tarpaulin, canvas or plastic as roofing or walls for shelters was found in the southern parts of Bogale and Labutta Townships. Houses throughout the cyclone-affected area were found to have a low rating for disaster preparedness, especially in the western and southern townships.

School attendance rates among children aged 5-10 were reported at 86 per cent among surveyed households, while attendance rates among children aged 11-15 were reported at 63 per cent. Additionally, data showed that 27 per cent of school-aged children were at least one year behind in their expected school level. A small incidence of non-attendance for children aged 5-10 was noticed in the central part of the affected area from Wakema Township down to Labutta Township, but larger concentrations of non-attendance were found for children aged 11-15 across the entire affected area. A high incidence of non-attendance for children aged 11-15 was found in parts of Labutta, Ngapudaw, Dedaye, and Thongwa Townships. However, overall, The school attendance rate improved for the 11 to 15 year olds compared with the first 6 months after the cyclone – a positive sign that many of the children are getting the psychosocial support needed to regain a sense of normalcy after such an extreme event.

Despite the marked improvements in school attendance since the cyclone, the PR II data indicate that 30 per cent of school-age children in the surveyed households could not attend school due to the cost burden. Most households considered the cost of writing and stationery supplies as well as transportation too high. Thus, distribution of educational items to households with school-age children may increase school attendance. However, with only 12 per cent of households reporting having received such items, additional efforts may be needed.
Figure 3.3: Proportion of households cultivating monsoon paddy at the time of the survey.
Figure 3.6: Acres of monsoon paddy per landholder before Cyclone Nargis

Legend

Mean: 11.6

Gulf of Mattama (Gulf of Martaban)
Figure 3.8: Reduced home garden size after Cyclone Nargis

Legend

100 %

0 %

Gulf of Mattama
(Gulf of Martaban)

Mean: 33 %
Figure 3.9: Crop items received through relief assistance

Legend

Mean: 7%

Gulf of Martaban (Gulf of Mattama)
Figure 3.10: Proportion of households owning a boat

Legend

Mean: 0.28

Gulf of Martaban

Number of Boats per Household Owned Before Nargis

- Gulf of Mattama
- Mean: 0.28
- Legend

BAYONNE

PRODUCTIVE LIVES

100
Figure 3.11: Proportion of households owning fishing gear

Legend

0% 0% 71%

Mean: 18%

Gulf of Mattama (Gulf of Martaban)
Figure 3.12: Boats owned per household before Cyclone Nargis

Legend

Mean: 1.9

Gulf of Mattama (Gulf of Martaban)
Figure 3.13: Income sources in areas with reported fishing gear reduction

Legend

- Income Farming
- Income Fishing

Legend

- Gulf of Mattama (Gulf of Martaban)
Figure 3.14: Fishing gear received since Nargis.
Figure 3.15: Fishing gear needs at present with income sources
Figure 3.16: Boats received since Nargis

Legend

0 % 20 % 41 % 81 %

Mean: 4 %

Gulf of Bengali

Gulf of Mattama (Gulf of Martaban)
Figure 3.17: Boat needs

Legend

Mean: 19%
Figure 3.18: Chickens lost

Legend

- **Red**: 99%
- **Orange**: 52%
- **Green**: 0%

Gulf of Mattama (Gulf of Martaban)

Mean: 52%
Figure 3.19: Livestock received

Legend

- 0 %
- 71 %

Gulf of Mattama
(Gulf of Martaban)

Bay of Bengal
Figure 3.20: Livestock needs

Legend

Gulf of Mattama
(Gulf of Martaban)

Mean: 5 %
Figure 3.21: Completely or severely damaged shelters

Legend

Mean: 63 %

Gulf of Martaban (Gulf of Mattama)

Completely or Severely Damaged Shelter
Figure 3.23: Shelter repair status

Legend

- 100%
- 75%
- 50%
- 25%
- 0%

Mean: 36%

Gulf of Mattama (Gulf of Martaban)

Bay of Bengal
Figure 3.25c: Plastic, tarpaulin or canvas is used as a wall or roof.
Figure 3.26: Insufficient shelter area

Legend

Gulf of Mattama (Gulf of Martaban)
Figure 3.27: Inadequate shelter conditions
Figure 3.28: Preparedness score for storms or flooding

Mean: 2.1

Legend

Gulf of Mattama (Gulf of Martaban)

Bay of Bengal
Figure 3.29: Safe shelter within 0.5 mile of home
Figure 3.30: Households that had received shelter items

Legend

<table>
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<tr>
<td>21%</td>
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<td>0%</td>
</tr>
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Bay of Bengal

Legend

Gulf of Mattama (Gulf of Martaban)
Figure 3.31: Shelter needs
Figure 3.32: School attendance for children aged 5–10 years
Figure 3.33: School attendance for children aged 11-15 years
Figure 3.37: Received education items

Legend

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<tr>
<td>0%</td>
<td>Red</td>
</tr>
<tr>
<td>13%</td>
<td>Yellow</td>
</tr>
<tr>
<td>26%</td>
<td>Orange</td>
</tr>
<tr>
<td>39%</td>
<td>Green</td>
</tr>
<tr>
<td>52%</td>
<td>Green</td>
</tr>
</tbody>
</table>

Mean: 12%
Chapter IV: Protected Lives
CHAPTER 4:

PROTECTED LIVES

Protecting individuals, families and communities from abuse and exploitation is an essential part of any sustainable post-disaster recovery process. This is particularly crucial in the area affected by Cyclone Nargis, in which an estimated 260,000 individuals left their villages in the aftermath of the cyclone.¹

The immediate protection response in the aftermath of the disaster, undertaken by the humanitarian community, focused on the protection of life, physical and mental health, security and moral integrity. The interventions ran parallel with efforts aimed to ensure that the most vulnerable and worst-affected populations gained access to goods and services necessary to live healthy and productive lives.

In the year following the cyclone, a number of households in the affected area had returned to their homes to re-establish their livelihoods; some remain unable to do so due to persisting trauma, severe destruction of their shelter, difficulty in accessing land or because they lacked resources. While the situation is slowly evolving from the emergency phase into the rehabilitation and recovery phase, protection concerns still prevail in some areas, as explained in the following sections.

Lack of reliable information has impeded efforts aimed at protecting vulnerable populations affected by Cyclone Nargis, such as women, children, people with a disability and the elderly. The PR II therefore looked at the circumstances of those vulnerable populations in order to present a better picture of the protection needs and the rehabilitation efforts required to address them.

4.1: WOMEN

The role of women in a post-disaster rehabilitation situation often expands in contrast with normal times. Women may have to single-handedly ensure the safety of children, older relatives and the disabled members of the household. This is more pronounced in households in which the men, who are typically the head, perished during the disaster.

The PR II covered several issues related to women and disaggregated the needs of the affected population in terms of gender. In particular, the PR II assessed the difference between households headed by men and those headed by women in terms of income sources. The survey further analysed the circumstances surrounding school attendance among school-age girls as well as issues of violence against women and possible economic causes. The PR II also looked at women’s access to reproductive health services, discussed previously in the Healthy Lives chapter.

4.1.1 DIFFERENCES BETWEEN HOUSEHOLDSヘEDED BY WOMEN AND BY MEN

Of the households surveyed in the cyclone-affected region, 12 per cent are headed by women. There is, however, no obvious geographical pattern in the location of these households.

To assess the differences between female-headed and male-headed households, the PR II first compared their main sources of income. The majority of the surveyed households headed by women derived their income predominantly from agriculture, similar to households headed by men, although to a lesser extent: 50 per cent of the female-headed households reported agriculture as their main income source, while 59 per cent of the households headed by men reported the same.

Casual labour was the second most prevalent source of income among the surveyed households, reported by 42 per cent of those headed by women and 47 per cent of those headed by men. Trading, however, was a much more common source of income in female-headed households; 21 per

cent of those households engaged in trading activities, compared with 11 per cent of male-headed households. While there is no difference for crop farming between household types, fishing was a more important income source for male-headed households, of which 16 per cent reported being engaged in such activity, compared to 6 per cent of the surveyed households headed by women.

The second comparison the PR II considered was the difference in land available for monsoon paddy cultivation between the two types of households. The survey did not find any differences in land tenure or much variance in the average area available for monsoon paddy cultivation per surveyed farming household. Female-headed households had 9.5 acres for monsoon paddy cultivation, while the male-headed households had 9.7 acres.

In the third comparison, the PR II assessed the difference in level of food security between the two types of households. The survey found that households headed by women engaged in more drastic practices to cope with food shortages in contrast to the male-headed households. Possible coping measures ranged from less drastic measures, such as choosing less expensive or unusual food, to more drastic measures such as borrowing food or having household members go without meals. Of the female-headed households, 26 per cent of those surveyed used moderate to severe coping measures when experiencing scarce food supplies, while 22 per cent of male-headed households reported doing so. In terms of the food consumption score, 12 per cent of the surveyed households headed by women received a high score or surpassed the minimum threshold, compared with 10 per cent of households headed by men.

The identified differences between the two types of households reflect a variation of food source. Of the female-headed households surveyed 35 per cent relied on their own production as a main food source, compared with 41 per cent of the male-headed households. A smaller proportion of households headed by women, at 9 per cent, reported relying on food aid as their main source of nutrition, compared with 11 per cent of the male-headed households.

### 4.1.2 Recruitment of Women for Outside Work Purposes

The PR II assessed the relevance and location of the recruitment of women or girls for work outside of their village. Women in households included in the survey were asked if they knew of any woman who had been offered work or opportunity to earn income somewhere outside the village (the answer could be based on their own experience or from first-person reports from others).

Overall, around 6 per cent of women in the surveyed households reported that they knew of at least one case in which a woman in the village had been offered work or an option to earn money in another location. The proportion within villages, however, varied widely, from a low of zero to a high of 31 per cent. In villages that reported a high rate, women in every third household knew of at least one case.

As shown in figure 4.1, more women living in areas closer to an urban area or in Yangon city, than those living in other parts of the affected area, were recruited to work in another location based on the responses from women in the surveyed households. This suggests that proximity to an urban area is an important determinant of recruitment of women or girls for work outside of their village.
The 186 women who reported this type of recruitment were then asked to define the type of work that they had heard was offered. Consistent with the proximity to an urban area, a third of the reports, 33 per cent, involved women who were recruited to work in a factory, 24 per cent referred to women recruited as domestic workers, 12 per cent cited casual labour and another 12 per cent mentioned farming activities, as shown in figure 4.2.

### Figure 4.2: Type of outside work offered to women, as reported by women in surveyed households

<table>
<thead>
<tr>
<th>Work Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karaoke/ massage parlor</td>
<td>5.70%</td>
</tr>
<tr>
<td>Other</td>
<td>6.14%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>7.46%</td>
</tr>
<tr>
<td>Farming</td>
<td>11.84%</td>
</tr>
<tr>
<td>Casual labor</td>
<td>12.28%</td>
</tr>
<tr>
<td>Domestic work</td>
<td>23.68%</td>
</tr>
<tr>
<td>Factory work</td>
<td>32.89%</td>
</tr>
</tbody>
</table>

#### 4.1.3 VIOLENCE AGAINST WOMEN OF ALL AGES

The UN defines violence against women as any gender-based act that results in, or is likely to result in, physical, sexual or mental harm or suffering. This includes the threat of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or private life.

To gauge the frequency of acts of violence against women, females in the sampled households were asked how often acts of violence committed against women of any age occurred in their village. The respondents could choose among the options ‘often’, ‘sometimes’, ‘rarely’, ‘never’ and ‘do not know’. Their answer could be based on their own experiences, or stories that they had heard from others. A proportion of 7 per cent of the women interviewed reported not knowing whether or not such acts of violence occur in their village, which could reflect the sensitivity of the question as much as the lack of such events.
Of the 2,649 women who reported that gender-based violence (GBV) occurred in their village, 20 per cent (523 women) characterised the frequency as ‘sometimes’ or ‘often’ in their village, while 3 per cent described it as ‘often’. As shown in figure 4.3, most of the violent incidences occurred in the western part of the affected area, in Labutta, Myaungmya, and Ngapudaw Townships, and in Yangon Division.

Among the women who characterised the frequency as ‘sometimes’ or ‘often’, 36 per cent, reported that acts of violence against women of all ages were most likely occur at home; 19 per cent of them described an attack was most likely when a woman travels alone (figure 4.4). The majority of women, or 40 per cent, reported that they did not know where such incidences were most likely to occur in their village.

4.2: Children

Children face increased vulnerabilities and protection concerns, including abuse, neglect, violence and exploitation, in a post-disaster context. The PR II looked at the vulnerabilities related to the aftermath of the cyclone, such as loss of parents and change in responsibilities. The PR II enquired
about the incidence of children working as a reason for non-attendance in school (see section 3.3 for further detail on education).

Of the 5,467 children aged eighteen or younger included in the survey, 15 per cent, 793 children, lived in a household with only 1 parent, while 7 per cent, 359 children lived in a household without both parents. This also means that the majority, or 78 per cent, of the children lived in a household with both natural parents. Figure 4.5 shows in red the areas in which more children 18 years and younger lived in a household without one natural parent.

Figure 4.5: Children younger than eighteen living without their
natural mother and/or father

Disasters may also change the responsibilities that children have to handle. Children who lose parents or immediate caregivers may need to become the head of household and provide care for the sick, elderly relatives or younger children. The PR II findings, however, indicate that few children were heading a household in the affected areas. Of the 2,917 households included in the survey, 15 households were headed by a child 18 years old or younger.

Data from the PR II also showed that among children aged 11–15 years who were included in the survey, 1 in 4 did not attend school because they were required to work. This is the second most important reason for not attending school, after education costs. The overall school attendance rate for this age group was estimated at 69 per cent. This is discussed in detail in the Productive Lives chapter. More girls, at 26 per cent, than boys, at 22 per cent, in the 11–15 age group were reported as out of school because they had to work or look after others in the household. There was no gender difference among children aged 5 to 15 years in terms of school attendance. The ratio of girls to boys in terms of school attendance for this age group is 0.98.

4.3: Persons with a disability

People with a disability are considered highly vulnerable to the negative impacts of a natural disaster. This vulnerability can extend to their immediate household because the additional responsibility of supporting a disabled person often affects livelihoods, income generation and mobility of other household members.

The PR II findings indicated a 3 per cent overall mean of persons with a disability among the surveyed population one year after the cyclone. Township estimates varied between a low of 2 per cent, such as in Kyauktan, to a high of 7 per cent, such as in Mawlamyinegyun. Figure 4.6 shows the areas that have a larger proportion of disabled persons in red and illustrates that areas along the path of the cyclone, particularly in the south-western coast, had a larger proportion of disabled persons among the surveyed population.
The PR II, however, did not assess whether or not persons with a disability were advantaged or disadvantaged in receiving relief goods after Cyclone Nargis.

4.4: Return, integration and resettlement

The UN Office for the Coordination of Humanitarian Affairs (OCHA) defines internally displaced persons (IDPs) as individuals or groups of people who have been forced or obliged to flee or leave their home or places of habitual residence as a result of, or in order to avoid the effects of armed conflict, situations of generalised violence, violations of human rights or natural and human-made disaster and who have not crossed an internationally recognised state border.\(^2\)

Natural disasters commonly cause large population movements. Cyclone Nargis displaced approximately 260,000 people to temporary camps and informal settlements. In addition, an unknown but significant number of people migrated between or within villages seeking refuge in makeshift shelters or in the home of a family member.\(^3\)

Internally Displaced Persons in the affected areas were likely to have experienced challenges either in reintegrating back into their former village or integrating into a new location. Displaced households may have experienced protection issues associated with inadequate shelter, land insecurity, lack of livelihood opportunities, minimal humanitarian assistance, loss of documentation and limited access to health care and schooling.

4.4.1 Households that move within or between villages

To better understand the level of vulnerability in the cyclone-affected region, the PR II tracked the movement of IDPs among the 2,931 households included in the survey. The PR II measured the proportion of households living in a different house from their pre-cyclone shelter, as this indicator captures displacements both within and between villages, while the second indicator includes only displacements between villages. The survey also measured the proportion of households that moved to another village after the disaster. These two indicators point to the varying extent to which IDPs may experience challenges to successful integration as well as re-establishment of livelihoods and social networks.

Overall, 87 per cent of the households included in the survey lived in the same compound as where they lived prior to Cyclone Nargis, which also means that 13 per cent lived in a compound different from their pre-cyclone abode. This figure is comparable to the 12 per cent finding in the PR I. Households that reported living in a different compound after the cyclone include both those displaced between, and within, villages.

\(^2\) UNOCHA (1998) Guiding Principles on Internal Displacement

These displaced households are concentrated in the most affected townships of Bogale, Labutta, and Pyapon, with the proportion in each township varying from 40–60 per cent. The areas in red in figure 4.7 highlight the location of households that were still displaced one year after the disaster.

Figure 4.7: Living in same compound as before Cyclone Nargis

Households that moved to another village after the disaster may be more vulnerable to the difficulties of integration, compared with households that moved to another compound within their original village. Overall, 103 households, or 4 per cent of the surveyed households and 31 per cent of the displaced surveyed households, reported living in a different village than before Cyclone Nargis (figure 4.8).

Figure 4.8: Lived in different village/ward before Cyclone Nargis

The majority of surveyed households that reported moving to another village said they had shifted only once after the cyclone, while a smaller number reported transferring to two or three villages. On average, households that moved to another village had stayed in their current location for 7 months. IDPs moving more frequently between villages or staying in villages for shorter periods of time are more likely to have experienced integration challenges than others.

Figure 4.9 shows that nearly half, or 46 per cent, of the IDPs in the survey moved to their current location because of the presence of family members in that area. Consequently, these households may have experienced fewer difficulties associated with integration due the socio-economic safety net provided by the host family. The latter, however, may find their resources stretched due to the arrival of new family members that they may have to support.
Despite the challenges of integration, almost 90 per cent of surveyed households that moved to another village after Cyclone Nargis intended to stay in their current location; 8 per cent planned to go back to their original location, while 4 per cent expressed a desire to move to yet another village (figure 4.10).

**Figure 4.10: Future migration plans**

**4.4.2 Personal identification documentation**

People affected by the consequences of natural disasters often encounter problems related to the loss of identification and legal documents, such as birth, marriage and death certificates; insurance certification; and passports and travel documents. These documents can be essential in accessing public services, such as education and health care, or resolving issues of property restitution or compensation.

In the wake of a natural disaster, protection of affected individuals must ensure that loss of documentation is not used i) to justify the denial of essential food and relief services; ii) to prevent individuals from travelling to safe areas or from returning to their home; iii) to impede their access to employment opportunities; or iv) to impede property rights.4

In Myanmar, two sets of documents are important in order to access government services: a national registration card (NRC) and a registration document that certifies that a household is registered at

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a certain geographic location (household registration). Together, these documents enable persons to access health facilities, send children to school, travel freely and own land, among other basic rights.

The PR II survey asked heads of households whether or not each of the household members aged 10 years or older had a NRC before Cyclone Nargis and at the time of the interview. Overall, 65 per cent were reported that they had a NRC before the cyclone, while 57 per cent reported having it at the time of the interview. Therefore at least 13 per cent of individuals who had a NRC before Cyclone Nargis lost it after the cyclone. Slightly fewer women, at 55 per cent, than men, at 60 per cent, reported having a NRC at the time of the interview. When household heads were asked whether or not they carried a household registration document, the majority, 87 per cent, of them reported that they did.

Areas shaded in red in figure 4.11 show the areas where a lower proportion of individuals had a NRC one year after the cyclone, while areas shaded in red in figure 4.12 show the locations where a higher proportion of individuals lost their NRC after the disaster. The highest rate of NRC losses and the largest proportion of household members without NRCs are situated around Bogale, Labutta, and Mawlamyinegyun Townships. Up to 94 per cent of surveyed household members in these townships did not have a NRC, compared to a low 8 per cent average in the rest of the affected area.

Household heads were then asked what types of difficulties they had encountered due to the absence of a NRC or household registration document. Most of the respondents reported that the absence of a NRC, even when combined with the lack of the household registration document, did not restrict household members from conducting their daily activities.

Of the households with at least one member without a NRC, 90 per cent reported that the absence of the NRC did not hinder access to government services, while 75 per cent reported that the absence of the NRC did not restrict travel. This question did not differentiate between long- and short-distance travel. The picture is less clear when it comes to the right to control land because 42 per cent of the household heads interviewed did not know if a person without a NRC can apply for land tenure. However, of the 1,102 household heads who answered the question with either 'yes' or 'no', 41 per cent reported that individuals without a NRC had encountered restrictions in applying for land tenure.

In assessing restrictions caused by the absence of a NRC, it is important to take into account the presence of a household registration document. Results from the PR II show that households that had at least one member without a NRC were also more likely to have no household registration document.
The data also showed that 75 per cent of the 370 households without a household registration document had at least one member without a NRC (figure 4.13). At the same time, 63 per cent of the 2,554 surveyed households with a household registration document reported at least one member without a NRC.

In terms of accessing government services, travelling freely and applying for land tenure, no differences were identified between households with or without the household registration document. This means that the presence or absence of the household registration document did not change the ability of its members to access government services, travel freely or apply for land tenure.

**Figure 4.13: Rights without a national registration card (NRC)**

| Don’t know | Travel without NRC | 8.58% |
| No | Buy land without NRC | 41.94% |
| Yes | Government services without NRC | 41.94% |

### 4.5: Chapter conclusion

Although protection issues are less visible and more difficult to identify compared with other humanitarian concerns during and after a natural disaster, they remain important in rehabilitation and recovery efforts.

The PR II results show that there was a higher incidence of women being offered work outside their villages in the townships surrounding the commercial centre of Yangon Division than in other parts of the cyclone-affected area. Violence against women that would be characterised as ‘sometimes’, or ‘often’, was reported in different areas across the affected region. There were areas with higher incidences reported in parts of Kungyangon, Kyauktan, Labutta, and Ngapudaw Townships. A high percentage of gender-based violence, where it was reported, was experienced in the home, followed by incidences when women travelled alone.

Issues specific to women that are rarely reported, such as gender-based violence, still remain a pressing issue in the disaster-stricken communities and need to be further analysed and addressed. Moreover, psychosocial needs arising from the direct impact of the cyclone as well as ongoing consequences of the losses experienced have to be further explored. There is a need to incorporate mental health and psychosocial support into the primary health care service. It is not enough to just replace pre-cyclone assets, tailored efforts must be employed to address the emergence of varying, but no less significant levels of distress.

The PR II provides an improved picture of children’s lives in the cyclone-affected area one year after the cyclone. The survey results show that the number of children orphaned by the cyclone may be less than originally expected, with 93 per cent of children in the surveyed households now living with one or both parents. The number of surveyed households headed by a child aged 18 or younger was also low. Of the 5,467 surveyed children aged 18 or younger, 15 per cent reported living in a household with only one parent, while 7 percent reported living in a household without both parents. The highest concentration of children living without their natural mother and/or father was found in Bogale and Labutta Townships. There remains a need to better understand the experiences
of children living in a household headed by a child, a woman, an elderly and/or disabled person, because they are more likely to experience vulnerabilities not previously identified nor addressed.

The vulnerable group of persons with a disability was found to be 3 per cent among the surveyed households. The highest geographical concentration of persons with disabilities was found in the townships of Labutta and Ngapudaw.

Overall, 87 per cent of households surveyed lived in the same compound that they lived in prior to the cyclone which indicates that most households in the affected area were no longer displaced. Of the remaining households surveyed, 4 per cent stayed in a village other than those they lived in before Cyclone Nargis, and 9 per cent remained in compounds other than their pre-cyclone abodes within their villages. These households that remained displaced were concentrated in Bogale, Labutta and Pyapon Townships, and are more likely to be vulnerable to the difficulties of integration. Of these, 53 per cent were without family members in the villages that they had moved to. Furthermore, households that had accepted family members who were displaced from other villages may have found their resources stretched to accommodate them. The highest geographical concentration of households living in a different compound after the cyclone was found in Labutta Township. The highest geographical concentration of displaced households living in a different village or ward after the cyclone, was found in Bogale Township. Almost 90 per cent of the households that had moved to another village intended to remain at their current location.

The PR II looked at land tenure and ownership in the cyclone-affected areas, but further efforts need to be undertaken in order to remove obstacles that may impede cyclone-affected households in pursuing long-term recovery and reintegration efforts in the coming years.
Figure 4.1: Women of all ages approached with an offer to work elsewhere

Legend

Mean: 6%

Gulf of Mattama (Gulf of Martaban)
Figure 4.3: Violence against women of all ages ‘sometimes’ or ‘often’
Figure 4.5: Children younger than 18 living without their natural mother and/or father
Figure 4.6: Disabled person in a household

Legend

- 0 %
- 4 %
- 8 %
- 12 %
- 16 %

Mean: 3 %

Bay of Bengal

Gulf of Martaban
Figure 4.7: Living in same compound as before Cyclone Nargis
Figure 4.8: Lived in different village/ward before Cyclone Nargis

Legend

0 % 10 % 20 % 25 %

Mean: 4 %

Gulf of Mattama (Gulf of Martaban)

Bay of Bengal
Figure 4.11: Currently without NRC

Legend

94%

Mean: 43 %

Gulf of Mattama (Gulf of Martaban)
Figure 4.12: Loss of a NRC since Cyclone Nargis

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\text{-86\%}
\end{array} \]

Legend

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\text{10\%} \\
\text{-86\%}
\end{array} \]

Mean: -13\%

Gulf of Mattama (Gulf of Martaban)

Miles

0 10 20

Bay of Bengal

Nargis Periodic Review II

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Chapter V: Annexes
CHAPTER 5: ANNEXES

5.1: CONTRIBUTING AGENCIES

[Image showing logos of various agencies]
5.2: **Methodology**

5.2.1 **Questionnaire and Interview Process**

The PR II questionnaire includes revisions and additions to the original PR I survey instrument, in response to changes in the situation of the emergency response and recovery phase between PR I and PR II. For example, the questions related to loss of fish and crab ponds have been omitted, whereas questions related to shelter and access to reproductive health services were added as these are more relevant to the recovery phase. In addition some questions were modified if they were not obtaining the required information, and on advice from expert partners in the feedback sessions that were part of the multi-sectoral consultative process.

The design and the content of the PR I questionnaire was limited in the choice of the thematic areas to be covered and inclusion of specific topic/questions. For example, the first Periodic Review focused attention on immediate issues prioritized for the post recovery period such as WASH, shelter, health, livelihoods, and covered in less detail areas such as migration, education, protection. The complete questionnaire can be found in annex 5.3.

A total of 95 enumerators visited cyclone-affected areas represented by a total of 105 hexagons on the map. After checking correct geographic positions of villages using GPS, meeting with village leaders, and selecting households for surveying, enumerators conducted interviews with various household members according to their suitability for answering the different modules of the questionnaire. Each interview lasted one hour on average.

5.2.2 **Survey Design**

The target population is the population living in areas affected by Cyclone Nargis in Ayeyarwady and Yangon Divisions. The term ‘affected’ was defined as the loss of life and/or property that had an impact on the livelihood of the individual, family or community. The sampling area, defined as the townships worst affected by the cyclone, has been divided into equal-sized areas which do not overlap using a hexagonal lattice (see figure 5.1).

**Figure 5.1: The sampling area of townships worst affected by the cyclone, divided into equal-sized areas which do not overlap, using a hexagonal lattice**
The Periodic Review used a two-stage sampling design in which the primary sampling units were communities sampled from the cyclone affected area, and the secondary sampling units were households within selected primary sampling units.

Primary sampling units were selected using Centric Systematic Area Sampling (CSAS) which divides the survey area into non-overlapping and equal areas and sampling the community located closest to the centre of each area. The advantage of this method is that it provides spatiality and not only sampling. The size of the hexagonal tiles used was determined by consideration of the need for spatial detail and a practicable number of primary sampling units.

The community nearest to the center of each hexagon was chosen by examining images taken after the cyclone (see figure 5.2). Using this area-based sampling method, 105 communities were chosen in the first stage. In each of these communities, 25 to 30 households were selected in the second stage using a representative random sampling method based on rapid community mapping that was conducted jointly with local community members. In each of these selected households, the enumerators used a questionnaire designed to provide indicators covering a wide range of areas such as health, agriculture, livelihoods, and education. In each of the households, respondents were in turn chosen with respect to their suitability for answering different sets of questions – for example, questions concerning reproductive health were directed only to women and questions on livelihoods to heads of households.

This area-based sampling approach differs from population-based sampling methods that give each person in the survey area an equal chance of being surveyed. The reasons for this approach are as follows: first, a complete list of villages was not available – the grid-based sampling approach also includes villages not included in the list; secondly, the area-based sampling approach is not biased towards towns and more populated areas like the traditional population-based approaches; thirdly area-based sampling method better accounts for spatial heterogeneity which is particularly the case in post-disaster situations where areas vary significantly with respect to the different types of needs of households as well as relief efforts by agencies. Moreover, the hexagonal sampling method allows for the presentation of results using an easy-to-understand map format.
5.2.3 Data Management

The PR II assessment tools were developed to meet the needs of the enumerators carrying out the household surveys in the field, data checkers to verify data collection in the field, and data entry operators. The PR II team developed an Adobe Acrobat tool in English which was later translated to Myanmar language. This Adobe PDF Forms tool was printed and used to collect household information in hard copy by ticking boxes according to answers to minimize data validation mistakes for the majority of questionnaire answers. The new tool was piloted to test format, speed and accuracy of the survey process. The new format proved to be invaluable allowing for double data validation during the collection process, providing 100 per cent validation to the Analysis Team two days after data collection was completed.

Using Adobe Acrobat PDF Forms the PR II team was able to implement a single template that allowed data collection to take under one hour per household, and allowing data operators to enter data in just over 40 minutes into a digital format that was saved in as an XML document. The XML document was then loaded to a Microsoft Access data base, allowing the Analysis Team to start developing preliminary results while data collection was still under way. The data was finally stored in a Microsoft Access 2003 data base.

5.2.4 Mapping area-based estimates

The overall sample size was 2,931 households including a total of 14,429 household members. This sample sizes allows overall estimates of proportions to be made with high precision (within less than ± 4 per cent). Apart from overall estimates, the method of data analysis and presentation employed by the Periodic Review involved the use of choropleth maps, which are thematic maps in which areas are shaded in proportion to the displayed estimates.

The coloured regions on these maps were created using Delaunay Triangulation. The raw data for each of these regions consists of the community-level estimates from the three primary sampling units located at the vertices of each triangular region. Using this method, the actual sample size for each of these regions ranged between 60 and 90 households, depending on the specific indicator. Indicators based on rare cases such as births since Cyclone Nargis are not represented using maps because the sample size for each region combining the data from three communities is too small to provide reliable estimates.

In PR II, like PR I, geospatial interpolation was used to predict unknown values of the Myanmar Delta area affected by Cyclone Nargis for all spatial representations using a limited number of survey sample points. The patterns that emerged into visual products convey the questions and resulting numbers to a clear visual interpretation of the current and past situation.

Kriging was used, which is a geostatistical method based on statistical models that include autocorrelation. Due to this, not only does this method have the capability of producing a prediction surface, but it can also provide some measure of the certainty or accuracy of the predictions.

To make a prediction with Kriging, two tasks are necessary, the first to uncover the dependency rules and the second to make the predictions. To realise these two tasks, Kriging goes through a two-step process; i. variograms and covariance functions are created to estimate the spatial dependence, called spatial autocorrelation values, which depends on the fitted autocorrelation model; and ii. prediction of unknown values are made. Fitting a complete model, or spatial modeling, is also known as structural analysis, or variography.

In spatial modeling of the structure of the measured points, the starting point is a graph of the empirical semivariogram for all paired locations separated by distance. Figure 5.3 shows the paring of one point in red with all the other measured locations. This process continues for each measured point. Spatial autocorrelation quantifies a basic principle of geography: things that are closer together are more alike than things further apart. Thus, pairs of locations that are closer should have more similar values. As pairs of locations become further apart, they should become more dissimilar.
In PR II the closest 6 locations were used to develop pairings. The formula then involves calculating the differences squared between the values of the paired locations.

Figure 5.3: Kriging Pairing Measured Locations
5.3: **QUESTIONNAIRE**

Periodic Review (Round 2)  
Village-Level Questionnaire  
GPS Collection and Village Level Data

Name of Supervisor: __________________________

ID of Supervisor: __________________________

HEXAGON number: __________________________

Township: __________________________

Village Tract: __________________________

Village Name/Ward: __________________________

Village Population: __________________________

Number of households interviewed: __________________________

Number of households refused: __________________________

Number of households absent: __________________________

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____ of _______ Questionnaires
Periodic Review (Round 2)
Household Questionnaire

HEX number: 

House number: 

Village/Ward Name: 

Date of interview DD-MM-YYYY: 

Beginning of interview HH:MM: 

End of interview HH:MM: 

ID of enumerator: 

Name of enumerator: 

ID of Supervisor: 

Name of Supervisor: 

Signature of Supervisor: 

What was the outcome of the interview?  
[ ] Completed Interview  
[ ] Partial/incomplete interview

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<tr>
<td>10) Niece/Nephew</td>
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<tr>
<td>11) Other Relative</td>
<td></td>
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<tr>
<td>12) Not Related</td>
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<tr>
<td>999) Don't Know</td>
<td></td>
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</tr>
<tr>
<td>1) Does [name] have an NRC card?</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2) Does [NAME] have a disability?</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3) Sex</td>
<td>Male</td>
<td>Female</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4) Natural Father ID CODE</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>5) Natural Mother ID CODE</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6) Does [NAME] have a disability?</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7) Record [NAME] marital status?</td>
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</tr>
<tr>
<td>8) Does [NAME] have a disability?</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9) Record [NAME] marital status?</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>10) What is the main activity that [NAME] does now?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11) What was the main activity that [NAME] did before Nargis?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>12) Pick number from list in question 10</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13) List all children 15 years or younger</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Start with all adults over 15 years old currently living in the household. Then list those who are temporarily out of the house.
### Carers of Children →

<table>
<thead>
<tr>
<th>Children 6 months old or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
</tr>
<tr>
<td><strong>Enter Respondent ID</strong></td>
</tr>
<tr>
<td>Is [NAME] currently being breastfed?</td>
</tr>
<tr>
<td>14.1) Solid or semi-solid foods?</td>
</tr>
<tr>
<td>14.2) Any other liquids?</td>
</tr>
<tr>
<td><strong>Within 24 hours, did [NAME] receive any of the following?</strong></td>
</tr>
<tr>
<td>Measured the child’s mid upper arm circumference on the left arm</td>
</tr>
<tr>
<td>Determine if the child’s height (or length) is between the two marks</td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>Has [NAME] experienced diarrhoea during the last 14 days?</strong></td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>Measles injection?</strong></td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>Diarrhoea</strong></td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>Choose up to three methods</strong></td>
</tr>
<tr>
<td>1st</td>
</tr>
<tr>
<td>1) Increased food or drink given to child</td>
</tr>
<tr>
<td>2) Reduced food or liquid given to child</td>
</tr>
<tr>
<td>3) Gave special foods to child</td>
</tr>
<tr>
<td>4) Oral rehydration therapy</td>
</tr>
<tr>
<td>5) Reduce or stop breastfeeding</td>
</tr>
</tbody>
</table>

### Children who are sufficient height or length

<table>
<thead>
<tr>
<th>Children who are sufficient height or length (65 to 110 centimeters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
</tr>
<tr>
<td><strong>How did you treat [NAME]’s diarrhoea?</strong></td>
</tr>
<tr>
<td>1) Increased food or drink given to child</td>
</tr>
<tr>
<td>2) Reduced food or liquid given to child</td>
</tr>
<tr>
<td>3) Gave special foods to child</td>
</tr>
<tr>
<td>4) Oral rehydration therapy</td>
</tr>
<tr>
<td>5) Reduce or stop breastfeeding</td>
</tr>
<tr>
<td>6) Home remedy</td>
</tr>
<tr>
<td>7) No treatment</td>
</tr>
<tr>
<td><strong>Choose Other</strong></td>
</tr>
<tr>
<td><strong>Measles injection?</strong></td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>Diarrhoea</strong></td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>Choose up to three methods</strong></td>
</tr>
<tr>
<td>1st</td>
</tr>
<tr>
<td>1) Increased food or drink given to child</td>
</tr>
<tr>
<td>2) Reduced food or liquid given to child</td>
</tr>
<tr>
<td>3) Gave special foods to child</td>
</tr>
<tr>
<td>4) Oral rehydration therapy</td>
</tr>
<tr>
<td>5) Reduce or stop breastfeeding</td>
</tr>
<tr>
<td>6) Home remedy</td>
</tr>
<tr>
<td>7) No treatment</td>
</tr>
<tr>
<td><strong>Choose Other</strong></td>
</tr>
</tbody>
</table>

### Children 5 to 15 years old

<table>
<thead>
<tr>
<th>Children 5 to 15 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
</tr>
<tr>
<td><strong>What is the main reason that [NAME] does not attend school?</strong></td>
</tr>
<tr>
<td>1) Child not interested</td>
</tr>
<tr>
<td>2) Parents not interested</td>
</tr>
<tr>
<td>3) Education costs</td>
</tr>
<tr>
<td>4) Required to work</td>
</tr>
<tr>
<td>5) Child is sick/disabled</td>
</tr>
<tr>
<td>6) Child’s looks after others in household</td>
</tr>
<tr>
<td>7) School too far away</td>
</tr>
<tr>
<td>8) No school</td>
</tr>
<tr>
<td>9) No teacher</td>
</tr>
<tr>
<td><strong>Choose Other</strong></td>
</tr>
<tr>
<td><strong>If [NAME] attends school?</strong></td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>If no, did [NAME] attend school before Nargis?</strong></td>
</tr>
<tr>
<td>Yes = 1</td>
</tr>
<tr>
<td><strong>If yes, what class does [NAME] attend?</strong></td>
</tr>
<tr>
<td>1) Textbooks</td>
</tr>
<tr>
<td>2) Exercise books</td>
</tr>
<tr>
<td>3) Writing</td>
</tr>
<tr>
<td>4) Supplies and stationery</td>
</tr>
<tr>
<td>5) Uniform</td>
</tr>
<tr>
<td>6) School bag</td>
</tr>
<tr>
<td>7) Pocket money</td>
</tr>
<tr>
<td>8) Transportation cost</td>
</tr>
<tr>
<td>9) School lunch</td>
</tr>
<tr>
<td>10) Tutoring cost</td>
</tr>
</tbody>
</table>

---

*Post-Nargis Periodic Review II*
I) QUESTIONS TO HEAD OF HOUSEHOLD

28) Head of Household Respondent ID

**FOOD:** I would now like to ask you a few questions about food.

29) Please tell me how many days in the past 7 days you or any member of your household ate the following foods?

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Examples</th>
<th>Check the number of days</th>
</tr>
</thead>
<tbody>
<tr>
<td>RICE</td>
<td>bread, noodles, any other foods from millet, sorghum, maize, wheat</td>
<td></td>
</tr>
<tr>
<td>CEREALS</td>
<td>pumpkin, carrots, squash, sweet potato, broccoli</td>
<td></td>
</tr>
<tr>
<td>VITAMIN A RICH VEGETABLES AND TUBER</td>
<td>white potatoes, kohlrabi, arrowroot, cassava (tapioca), yams, radishes</td>
<td></td>
</tr>
<tr>
<td>WHITE TUBERS AND ROOTS</td>
<td>amaranth, mustard greens, chinese kale, pickle tea leaves</td>
<td></td>
</tr>
<tr>
<td>OTHER VEGETABLES</td>
<td>tomatoes, cucumber, lettuce, onion, cabbage, green herbs, red beet, and other vegetables including wild ones</td>
<td></td>
</tr>
<tr>
<td>VITAMIN A RICH FRUITS</td>
<td>watermelon, peaches, apricots, oranges, papaya, mango</td>
<td></td>
</tr>
<tr>
<td>OTHER FRUITS AND DRIED FRUITS</td>
<td>pomelo, mangosteen, apples, banana</td>
<td></td>
</tr>
<tr>
<td>FLESH MEATS</td>
<td>beef, pork, lamb, goat, rabbit, wild game</td>
<td></td>
</tr>
<tr>
<td>ORGAN MEATS</td>
<td>liver, kidney, heart, or other organ meats or blood-based foods</td>
<td></td>
</tr>
<tr>
<td>EGGS</td>
<td>eggs</td>
<td></td>
</tr>
<tr>
<td>POULTRY</td>
<td>poultry</td>
<td></td>
</tr>
<tr>
<td>FISH</td>
<td>fresh or dried fish or shellfish, prawns, shrimp</td>
<td></td>
</tr>
<tr>
<td>LEGUMES, NUTS, SEEDS</td>
<td>beans, peas, lentils, chickpeas, grams, cashew, groundnuts, nuts, seeds, or foods made from these</td>
<td></td>
</tr>
<tr>
<td>MILK AND MILK PRODUCTS</td>
<td>butter, yogurt, ice cream and other products made with milk</td>
<td></td>
</tr>
<tr>
<td>OILS &amp; FATS</td>
<td>oils (palm oil, peanut oil), fats, or butter added to food or used for cooking</td>
<td></td>
</tr>
<tr>
<td>SWEETS</td>
<td>sugar, sugar cane, jaggery, honey, sweetened soda or sugary foods such as chocolates, sweets or candies</td>
<td></td>
</tr>
<tr>
<td>SPICES, CONDIMENTS</td>
<td>spices (black pepper, salt, chili), condiments (soy sauce, hot sauce)</td>
<td></td>
</tr>
<tr>
<td>BEVERAGES</td>
<td>coffee, tea, soft drinks, alcoholic beverages</td>
<td></td>
</tr>
</tbody>
</table>

Check the number of days

0 1 2 3 4 5 6 7

Examples
30) In the past 7 days, on average, how many meals did your household eat each day?

Number of meals per day

31) In the past 7 days, did you have enough food for your household?

Yes >> 34  No

32) How often did you not have enough food in the last 7 days?

(1-3 Days)  -TICK ONE
(4-6 Days)
Every day

33) How often did you do the following when your household did not have enough food during the last 7 days?

-TICK ONE FOR EACH LINE

<table>
<thead>
<tr>
<th>Choice</th>
<th>Never</th>
<th>1-3 days</th>
<th>4-6 days</th>
<th>Every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHOSE LESS EXPENSIVE FOOD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHOSE FOOD THAT YOU USUALLY DO NOT EAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAT FEWER MEALS PER DAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BORROWING FOOD OR BUYING FOOD ON CREDIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GOT SUPPORT FROM FRIENDS AND RELATIVES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOME MEMBERS OF HOUSEHOLD WENT WITHOUT MEALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

34) What are the 3 most important sources of food for your household during the last 7 days?

DO NOT READ THE LIST.

1. Own production
2. Gift from family
3. Purchases
4. Borrow/credit/advance (money)
5. Pre-harvest advance (food)
6. Exchange items for food
7. Exchange work for food (not food aid)
8. Food for work
888. Other: Specify

35) In the past 30 days approximately what share of your total expenditure has been on food?

-Use the 10 stones or beans to calculate this

%
WASH: I would now like to ask you a few questions about water and sanitation.

36) What is the main source of drinking water for your dwelling?
   1. PIPED WATER INTO DWELLING
   2. PIPED WATER TO YARD/PLOT
   3. PUBLIC TAP/STANPIPE
   4. TUBEWELL/BOREHOLE
   5. PROTECTED DUG WELL
   6. UNPROTECTED DUG WELL
   7. PROTECTED SPRING
   8. UNPROTECTED SPRING
   9. RAINWATER COLLECTION
   10. BOTTLED WATER
   11. CART WITH SMALL TANK/DRUM
   12. TANKER TRUCK
   13. SURFACE WATER
   14. OTHER: Specify __________________________

   Dry Season  Rainy Season
   [ ] [ ]

37) How many equivalent bottles of drinking water does your household have per person each day?
   Show 1 Liter Bottle
   Dry Season  Rainy Season
   [ ] Less than 3  [ ] Less than 3
   [ ] 3 or more  [ ] 3 or more
   [ ] Don't know  [ ] Don't know

38) Is the drinking water source within the compound?
   Dry Season  Rainy Season
   [ ] Yes >>41  [ ] No

39) How long does it take to go there, get water and come back?
   Dry Season  Rainy Season
   [ ] Number of Minutes  [ ] Number of Minutes

40) Who in your household has the main responsibility for fetching the water used for your household?
   [ ] ID CODE - Select ID from Household Roster

41) If you purchase water (have to buy drinking water), how much do you spend per week? - TICK ONE
   [ ] < 1000 kyat  [ ] Do not buy water
   [ ] 1000 - 2000 kyat  [ ] Don't Know
   [ ] > 2000 kyat
42) Do you treat your water in any way to make it safer to drink?
   □ Yes        □ No >> 44

43) Which of these methods do you use to make the water safer for drinking?
   -TICK ALL THAT APPLY
   □ BOIL
   □ ADD BLEACH/CHLORINE
   □ ADD WATER GUARD
   □ STRAIN IT THROUGH A CLOTH
   □ USE WATER FILTER (CERAMIC, EARTHEN POT, SAND, ETC)
   □ SOLAR DISINFECTION
   □ LET IT STAND AND SETTLE
   □ ALUM
   □ OTHER: Specify
   □ DON'T KNOW

44) What kind, and how many, types of storage containers does your household have to store water?

<table>
<thead>
<tr>
<th>Type</th>
<th>How many does the household have?</th>
<th>How many gallons can it/they store in total?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pots (Clay, Ceramic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buckets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jerry cans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water tanks from NGOs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: Specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

45) Do you have animals?
   □ Yes        □ No >> 47

46) Do you have enough drinking water for the animals in your household?
   □ Yes        □ No

47) What kind of toilet facilities are in your dwelling?
   -TICK ONE
   Flush/pour flush to:
   □ Piped sewer system
   □ Septic tank
   □ Pit latrine
   □ Elsewhere
   □ Unknown place/not sure/don't know
   □ Ventilated improved pit latrine (VIP)
   □ Pit latrine with slab
   □ Pit latrine without slab/open pit
   □ Composting toilet
   □ Bucket
   □ Hanging toilet/hanging latrine
   □ No facilities or bush or field >> 50
   □ Other: Specify
48) Do you share this facility with other households?

☐ Yes  ☐ No >> 50

49) How many other households share this toilet?

☐ Number of Households

50) If there is a child under 5 in the household, the last time your youngest child passed stools, what was done to dispose of the stools?

☐ CHILD USED TOILET/LATRINE
☐ PUT/RINSED INTO TOILET OR LATRINE
☐ PUT/RINSED INTO DRAIN OR DITCH
☐ THROWN INTO GARBAGE
☐ BURIED
☐ LEFT IN OPEN
☐ OTHER: Specify __________________________
☐ DON'T KNOW
☐ NO CHILDREN UNDER 5 IN HOUSEHOLD

51) What methods do you use to dispose of solid waste in your household?

1. BURN
2. BURY IN YARD
3. COMPOST
4. SCAVENGERS COLLECT
5. NEIGHBOURHOOD WASTE COLLECTION & LOCAL DISPOSAL
6. THROW IN OWN YARD
7. THROW IN THE STREET
8. THROW IN RIVER/STREAM
9. OTHER: Specify __________________________

52) Is there soap in the household?

☐ Yes  ☐ No >>54  ☐ Don’t Know

53) Does the person who cooks the meals for the household wash his/her hands with soap before preparing the food?

☐ Yes  ☐ No  ☐ Don’t Know
HEALTH: I would now like to ask you a few questions about health.

54) How long does it take you to travel to the nearest health post/clinic?

Number of minutes
If don't know, write "999"

55) Are there official health care personnel available in the nearest health post/clinic?

- All of the time
- Most of the time
- Some of the time
- Never
- Don't know

56) How often are medicines and drugs available at the nearest health post/clinic?

- All of the time
- Most of the time
- Some of the time
- Never
- Don't know

57) Since Nargis, how many times did you go to a health post/clinic for your own treatment?

Number of times
If more than 0, >>59

58) What are the main reasons you did not use the health post/clinic?

DO NOT READ OUT LIST
-TICK UP TO THREE
- Too far away
- Wait time to see personnel too long
- Usually no medicines available
- Facility not open every day
- Facility not clean
- Facility has no equipment
- Have to pay too much for the services
- Prefer to use a traditional healer
- Use our own remedies for health problems
- Due to a disability
- No household registration
- No NRC
- No Medical Staff
- Denied treatment (age limitation)
- I feel healthy / no need
- Other Specify: __________________________
SHELTER: I would now like to ask you a few questions about your shelter.

59) What is the major construction material of the external walls?  
   - Sticks and thatch  
   - Bamboo and palm leaves  
   - Tarpaulin/polytarp  
   - Wattle and daub  
   - Wood  
   - Bricks/blocks/concrete  
   - Tin/Zinc  
   - Mud  
   - Bamboo  
   - Canvas, felt  
   - Other: Specify: ____________________________

60) What is the major material of the roof?  
   - Sticks and thatch  
   - Bamboo and palm leaves  
   - Dhani  
   - Tarpaulin/polytarp  
   - Solid wood  
   - Tiles  
   - Shingles  
   - Metal, tin or CGI  
   - Asbestos  
   - Plastic sheeting  
   - Other: Specify: ____________________________

61) Does the current dwelling have any of the following features?  
   - Dwelling built on raised ground  
   - A wind break of trees or other plants  
   - Shorter side of the dwelling faces windward direction  
   - Single pitch  
   - Double pitch  
   - Hip roof  
   - Water tight roof able to harvest rainwater

62) Size of the house (floor space protected from rain where people can sit or sleep)  
   Length in feet: ___  
   Width in feet: ___  
   Measure length and then width

63) Number of people sleeping in this house, on average during the past 14 days  
   ___
64) Do you live in the same dwelling or compound that you lived in prior to Nargis?
   □ Yes  □ No

65) After Nargis, what was the state of your house?
   □ Completely destroyed
   □ Severely damaged
   □ Minor damaged
   □ No damage

66) Have you repaired/rebuilt your current house since Nargis?
   □ Fully repaired
   □ Almost fully repaired
   □ Partially repaired
   □ Not repaired

67) What is the main problem you are still facing when repairing?
   - TICK UP TO TWO
     □ Lack of material  □ Lack of cash
     □ Lack of technical skills  □ Rainy season
     □ Lack of workers  □ Other
   Specify: _______________________

68) Is your current house hotter than before Nargis?
   □ Yes  □ No  □ Don't Know

69) During the rainy season is your current house wetter than before Nargis?
   □ Yes  □ No  □ Don't Know

70) Is your current house more crowded than before Nargis?
   □ Yes  □ No

71) Do you consider your current shelter as safe against rain, wind, or surge?
   □ Yes  □ No  □ Don't Know

72) If no, is there a building within 1/2 mile that you consider as safe against rain, wind or surge?
   □ Yes  □ No  □ Don't Know

73) If yes, what type?
   □ Monastery
   □ Public Building
   □ School
   □ Stronger house in the community
   □ Other Specify: _______________________

**GOODS AND NEEDS:** I would now like to ask you a few questions about items in your household.

<table>
<thead>
<tr>
<th>Durable Goods</th>
<th>Does anyone in your household own the following goods?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Read Entire List</strong></td>
<td></td>
</tr>
<tr>
<td>Bed</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Blankets, bedding</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Table</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Chair</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Fan</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Radio</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Television</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Sewing machine</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Stove</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Bicycle</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Vehicle (Car, tractor, etc)</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Motorized boat</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Boats without motors</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Fishing gear</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Clock</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Wheelbarrow</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Hoe</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Agricultural Machinery</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Axe</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Dishes/eating utensils</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Cooking utensils</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Thresher</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Water pump</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Rice mill</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Power tiller</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Draught animal tilling equipment</td>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>Water containers</td>
<td>☐ Yes ☐ No</td>
</tr>
</tbody>
</table>
75) Has anyone in this household received relief items since Nargis?

☐ Yes  ☐ No >> 77

76) What kinds of relief items has your household received?

DO NOT READ THE LIST. LET THE RESPONDENT SAY WHAT HAS BEEN RECEIVED

-TICK ALL THAT APPLY

☐ Water
☐ Shelter/housing materials
☐ Bednets
☐ Blankets
☐ Soap/hygiene kit
☐ Jerry can/bucket/water container of any type
☐ Clothes
☐ Personal items
☐ Fuel
☐ Medicine
☐ Dignity Kits
☐ Animal feed/supplements/drugs/vaccines
☐ Boats
☐ Boat Engines
☐ Fishing gears
☐ Water purification items (water guard or tablets)
☐ Latrine construction material (latrine pans)
☐ Health and hygiene message
☐ Agricultural chemicals/fertilizer
☐ Seeds
☐ Agricultural equipment
☐ Draught animals
☐ Pig
☐ Poultry
☐ Construction tools
☐ Household items
☐ Student kits/learning packs
☐ Food
☐ Special assistance to a person with a disability (for example: wheelchair, physical treatment, house adaptation)
☐ Other Specify: ____________________________________
77) What are the three most important needs that your household has today?
Do not read out the list.

0. Don't need anything
1. Bed
2. Blanket, bedding
3. Table
4. Chair
5. Dishes/eating utensils
6. Cooking utensils
7. Stove
8. Refrigerator
9. Clock
10. Fan
11. Radio
12. Employment
13. Sewing machine
14. Bicycle
15. Motorcycle
16. Vehicles (car, truck, ...)
17. Seeds
18. Power tiller
19. Thresher
20. Water pump
21. Draught animals (buffalo or cattle)
22. Draught animal tilling equipment
23. Pigs
24. Poultry
25. Animal feed and fodder
26. Animal drugs, vaccines or healthcare
27. Boat
28. Boat engine
29. Fishing gear (nets, crab traps, etc.)
30. Fish processing equipment (cutting boards, buckets, knives, etc.)
31. Wheelbarrow
32. Hoe
33. Axe
34. Land
35. House - repair
36. House - rebuild
37. Cash grant
38. Water
39. Pesticide & insecticide
40. Food (rice, ...)
41. Fertilizer
42. Clothes
43. Land
44. Cash grant
45. Water
46. Food (rice, ...)
47. Fertilizer
48. Clothes
49. Land
50. Cash grant
51. Water
52. Food (rice, ...)
53. Fertilizer
54. Clothes

Specify: ________________________________

888. Other
LIVELIHOOD: I would now like to ask you a few questions about livelihoods.

78) What are the three main sources of income for the household at this time?

79) What are the three main sources of income for the household before Nargis?

(Do not read the list)

1. Fishing
2. Crops
3. Livestock
4. Aquaculture (shrimp, prawn, crabs, etc)
5. Rent or lease of property
6. Salt production
7. Government employee
8. Private sector employee
9. Casual labour (paid daily)
10. Agriculture and fishing labour
11. Group labour (boss or member)
12. Trader/shopkeeper/village broker
13. Remittances
14. Self-employed/craftsman/artisan
15. Bar girl/massage/karaoke/entertainment
16. Savings
17. Borrowing (not microfinance) with collateral
18. Borrowing (not microfinance) without collateral
19. Microfinance initiative
20. Charcoal (manufacture & sale)/firewood
21. Forestry
22. Gifts/family
23. Pawning of assets
24. Sale of assets

888. Other Specify: __________________________
80) Does your household have a home garden now or did it have one before Nargis?

- Yes
- No >> 82

81) What is the change in size of your home garden since Nargis?

- Smaller
- Same
- Larger

82) Is anyone in your household able to cultivate crops now or was anyone able to cultivate crops before Nargis?

- Yes
- No >> 83

<table>
<thead>
<tr>
<th>Cultivated Crops</th>
<th>How many acres did you cultivate in [CROP] this season or do you plan to cultivate?</th>
<th>How many acres did you cultivate in [CROP] before Nargis?</th>
<th>If there was a reduction in acres cultivated, what is the main reason for the reduction?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monsoon paddy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer paddy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil crops (sunflower, sesame, etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit trees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (corn, betel leaf, etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


83) Do you have any livestock now or did you have livestock before Nargis?

- Yes
- No >> 84

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Before Nargis</th>
<th>At Present</th>
<th>If there is a reduction in the number of [ANIMAL], what is the main reason for the reduction?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chickens (Quails)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ducks, geese, mun-dar-lee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk cows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buffalo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pigs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reduction List: (1) Animals died, (2) Animals sold, (3) Animals eaten, (4) Animal disease or depression, (5) Lost, (6) Lack of feed, (888) Other Specify: ___________________________
84) Do you have any fishing equipment (boats or gear) now or did you have any before Nargis?

☐ Yes  ☐ No >> 85

<table>
<thead>
<tr>
<th>Fishing Equipment</th>
<th>How many [ITEM] do you have now?</th>
<th>How many [ITEM] did you have before Nargis?</th>
<th>If there is a reduction in [ITEM], what is the main reason for the reduction?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offshore vessels (ocean going over 15 miles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inshore vessels (ocean going under 15 miles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inland boat without motor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inland boat with motor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing gear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish processing equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reduction (1) Lost, (2) Sold, (3) Loaned to someone, (4) Damaged/ needs repair , (888) Other Specify: __________

85) What is the main source of fuel for cooking used by your household?

1. Fire Wood  
2. Charcoal  
3. Rice husk  
4. Saw dust  
5. Electricity  
888. Other Specify: __________

86) What are your main sources of forest products for your household, like poles, posts, roofing material?

-TICK ALL THAT APPLY
**MIGRATION & REGISTRATION:** I would now like to ask you a few questions about migration and registration.

87) Did your household live in this village/ward before Nargis?
   □ Yes >>92  □ No

88) Since Nargis, in how many different villages have you lived?
   □ Number

89) How long have you lived here in this village/ward?
   □ Number of Months

90) What are some reasons that you came to this village/community
   -TICK ALL THAT APPLY
   □ Shelter  □ Family in this village
   □ Work  □ Asked to leave the last place where I lived
   □ Food  □ Other Specify: ____________________________
   □ Water  □ Don't know
   □ Scared of another cyclone/feel safer in this village

91) Do you want to:
   □ Stay in this village/ward
   □ Return to the place I lived before Nargis
   □ Move to a new place

92) At this present time, do you have a permanent household registration document?
   □ Yes  □ No

93) At this present time, is there any person in your household without an NRC card?
   □ Yes
   □ No >> 97

94) Has this person been able to travel without the NRC card?
   □ Yes  □ No  □ Don't know

95) Has this person been able to access government services such as health or school without the NRC card?
   □ Yes  □ No  □ Don't know

96) Has this person been able to buy or apply for ownership of land for housing without the NRC card?
   □ Yes  □ No  □ Don't know

97) What is the main language spoken in the household?
   1. Kachin
   2. Kayah  □ Main Language
   3. Kayin
   4. Chin
   5. Bamar
   6. Mon
   7. Rakhine
   8. Shan
   888. Other Specify: ____________________________
II) QUESTIONS TO WOMEN

Please ask questions to the mother of the youngest child in the household. If not available, please ask questions to any woman with children. If no children, please ask questions to a woman over the age of 15 in the household.

98) Result of women's interview:
- Completed Interview
- Partial/incomplete interview
- Refusal

99) Woman's ID

100) Has any woman/girl in this household given birth since cyclone Nargis?
- Yes
- No >>108

101) If yes, what was the age of the woman/girl?

Years old

102) Who assisted with the delivery?

-TICK ALL THAT APPLY

Health Professional
- Doctor
- Lady Health Visitor/Health assistant
- Nurse/midwife

Other person
- Auxiliary midwife
- Traditional birth attendant
- Community health worker
- Relative/friend
- Other: Specify: 

No one
- Don't know
103) Where did this birth occur?
- TICK ONE

Home
- Your home
- Other home

Public Sector
- Government hospital
- Government clinic/health center
- MCWA maternity clinic
- Other public: Specify: __________________________

Private Medical Sector
- Private hospital
- Private clinic
- Private maternity home
- Other Specify: __________________________

104) Is the child still alive?
- Yes
- No >>106

105) In the 4 to 6 weeks after the birth, did any health care provider or a traditional birth attendant check on the child's health?
- Yes
- No

106) Is the mother still alive?
- Yes
- No >>108

107) In the 4 to 6 weeks after the birth, who checked on the mother's health at that time?
- TICK ALL THAT APPLY

Health Professional
- Doctor
- Lady Health Visitor/Health assistant
- Nurse/midwife

Other person
- Auxiliary midwife
- Traditional birth attendant
- Community health worker
- Relative/friend
- Other: Specify: __________________________
- No one
- Don't know
108) Have any women in your village been approached about earning money in another location?
- Yes
- No >> 110

109) For what type of work are these women approached?
- Factory work
- Domestic work
- Casual labor
- Farming
- Karaoke/ massage parlor
- Other Specify ________________________________
- Don't know

110) Do acts of violence against women of all ages occur in your village?
- Often
- Sometimes
- Rarely
- Never
- Don't know

111) Where would acts of violence against girls and women of all ages in your village be most likely to occur (can tick up to 3)?
- In the home
- In the market
- While collecting firewood
- While collecting water
- While fishing
- While travelling alone
- While at work outside the home
- Other Specify ________________________________
- Don't know
### 5.4 List of Affected Townships

<table>
<thead>
<tr>
<th>Division</th>
<th>P-code</th>
<th>Township</th>
<th>No of Village Tracts</th>
<th>No of Villages</th>
<th>Population Before Nargis</th>
<th>Deaths+Missings Before Nargis</th>
<th>Male Before Nargis</th>
<th>Current (Dec 08) Male</th>
<th>Female Before Nargis</th>
<th>Deaths+Missings Female Before Nargis</th>
<th>Male After Nargis</th>
<th>Current (Dec 08) Male</th>
<th>Female After Nargis</th>
<th>Deaths+Missings Female After Nargis</th>
<th>Male Current (Dec 08)</th>
<th>Current (Dec 08) Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Bogale</strong></td>
<td><strong>MMR017024</strong></td>
<td>71</td>
<td>589</td>
<td>285,909</td>
<td>-</td>
<td>249,584</td>
<td>349,427</td>
<td>145,685</td>
<td>-</td>
<td>127,643</td>
<td>173,811</td>
<td>-</td>
<td>140,224</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Kyakktar</strong></td>
<td><strong>MMR017025</strong></td>
<td>87</td>
<td>438</td>
<td>177,539</td>
<td>-</td>
<td>196,406</td>
<td>90,238</td>
<td>-</td>
<td>-</td>
<td>99,940</td>
<td>87,101</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Labutta</strong></td>
<td><strong>MMR017016</strong></td>
<td>115</td>
<td>684</td>
<td>394,553</td>
<td>84,454</td>
<td>-</td>
<td>310,099</td>
<td>198,665</td>
<td>47,901</td>
<td>-</td>
<td>150,764</td>
<td>195,888</td>
<td>36,553</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Maubin</strong></td>
<td><strong>MMR017019</strong></td>
<td>76</td>
<td>470</td>
<td>397,421</td>
<td>-</td>
<td>309,921</td>
<td>200,489</td>
<td>-</td>
<td>-</td>
<td>158,597</td>
<td>196,932</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Mawlamyinegyun</strong></td>
<td><strong>MMR017018</strong></td>
<td>108</td>
<td>(Incl. 7 add. from Labutta TS)</td>
<td>632</td>
<td>(Incl. 57 add. from Labutta TS)</td>
<td>267,989</td>
<td>5039+776 =5815</td>
<td>-</td>
<td>256872 (+ 31142 to add from Labutta 7 VTs)</td>
<td>135,809</td>
<td>3,366</td>
<td>-</td>
<td>129972 (+ 15099 to add from Labutta 7 VTs)</td>
<td>132,180</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Myaungmya</strong></td>
<td><strong>MMR017014</strong></td>
<td>98+16</td>
<td>(Urban wards)</td>
<td>469</td>
<td>-</td>
<td>282,388</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>144,157</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Ngapudaw</strong></td>
<td><strong>MMR017004</strong></td>
<td>83</td>
<td>412</td>
<td>330,058</td>
<td>5,325</td>
<td>-</td>
<td>343,343</td>
<td>161,692</td>
<td>-</td>
<td>-</td>
<td>138,261</td>
<td>168,366</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Rhein</strong></td>
<td><strong>MMR017001</strong></td>
<td>60</td>
<td>2,36</td>
<td>352,915</td>
<td>-</td>
<td>-</td>
<td>359,292</td>
<td>175,999</td>
<td>-</td>
<td>-</td>
<td>157,665</td>
<td>176,916</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Ayapwn</strong></td>
<td><strong>MMR017023</strong></td>
<td>52</td>
<td>211</td>
<td>240,091</td>
<td>728</td>
<td>-</td>
<td>310,321</td>
<td>128,295</td>
<td>408</td>
<td>-</td>
<td>157,360</td>
<td>111,796</td>
<td>320</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Dedaye</strong></td>
<td><strong>MMR017026</strong></td>
<td>90+3</td>
<td>(Urban wards)</td>
<td>390</td>
<td>2,113,53</td>
<td>3,748</td>
<td>-</td>
<td>216,959</td>
<td>106,870</td>
<td>2,259</td>
<td>-</td>
<td>109,551</td>
<td>104,483</td>
<td>1,489</td>
</tr>
<tr>
<td><strong>Ayeyarwady</strong></td>
<td><strong>MMR017</strong></td>
<td><strong>Wakema</strong></td>
<td><strong>MMR017017</strong></td>
<td>126+14</td>
<td>-</td>
<td>584</td>
<td>310,914</td>
<td>-</td>
<td>-</td>
<td>159,654</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>151,260</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Yangon</strong></td>
<td><strong>MMR013</strong></td>
<td><strong>Kawmhu</strong></td>
<td><strong>MMR013028</strong></td>
<td>55+7</td>
<td>(Urban wards)</td>
<td>125</td>
<td>1,243,31</td>
<td>130</td>
<td>-</td>
<td>123,276</td>
<td>63,162</td>
<td>75</td>
<td>-</td>
<td>62,594</td>
<td>61,149</td>
<td>55</td>
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<td><strong>MMR013</strong></td>
<td><strong>Kungyangon</strong></td>
<td><strong>MMR013029</strong></td>
<td>43+7</td>
<td>(Urban wards)</td>
<td>118</td>
<td>1,147,71</td>
<td>1,446</td>
<td>-</td>
<td>114,926</td>
<td>58,355</td>
<td>621</td>
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<td>59,401</td>
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<td><strong>Yangon</strong></td>
<td><strong>MMR013</strong></td>
<td><strong>Dagon Myothit (north)</strong></td>
<td><strong>MMR013019</strong></td>
<td>27 wards</td>
<td>-</td>
<td>163,848</td>
<td>163,487</td>
<td>-</td>
<td>85,916</td>
<td>86,338</td>
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<td>75,932</td>
<td>77,149</td>
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<td><strong>Dagon Myothit (Sekkian)</strong></td>
<td><strong>MMR013021</strong></td>
<td>39</td>
<td>5</td>
<td>92,139</td>
<td>2</td>
<td>93,823</td>
<td>47,792</td>
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<td>48,733</td>
<td>44,347</td>
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<td>45,090</td>
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<td><strong>MMR013</strong></td>
<td><strong>Dagon Myothit (south)</strong></td>
<td><strong>MMR013018</strong></td>
<td>44 wards</td>
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<td>284,077</td>
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<td>284,530</td>
<td>148,372</td>
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<td>148,657</td>
<td>135,705</td>
<td>2</td>
<td>135,873</td>
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<td><strong>Dala</strong></td>
<td><strong>MMR013030</strong></td>
<td>23+23</td>
<td>(Urban wards)</td>
<td>50</td>
<td>139,712</td>
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<td>143,688</td>
<td>70,882</td>
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<td>72,499</td>
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<td>Township</td>
<td>Township P-code</td>
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<td>No of Villages</td>
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<td>Yangon</td>
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<td>MMR013008</td>
<td>29 (of which 8 are wards)</td>
<td>18</td>
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<td>340,322</td>
<td>142,882</td>
<td>176,435</td>
<td>145,995</td>
<td>163,877</td>
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<td>59</td>
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<td>115,833</td>
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<td>53+12 (Urban wards)</td>
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<td>164,796</td>
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<td>84,876</td>
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<td>44+13 (Urban wards)</td>
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<td>107,817</td>
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<td>54,934</td>
<td>50,550</td>
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<td>North Okkalapa</td>
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<td>19 wards</td>
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<td>141,871</td>
<td>134,035</td>
<td>129,135</td>
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<td>9 wards</td>
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<td>14,817</td>
<td>14,410</td>
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<td>MMR013007</td>
<td>4 + 23 (Urban wards)</td>
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<td>19 wards</td>
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<td>110,364</td>
<td>110,168</td>
<td>104,678</td>
<td>104,465</td>
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<td>MMR013023</td>
<td>28+17 (Urban wards)</td>
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<td>39 wards</td>
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<td>180,594</td>
<td>94,540</td>
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<td>64+12 (Urban wards)</td>
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<td>65+8 (Urban wards)</td>
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<td>200,954</td>
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<td>101,695</td>
<td>103,199</td>
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Source: MIMU (April 2009) Township Profile
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A report prepared by the Tripartite Core Group comprised of representatives of the Government of the Union of Myanmar, the Association of Southeast Asian Nations and the United Nations with the support of the Humanitarian and Development Community.

July 2009