YAUNG CHI THIT

Scholar Institute

Impacts of the floods on the rural areas and proposed framework of rehabilitation assistance in Rakhine State

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Scholar Institute

Scholar Institute is a non- profit organization building social capital, empowering civil society, advancing democracy and promoting respect for human rights. Since its inception, Scholar Institute has been in the forefront in launching educational activities mainly focusing on promoting Human Rights, supporting to consolidate Democratic norms in different sectors, advocating for equal opportunities and social justice in partnership with the affected communities and other key stakeholders. Currently Scholar Institute is running four main programs (Scholar Education Learning Center, Civic Education Program, Governance Program, Rural Education Development Program) fulfilling its mission ***"Building An Enabling Environment for Youths and Women in Consolidating Democratic Principles and Practices".***

Yaung Chi Thit (YCT) was created in 2009 to support youth and women in Rakhine State, Myanmar. Since that time YCT started projects that support women, youth and the wider community with trainings and capacity building, and by setting up a community learning center.
The vision of YCT is to build a society in which all the citizens have the right to practice their citizenship rights fully and to engage in decision-making process for policies that can bring welfare to them. To reach the vision, YCT set out two goals which are; 1) to provide the grassroots level community especially focusing on peasants and workers with knowledge about the legal rights, which they are entitled to, and to encourage them to claim their legal rights in their respective fields for engaging different state and non-state actors and 2) to strengthen the civil society in the grass-roots level by mobilizing the community to be empowered through equipping the youths with necessary skills and knowledge as the community support actors to promote the participatory community led self-reliance development process. YCT aimed to implement project activities in Rakhine when YCT formed in 2009 though, since 2011 YCT could expand its activities not only in Rakhine but also in other States and Regions. To intending the promoting of women participation in politic, and decision-making and country democratisation process, YCT is implementing "women empowerment program" across the country.YCT as the member of Gender Equality Network (GEN), and Women Organisation Network (WON) has engaged with the different political parties, civil society and local authority to work on policy advocacy to the government.

Foreword

Rakhine State, , saw scores of people killed and tens of thousands of firmland acres and properties destroyed by Cyclone Komen that made landfall on July 30, 2015. Rakhine is a land that is frequently struck by natural disasters that always devastate the impoverished coastal state of Myanmar. Failures to follow the devastations with effective rehabilitation programs has ever hindered the development of Rakhine State, which is already the second poorest state after Chin State, to farther lag behind that of the other parts of the country.

The Scholar Institute, in collaboration with Yaung Chi Thit, wrote a mini-research paper titled "**Impacts of the floods on the rural areas and proposed framework of rehabilitation assistance in Rakhine State**" with the aim of assessing impacts in the flood-affected townships of Kyauktaw, Mrauk-U, Minbya and Ponnagyun, and of facilitating relief and rehabilitation efforts.

The paper concludes with our recommendations on the approach rehabilitation programs should be implemented in by analyzing the data we collected in the affected areas, extending the scope to include the points raised by regional governmental departments and local civil society organizations. Brief discussions on the two project designs previously developed to help rehabilitate two cyclone-affected areas: Ayeyarwady Region devastated by Cyclone Nargis in 2008, and Rakhine State hit by Cyclone Giri in 2010 – are included in order to set as examples for future assistance projects.

This paper is expected to remedy the shortcomings that may stem when developmental organizations implement rehabilitation programs in the flood-affected townships and villages in Rakhine State, while it further boosts the strengths of them. It is hoped to present itself as a reliable guide for local and international non-governmental organizations and community-based organizations that are implementing aids programs.

Khin Hla
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Preface

Myanmar suffered widespread flooding and landslide in its 12 out of 14 states/regions of the country in July/August of 2015 following unusually heavy monsoon rain caused by Cyclone Komen that formed in the Bay of Bengal. According to the National Committee for Natural Disaster Management, more than 100 people were dead, 1.1 million people affected and over 15,000 homes destroyed across the country. Worsening situations led President U Thein Sein declare a state of emergency on July 31 in the four worst-hit regions in the western part of the country – Chin State, Rakhine State, Magwe Region, and Sagaing Region.

The United Nations' **Food and Agriculture Organization** (FAO) and the **World Food Program** (WFP) also stated in a Government-UN joint report released on October 20, 2015 that more than 500,000 hectares of rice paddy were affected and almost a quarter of million livestock were killed, including poultry, cattle, pigs and goats. It also expressed concerns over a likely impact on the food security of the country since rice was the most affected crop, with some parts of the country losing entire paddy plantations. Flooding was also devastating for the aquaculture and fishing industries, with more than 30,000 hectares of fish and shrimp ponds gone. The report is an assessment jointly conducted by the FAO, WFP and the Myanmar government by looking at Magwe, Bago and Ayeyarwady regions, and Chin and Rakhine states.

This paper primarily focuses on the impacts of the disaster on the livelihoods of four townships in Rakhine State, one of the most affected areas by the flooding; and presents the findings from our field researches conducted in the townships of Kyauktaw, Mrauk-U, Minbya and Ponnagyun – regions with the highest rice yields in Rakhine State. Data obtained from the Wan Lark Rural Development Foundation (Rakhine State) as well as figures from governmental sources such as the General Administration Department, the Department of Rural Development, and the Department of Agriculture are also cited as secondary sources.

The general idea about writing this document is to produce an in-depth analysis on the real situations in the affected areas in Rakhine State. It also aims to highlight the likelihood of severe socio-economic impacts that may follow destructions in the economic, educational, social and

health care sectors. Having a chance to produce a firsthand report on the realities could help government agencies, and local and international organizations become aware of the losses and potential impacts, and could convince them to collaborate in providing aids in these areas. In other words, the main idea of this report is to produce an 'advocacy research', in which individual perspectives and personal stories/experiences are usually put forward and discussed. With that objective, a qualitative research method approach is used in this mini research paper to expose the real voices and stories of the flood victims in the four townships.

In line with the qualitative research method, two types of data gathering techniques were applied in setting the guideline questions: the Key Informative Interview (KII) method for the representatives from relevant local organizations, and the Focus Group Discussion (FGD) method for community elders, administrators, teachers, responsible persons and community members representing a total of 41 villages. Interviews and the collection of data were conducted in September, 2015 during our trips to the villages in those four townships.

All the expenses and necessary measures in writing this research paper were covered by the Scholar Institute and the Yaung Chi Thit. All the perspectives presented in this report are the writers' own, and do not necessarily reflect those of the Scholar Institute and/or Yaung Chi Thit.

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EXECUTIVE SUMMARY

This research paper contains five chapters.

In Chapter I, a history of natural disasters, or "Rakhine cyclones", which affected the Rakhine coastal region, is introduced to the reader, followed by a brief description of sufferings felt in the region due to the disaster that broke out in July and August of 2015. That was succeeded by overviews of the geographical data and socio-economic backgrounds of the four townships, namely Minbya, Kyauktaw, Mrauk-U and Ponnagyun, and impacts of the disaster on each township; and citing statistics from government sources, the location, the overviews of education, health, agriculture, rainfall, damns and irrigation, farming machineries, cattle farming, roads and bridges, and telecommunications are presented for each township. Then, figures related to human casualties and damages caused to homes, religious buildings, health facilities, educational infrastructure, flooded farmland areas, losses of paddy, deaths of cattle and poultries, and damages to the transportation, agriculture, irrigation and water supplies all follow.

Chapter II discusses in detail the impacts on the education sector in each of the four townships, and the needs the townships are critically demanding. The discussions are based on the statistics obtained from relevant government departments, facts compiled by the Wan-Lark Rural Development Foundation (Arakan), and data collected during our trips to the affected areas prior to writing this report. Not only physical needs of the educational infrastructure but also the difficulties and challenges such as staff insufficiencies, shortages of teaching aids, losses of furniture and poor conditions of transport infrastructure are analyzed. Local people are also cited in reminding would-be aid groups of what should be kept in mind in helping the victims.

Chapter III analyzes thoroughly socioeconomic conditions of the local people in the four townships, as well as the needs to help them rehabilitate. Firstly, damages caused to monsoon paddy by the rain and floods that occurred in July and August of 2015 are described, followed by reports on the impacts on agriculture, livelihoods and food security, as well as discussions about much-needed support for the villagers by citing the feedbacks and voices of the victims. Statistics and information cited in this chapter are in courtesy of relevant government departments and our own data.

Chapter IV looks particularly at impacts on the health sector of each of the four townships, as well as raises concerns about health-related issues such as the use of toilets, hygiene of drinking water, availability of proper shelters, and the condition of transport infrastructure, succeeded by detailed discussions about anticipated aids for each township. The realities on the ground are not only illustrated with tables but also reflected in recommendations for improvements and further developments.

In the concluding chapter, all the information discussed in the previous three sections are wrapped up, highlighting the status of Rakhine State that has farther stumbled down the development stairways due to the disaster, and calling on different stakeholders to be engaged in a rehabilitation master plan that is comprehensive, inclusive and cooperative. The Post-Cyclone Nargis Initiative Project and the Tat Lan Project, which were superbly designed and implemented by various local and international NGOs to help the four townships in Rakhine State recover from the scars of Cyclone Giri in 2010.

Chapter 1 Introduction

1.1. Natural disasters and Rakhine State

Rakhine State is usually vulnerable to tropical cyclones that form during early and late monsoon season (May-September) in the Bay of Bengal. Records show that powerful cyclones have devastated the region in 1884, 1926, 1930, and 1936 respectively, leaving behind heavy casualties. A cyclone that struck on May 10, 1986 brought in tidal surges, killing a total of 1037 people, the highest death toll in Rakhine cyclone history. In May 1982, the township of Gwa was affected by a cyclone, and the towns of Thandwe, Taunggup, Kyaukphru, Ramree and Man Aung were also hit by a storm in May 1992. Another storm that ripped through northern Rakhine State on May 19, 2004 caused rivers and creeks to overflow with rainwater and flooded low lying areas around waterways, killing about 140 people. In April 2006, a storm devastated the town of Gwa; while in 2010 Cyclone Giri also struck many parts of the state.

Beginning in July 2015, higher-than-average monsoon rain fell on Rakhine State, causing flash floods and landslides. Worsened by Cyclone Komen, casualties and damages went alarmingly high up. According to official data by the Rakhine State Department of General Administration, more than 50 people and 4,000 cattle were killed, while more than 10,000 homes totally flattened and 200,000 acres of rice paddy destroyed. The total value of losses for roads, bridges, homes, schools, wells, lakes, dams, and paddy fields destroyed in Rakhine State was estimated at 44.8 billion kyats (See in Appendix 1).

1.2. Township profiles and the devastations

This section highlights the profiles of the four affected townships in Rakhine State and overviews of damage caused to them, citing statistics obtained from governmental agencies such as the Department of General Administration, Department of Agriculture, and the Department of Rural Development. These statistics provide an overall picture of the sectors that incurred damages and the extent of the impact on important sectors. Chapters in the later part of this report present a breakdown of the sectors affected in each township, and analyze the data, and discuss how supports should be provided to those areas.

1.3. Township profile and the devastations for Minbya Township

1.3.1. Township profile of Minbya Township

First of all, the township profile of Minbya Township, based on facts and figures obtained from the Rakhine State Department of General Administration, is presented here.

Minbya, a township in Mrauk-U District, is located between the North Latitudes of 20°5' and 20°55', and between East Longitudes of 93°52'30 at 50 feet above the sea level, and covers a total area of 1,338.46 square miles. There are a total of 62 village tracts and 246 villages in the township, with a population of 196,356 where 23,237 live in the urban areas and 173,119 dwell in the villages.

The township has three public high schools, eight branch high schools, two middle schools, 18 branch middle schools, 50 post-primary schools and 119 primary schools, plus five monastic schools, all of them accommodating 41,274 students.

It has one 25-bed hospital, one 16-bed hospital, six rural health centers, 27 rural health sub-centers, one indigenous medicinal clinic, one maternity and childcare center, and one anti-tuberculosis center. A total of five doctors and 11 nurses are serving in those establishments.

The area grows mainly rice paddy, ground peanut, sesame, sunflower, green gram, pigeon bean and corn. Minbya possesses a total cultivable land area of 92,814 acres, while designated land area is 94,811 acres, and the total cultivated land area is 94,239 acres. Of them, 94,595 acres grow rice paddy, 15,305 acres pea, 12,693 acres edible oil crops, and 20,008 acres others.

Minbya Township receives average annual rainfall of 155.50 inches over 122 days across the year. There are two government-administered dams that supply 18.5 acres of farms, while another developmental dam can feed up to 35 acres.

In the agricultural sector, the state owns five tractors and 22 tractor manuals. Private farmers own two tractors, 197 tractor manuals, 11 paddy reapers, and four combine harvesters. A total of 176 registered private mechanized industries are operating, but there is no state-owned factory.

There are 31,760 buffaloes, 120,609 cattle, 581,948 chickens, 24,545 pigs, 37,177 ducks and 27,570 goats.

The total length of road network in Minbya Township is 27 miles and 3 furlongs, where 10 miles 2 furlongs are tarred roads, 2 miles gravel roads, and 10 miles 1 furlong dirt roads, all constructed by the Public Unit, and the Township Development Committee.

The township has one post office, one telegraph booth, 159 automatic telephone subscribers, and 6,473 GSM mobile phone subscribers.

1.3.2. Devastations in Minbya Township

Table 1.1 shows the devastations suffered in Minbya Township. Statistics by the Mrauk-U District General Administration Department give the human casualty of Minbya Township as 11, and the damage of houses as 1,200 in which 752 houses totally collapsed while 448 had partial

damage in their roofs and walls. A total of 19 religious buildings such as ordination hall, monastery and public rest house were thrashed.

Table (1.1) Overview of damages in Minbya Township

Sr.	Subject	Total Number	Detail Explanation	(Millions of Kyat)
1.	Casualties	16 people		
2.	Homes	1200 homes	Total damage (752 homes)	75.20
			Roof, wall (448 homes)	44.8
3.	Religious buildings	19 homes	Monastery (19 buildings)	37.550
4.	Health facilities	13 buildings	Hospital (2)	13.0
			Dispensary (1)	34.3
5.	Education facilities	7 buildings	High School (1)	43.2
			Middle School (1)	43.2
			Primary School (5)	108.00
6.	Rice paddy flooded		36,079 acres	4996.941
7.	Rice paddy damaged		54,119 baskets	378.833
8.	livestock		1. Chicken (2059)	10.29
			2. Duck (607)	2.42
			3. Pig (426)	63.90
			4. Buffalo (745)	334.80
			5. Cow (1086)	474.40
			6. Goat (175)	14.08
			7. Shrimp/f h pond (6255.42 acres)	312.771
9.	road transportation		1. Dirt/ gravel road (18.5 mile)	705.281
			2. Bridge shorter than 20 feet (12 bridges)	44.00
			3. Bridge shorter than 40 feet (2 bridges)	15.50
			4. Bridge longer than 40 feet (2 bridges)	482.00
10.	Dam, dikes		3 dams owned by state (9050 feet)	93.41
			8 dikes owned by farmers (56938 feet)	366.91
11.	water well/ ponds	257	5 wells 252 ponds	167.80

Reference: General Administration department of Mrauk-U District, Department of Agriculture, Department of Rural Development

Two hospitals and 11 clinics; one high schools, one middle schools, and five primary schools in Minbya township were damaged. A total of 36,079 acres of paddy fields were destroyed by the flood, and a total of 54,119 baskets of rice grains were damaged.

In the livestock sector, 2059 chicken, 607 ducks, 426 pigs, 745 buffaloes, 1086 cattle and 175 goats were lost, in addition to a total of 62,554.42 acres of shrimp/fish ponds, it states.

In terms of access road, there are 18.5 miles of gravel/dirt road, 12 bridges (under 20 feet), two bridges (under 40 feet) and two bridges (over 40 feet) that are also in the damage list. Three state-owned dams (9,050 feet) and eight embankments (56,938 feet) of farmers and other three embankments (698 feet) were ruined, while a total of 150 lakes were destroyed.

These statistics show that the sectors of health, education, transportation, agriculture, livestock and aquaculture in Minbya Township were significantly affected, hence resulting in hindrance on the livelihoods of the local residents.

Let us continue to look at the township profile and devastations suffered in Kyauktaw Township.

1.4. Township profile and the Devastation in Kyauktaw Township

1.4.1. Township profile of Kyauktaw Township

The following Township profile of Kyauktaw is also based on the facts provided by the Rakhine State Department of General Administration.

Kyauktaw is a township located in the Mrauk-U District of Rakhine State, between the North Latitudes of 20° 37' and 23° 11', and the East Longitudes of 91° 10', sitting at 10.57 feet above sea level, and covering an area of 675.55 square miles. There are 79 village tracts and 283 villages in Kyauktaw Township. It has a population of 216,839 in which 19,571 people dwell on the more urbanized areas and 197,268 live in the rural areas.

In the education sector, there are six high schools, six branch high schools, two middle schools and 17 branch middle schools, 17 post-primary schools and 162 primary schools accommodating a total of 12,915 students.

It has one 50-bed hospital, two 16-bed hospitals, six rural health centers, 25 rural health sub-centers, one indigenous medicinal hospital, one maternity and childcare center, one anti-tuberculosis center, and one anti-malaria center that are served by five doctors, one dentist and 110 nurses.

The main crops grown in Kyauktaw Township are rice, ground nut, sesame, sunflower, *matpe* (*phaseolus mungo*), green gram, pigeon bean, sugarcane, onion and corn. There are a total area of 91,475 acres of cultivable land, 118,195 acres of designated land, and 104,825 acres of cultivated land. Seasonal paddy is grown on an area of 92,795 acres, while 815 acres are for

crops used as raw materials for the industries, and on some 132 acres grow oil-bearing crops. While on 11,083 acres grow beans, other crops are grown on 59 acres.

Kyauktaw receives an average annual rainfall of 150 inches over 103 days every year. The Pyaing-Chaung and Zichaung dams can feed up to 5000 acres and are administered by the government. There are also two dams built for regional development, feeding 100 acres of land.

The state owns 32 tractors; private farmers own 25 tractors and 312 tractor manuals.

There is no mention of state-owned factories, nor is there any statistic regarding registered private enterprises.

Livestock statistics show there are 31,760 buffaloes, 121,609 cattle, 581,948 chickens, 24,545 pigs, 37,177 ducks and 27,570 goats.

A total road length of 46.56 miles have been built by the Ministry of Construction's Public Work unit and the Township Development Committee, in which 0.26 miles run as concrete road, 30.4 miles as tarred road, 10.71 miles as gravel road and 14.2 miles as dirt road.

In the telecommunications sector, there are only one post office and a telegraph booth each, while 896 subscribe automatic landlines and 3,600 users subscribe GSM and 2,650 subscribe CDMA mobile phones, totaling 7,146 subscriptions.

1.4.2. The Devastations in Kyauktaw Township

The devastations suffered in Kyauktaw Township can be observed in Table 1.2. According to the statistics collected from the Mrauk-U District General Administration Department, there was one reported human death. A total of 1,028 homes were affected where 624 houses were completely destroyed while 404 suffered partial damages such as in roofs and walls. A total of 19 religious buildings such as ordination hall, monastery and public rest house were also affected.

Table (1.2) Overview of damages in Kyauktaw Township

Sr.	Subject	Total Number	Detail Explanation	(Million Kyat)
1.	Casualties	1person		
2.	Home damage	1028 homes	Total damage (624 homes)	201.5
			Roof, wall damage (404 homes)	312.00
3.	Religious Building	19		9.558
4.	Health facility	3	Hospital (1) Dispensaries (2)	
5.	Education facility	23	High school (3)	12.00
			Middle school (2)	5.00
			Primary school (18)	61.00
6.	Flooded paddy field	41281 acres		2765.820

7.	Damaged paddy	41281 basket		309.6075
8.	livestock		1. Chicken (34292)	233.83
			2. Duck (1164)	8.14
			3. Pig (3146)	251.68
			4. Buffalo (484)	242.00
			5. Cow (920)	368.00
			6. Goat (988)	34.50
9.	road transportation		1. Gravel/ dirt road (18.5 mile)	833.60
			2. Bridge shorter than 40 feet (2 bridges)	45.00
			3. Bridge longer than 40 feet (7 bridges)	878.60
10.	Dam, dikes	1. State owned dam (1)	15,300 feet	125.00
11.	water well/ ponds	Pond (271)		

Reference: General Administration department of Mrauk-U District, Department of Agriculture, Department of rural development

Health and education: one public hospital and two clinics sustained damaged, while three high schools were affected along with two middle and 18 primary schools. A total of 41,281 acres of paddy fields were destroyed by the flood, while 41,281 baskets of paddy grains also were exposed to the rain.

The data also shows that 2059 chicken, 607 ducks, 426 pigs, 745 buffaloes, 1086 cattle and 175 goats were killed, while a total of 6,255.42 acres of fish/shrimp ponds was also affected.

Damage to the transport sector comes such as 18.5 miles of gravel/dirt road, 12 bridges (under 20 feet), two bridges (under 40 feet) and two bridges (over 40 feet). Moreover, three state-owned dams (a total of 9,050 feet) and eight embankments of private farmers (a total of 56,938 feet), plus other three dykes (a total of 698 feet) were broken, while 150 lakes were flooded.

These statistics show how much public services such as schools and hospitals; infrastructures such as roads and bridges; and livelihoods such as agriculture, livestock and fisheries were enormously affected by the massive flood.

Let us move on to look at the damage in the township of Mrauk-U.

1.5. Township profile of Mrauk-U Township and the devastations

1.5.1. Township profile of Mrauk-U Township

The credit for this Township profile goes to the same Rakhine State Department of General Administration.

Mrauk-U, a township in Rakhine District, is located at an altitude of 27 feet between the North Latitudes of 20° 10' 30" and 20° 20' 20", and the East Longitudes of 93° 10' 15" and 93° 19' 25". With an area of 490.97 square miles, the township encompasses 95 village tracts and 248 villages, accommodating a population of 229,710, with 33,716 of them living in urban Mrauk-U while 191,994 dwell in its rural outskirts.

A total of 29,002 students are studying in four high schools, five branch high schools, four middle schools, 13 branch middle schools, 152 primary schools and 31 post-primary schools across Mrauk-U Township.

It has one 25-bed hospital, two station hospitals, eight rural health centers, 34 rural health sub-centers, one school health center, one hospital of indigenous medicine, and one maternity and childcare center, where five doctors and 19 nurses are rendering their services.

The staple crops are rice, ground peanut, sesame, pigeon bean and sugarcane. The township has a total cultivable land area of 142,853 acres, designated land area of 133,722 acres and the cultivated area of land is 133,268 acres. A total of 133,722 acres grow rice paddy, four acres bean, and 1,920 acres oil-bearing crops.

Mrauk-U Township has an average rainfall period of 126 days and receives 190.96 inches of accumulated rainwater per annum. The state owns one dam that supplies water to 150 acres while another dam for regional development feeds 143 acres. A village dam formed by enclosing a ravine can also feed up to 150 acres.

There are three tractors as state-owned; while five tractor manuals and three rice reapers are counted as private properties.

There is no state-owned factory as well as no record of registered private enterprises.

In the township are 65,778 cattle, 61,785 buffaloes, 19,882 pigs, 635,949 chicken, 35,941 ducks, 11,866 gooses, and 29,580 goats.

The Public Work unit and the Township Development Committee built 64.1 miles of tarred road, 66.2 miles of gravel road, 5 miles of macadam country road, and 22.2 miles of dirt road.

There are one post office, one telegraph booth, 305 automatic exchange landline subscriptions, 1,041 GSM mobile phone subscriptions and 6,560 CDMA mobile subscriptions.

1.5.2 Devastations in Mrauk-U Township

The devastations suffered by Mrauk-U Township can be observed in Table 1.3. According to the Mrauk-U District Department of General Administration statistics, 13 people were killed and 1814 houses were affected where 1288 of them were totally destroyed while 526 only suffered partial damage such as roofs and walls. A total of 14 religious buildings such as ordination hall, monastery and public rest house were affected.

Table (1.3) Overview of damages in Mrauk-U Township

Sr.	Subject	Total Number	Detail Explanation	(Million Kyat)
1.	Casualties	13 people		
2.	Home	1814 homes	Total damage (1288 homes)	386.4
			Roof, wall damage (526 homes)	52.6
3.	Religious Building	14 buildings	Monastery (11 buildings)	37.5
4.	Health facility	24	Hospital (2) Village health care center (7) Village health care sub-center (15)	
5.	Education facility	58	High school (4)	15.27
			Middle school (12)	26.768
			Primary school (42)	31.797
6.	Flooded paddy field	75242 acres		5041.214
7.	Damaged paddy	48500 baskets		339.500
8.	Livestock		1. Chicken (27133)	189.90
			2. Duck (1764)	8.82
			3. Pig (1140)	5.7
			4. Buffalo (1036)	414.40
			5. Cow (2462)	738.60
			6. Goat (958)	14.37
			7. Prawn/ f h pond (564.00 acres)	169.200
9.	road transportation		1. (Tarmac (miles) – 24.04 miles)	532.60
			2. Bridge shorter than 40 feet (2 bridges)	80.00
			3. Bridge longer than 40 feet (7 bridges)	145.50
10.	Dam, dikes	1. State-owned dam (1)	Width (20 feet), depth (15 feet)	1.5
11.	water wells/ponds	397	Well (15) Pond (382)	

Reference: General Administration department of Mrauk-U District, Department of Agriculture, Department of rural development

Two hospitals, seven rural health centers, and 15 rural health sub-centers were damaged while four high schools, 12 middle schools and 42 primary schools were also reportedly affected. A total of 75,242 acres of farmland was flooded while 48,500 baskets of paddy grains were destroyed.

The Department's statistics show that 27,133 chicken, 1,764 ducks, 1140 pigs, 1036 buffaloes, 2462 cattle and 958 goats are dead; while 564 acres of fish/shrimp ponds have been destroyed.

It continues to state that 24.04 miles of tarred road, two bridges (under 40 feet), and seven bridges (over 40 feet) suffered damage, in addition to one state-owned dam (20 feet wide and 15 feet deep). A total of 397 public-use lakes were also affected.

These statistics show how much public services such as schools and hospitals; infrastructures such as roads and bridges; and livelihoods such as agriculture, livestock and fisheries were enormously affected by the massive flood.

Let us continue to observe the devastations in Ponnagyun Township.

1.6. Township profile of Ponnagyun Township and Devastations

1.6.1. Township profile of Ponnagyun Township

The source for this township profile of Ponnagyun Township is the statistics from Rakhine State Department of General Administration.

A township in Sittwe District of Rakhine State, Ponnagyun covers an area of 439.61 square miles, and is located at an altitude of 19.8 feet, between the North Latitudes of 21°8' and 21°18'45", and the East Longitudes of 92°45' and 92°45'12". A total of 193 villages accommodate a population of 134,192, in which 10,859 live in more urban establishments while 123,333 resides in the rural villages.

There are five high schools, five branch high schools, 13 branch middle schools, 107 primary schools, 49 post-primary schools, and 13 branch post-primary schools, where a total of 29,959 students are being taught by 1,043 teachers throughout the township.

Five doctors, 15 nurses and 30 midwifes are serving at one 25-bed hospital, two 16-bed station hospitals, five rural health centers, 23 rural health sub-centers, one indigenous medicine hospital, one maternity and childcare center and one anti-malaria center.

The staple crops – paddy, sesame, pigeon bean and corn – are cultivated. A total of cultivable land area of 65,134 acres exists, while 63,500 acres are designated land for cultivation, and 31,345 acres are in use. Paddy is grown on a total of 614 acres of land.

The entire township of Ponnagyun receives an average of 194.26 inches of rainwater over a period of 114 days every year. Two embankments are state-owned, benefiting 2,059 acres of land. There is one regional development dam, which irrigates 30 acres of land.

It has six tractors, 24 tractor manuals, five combine harvesters and 20 water pumps as public properties. A total of 232 tractor manuals and six pumps are in the hands of private farmers.

There are no state-owned factories in this township, as well as there is no mention of the number of registered privately owned enterprises.

Relevant data shows that Ponnagyun has 64,178 cattle, 41,379 buffaloes, 12,000 pigs, 14,598 chicken, 4,378 goats, and 10,684 ducks.

The Public Work unit, the township development committee and the *Ministry* for Progress of *Border Areas* and National Races and Development Affairs have built a total of 67 miles and 2 furlongs in which 35 miles are tarred roads, 22 miles 1 furlong macadam roads and 10 miles 1 furlong dirt roads.

The township also has four post offices, one telegraph booth, one manual service telephone exchange and 6500 CDMA and GSM mobile phone users.

1.6.2. Devastations in Ponnagyun Township

The devastations suffered in Ponnagyun Township are summarized in Table 1.4. The information about the value of losses in this township is not available here due to difficulties such as loss of documents.

According to the statistics collected from the Rakhine State Department of General Administration, three people were dead, and 2,223 homes were damaged.

Table (1.4) Overview of damage in Ponnagyun Township

Sr.	Subject	Total number
1.	Casualties	3 people
2.	Home	2223 homes
3.	Religious Building	Monastery (14)
4.	Education facility	37 buildings
5.	Flooded paddy field	9657 acres
6.	in livestock	Buffalo, cow (338)
7.	in road transportation	Road (4) Bridge (2)
8.	Dam, dikes	Dam (3)
9.	Pond	Pond (60)

Reference: General Administration department of Mrauk-U District, Department of rural development

A total of 37 schools as well as 9,657 acres of farms were affected.While 338 cattle were dead, four roads and two bridges were damaged along with three dams and 60 lakes.

These statistics show how much public services such as schools and hospitals; infrastructures such as roads and bridges; and livelihoods such as agriculture, livestock and fisheries were enormously affected by the massive flood in all four townships.

The upcoming chapters discuss how community-based rehabilitation work should be implemented, based on detailed information of damages acquired by the Scholar Institute and the Yaung Chi Thit, as well as information obtained from the community elders.

Chapter 2
Damages to the educational infrastructure of the four disaster-affected townships in Rakhine State

This chapter elaborates the damages to the educational infrastructure of the four townships as well as discusses, based on the findings from field researches, how needs of the locals should be met.

Damages caused by the floods need to be differentiated between those suffered in the urban areas and those affected in the rural ones. We aim to highlight mainly the damages sustained in the educational infrastructure of the rural villages.

2.1. Damages to the educational infrastructure of villages in Minbya Township

First of all, when it comes to damages to the educational infrastructure of Minbya, Table 1.1 in Chapter (1) only lists overall impacts across all sectors in Minbya Township, hence damages by sector as well as the detailed situations of devastations suffered by the villages still need to be presented so that rehabilitation plans for the most affected villages can be mapped out based on the priorities set against the whole township.

The Mrauk-U District Department of General Administration states that 219 villages out of 246 in the entire Minbya Township were flooded. Even though it is not possible to discuss each and every village in the township here, we will try to generalize the on-the-ground situations of the villages in Minbya Township sector by sector, based on the statistics provided by government departments, the data collected from the villages by the Wan Lark Rural Development Foundation, pieces of information obtained by local organizations, and the information provided from 10 villages we went to inspect in person.

Table (2.1) List of office/schools in Minbya Township damaged

Sr.	Tsp	office/school	Level of damage	Measurement			Cost of damage (Kyat in Million)
				Length	Width	Heigh	
1.	Minbya	One primary school, Kywe Tet village	Total damage	40ft	15ft	10ft	21.6
2.	Minbya	One primary school, Thalu Chaung village	Total damage	60	30 ft	12 ft	21.6
3.	Minbya	One branch middle school, Pyin Yaung village	Total damage	60	30 ft	12 ft	43.2
4.	Minbya	One primary school, Kha Tha village	Total damage	32	18 ft	10 ft	21.6
5.	Minbya	One primary school, Zikone village	Total damage	32	18 ft	10 ft	21.6
6.	Minbya	One primary school, Kat Pet Pale Taung	Total damage	40	20 ft	12 ft	21.6
7.	Minbya	One branch high school	Damage	120	30 ft	12 ft	43.2
		Total					194.4

Reference: General Administration Department of Mrauk-U District

The table above states one branch high school, one branch middle school and five primary schools were damaged, with total losses being estimated at 194.4 million kyat.

(Remark: One branch middle school and five primary schools are village schools, while one branch high school is located in urban Minbya.)

Statistics shown in Table 2.1, which is provided by government departments, only state structural damages to the schools, hence let us try to present the data for devastations specific to education sector at large in Minbya as well as discuss what the needs are – data we have collected on the ground in cooperation with the Wan Lark Rural Developemnt Foundation.

Table (2.2) Damages to education facilities of 18 villages in Minbya Township

Sr.	Name of village	Damage to education facilities
1.	Pyin Yaung	90 x 30 building damaged 20 x 30 brick wall damaged bench damaged
2.	Ahnyin Taung*	Table damaged
3.	Taung Tan*	School furniture damaged
4.	Htein Pin*	5 pieces of glass broken, bench drifted away
5.	Pwe Ya Kan Sate*	Bench damaged
6.	Pauk Taw*	School damaged
7.	Min Ywar*	Bench damaged Note: benches had already damaged before flood
8	Done Thar*	School building leaning a little. School furniture damaged
9.	Awa Ywar*	Two corrugated iron sheets of school roof gone
10.	Myit Nar*	School fence damaged
11.	Oh Pyin Daung*	Benches damaged
12.	Hpa Pyaw*	School roof gone
13.	Done Thar*	School building leaning a little, furniture damaged
14.	Tagundaing*	School furniture damaged
15.	Wa Daung*	Benches drifted away
16.	A Thay Kar La*	School furniture drifted away
17.	Hpontha*	School materials damaged
18.	Kat Pet Pale Taung*	School furniture, teacher's dormitory damaged

Reference: Wan-Lark Rural Development Foundation (Arakan)

By having a look at the statistics obtained by the Wan Lark Rural Developemnt Foundation shown in the above table, there were losses not only by the schools in the town of Minbya and in the six villages in its outskirts but also at the other villages in its proximity. The only two out of 18 villages – Pyin Yaung and Kat-Pe-Palae-Htaung – can only bring consistent damage lists with those recorded by the government authorities, while the other 16 villages marked asterisk (*) also sustained additional damages. It is not just structural damages caused to the school buildings but other materials such as teaching aids, furniture and school fences, in addition to teachers' boarding houses that also suffered damages.

Let us observe further at the following Table 2.3 to be informed of the statistics that were acquired by our ground surveys at the affected 10 villages in Minbya Township.

The villages listed in Table 2.3 are the villages located at the upper part of the Pan-Myaung-Gyi Creek in Minbya Township, villages along the Hpontha Creek and those on the sides of the Minbya-Mrauk-U road.

After cross-checking the government's and the Wan Lark Rural Developemnt Foundation's statistics with our own, we found that there are seven more villages that were affected by the disaster in addition to the official list. These seven villages are marked with asterisk (*). Therefore, the total number of villages in Minbya Township that were affected by the disaster is

identified as six in the government figures, 16 in the Wan Lark Rural Developemnt Foundation, and seven in our report, totaling 29.

School infrastructure in the villages of Minbya Township has sustained heavy damages as per our Table 2.3 that presents data we collected on the ground.

In addition to the structural damage sustained by the school buildings, losses also struck the furniture such that tables and benches drifted along the current during the flood, and the stationeries of the students also sustained damage. Village elders also reported that the students also faced a shortage of school uniforms.

Another blow the education sector has been suffering is an insufficient number of school teachers. If we observe the numbers of students and teachers shown in Table 2.3, we see there are only four, five or six teachers for nearly some 200 students.

Table (2.3) Damages to education facilities of 10 villages in Minbya Township

Sr.	Village name	No of schools	No of students	No of teachers	Damage to education facilities	Updates
1.	Khaung Laung* (Old village)	Primary School (1) Middle School (Associate) (1)	Primary Level (66) Middle Level (over 60)	Primary Level (5) Middle Level (3)	benches, furniture drifted away. Note: middle school moved to monastery. classroom also damaged.	School reopened in August. school cleaned by villagers. Repairs made for temporarily classrooms. damage report submitted to government.
2.	Naram Ziwha* Population – 294 Homes – 64 Household –	Primary School (1)	Primary Level (Over 100)	Primary Level (5)	Mud covered over one foot in school. Benches damaged, stationeries damaged.	School reopened in August. Mud removed. Damage report submitted to government.
3.	Chin Sate* Population – 528 Homes – 126 Household –121	Primary School (1)	Primary Level (150)	Primary Level (5)	Mud covered over one-foot height in school. School furniture, benches flushed away.	School reopened. Mud removed. A small donation of exercaree books received. (five books for each student) Damage report submitted to government.
4.	Naram Ywa Gyi* Population – 55 Homes – 165 Household –	Nil. Note: Children go to school at Naram Ziwha Village.				
5.	Taung Poke Kay Population – 730	Primary School (1)	Primary Level (204)	2	Stationeries damaged.	School reopened in August but only two out of five teachers

	Homes – 165 Household – 185	Branch Middle School (1)	Middle Level (95)			returned.
6.	Thaluchaung Population – 601 Homes – 120 Household – 130	Primary School (1) Associate Middle School (1)	Primary Level (128) Middle Level (22)	Primary Level (4) Middle Level (2)	Primary School (60 ft x 30 ft) completely damaged. School furniture, benches damaged.	School reopened. Students taught in makeshift schools. Shwe Thanlwin company to donate 4.7 million Kyat to pay for wood, corrugated iron sheets, cement. but total cost as estimated at K21.6 million. Damage report submitted to government.
7.	Tagun Taing* Population – 556 Homes – 130 Household – 130	Primary School (1) Associate Middle School (1)	Primary Level (157) Middle Level (37)	Primary Level (6) Middle Level (3)	School furniture, benches drifted away. Glass panes broken, stationeries damaged.	School reopened. Middle school opened at monastery. Damage report submitted to government.
8.	Myin Tin Ma* Population – 730 Homes – 165 Household – 185	Primary School (1) Post Primary School (1)	Total number of students at primary, post primary schools (131)	Primary Level (4) Middle Level (4)	School buildings damaged. School furniture damaged. Benches lost/damaged.	Schools reopened. Damage report submitted to government.
9.	Oh Pyin Daung Population – 1176 Homes – 219 Household – 137	Primary School (1) Associated Middle School (1)	Primary Level (196) Middle Level (78)	Primary Level (6) Middle Level (3)	Middle school totally destroyed.	School reopened. Middle school students studying at villagers' homes. Damage report submitted to government.

10.	Pyin Yaung Population – 827 Homes – Household –	Primary School (1) Middle School (1)	Total number of students at primary, middle schools (380)	2	Middle school totally destroyed.	School reopened in September. Middle school students studying at makeshift classrooms with bamboo partitions. Only two out of three teachers returned.

Reference: Findings of field research;

Some villages are also facing a problem of losing already few teachers because since the flood they have not returned to the village schools they are attached. Some have reportedly been transferred to other villages after they received promotions; and it still remains unknown when those vacant positions will be filled with newly sent teachers. Some teachers did not return for unknown reasons (for instance, there are currently only two teachers in Pyin Yaung village to teach a total of 380 students at the primary and middle levels.)

Most of the villages have finished cleansing the mud. In places where schools were destroyed, children are studying under makeshift tarps, while village monasteries and villagers' homes are also providing space as temporary classrooms. The list of damaged schools has been presented to the government authorities. If we look at the schools in the villages listed in Table 4, all have been reopened – whereas some have been running since August while some since September.

It is evident that the local students' education has been much hampered in the villages in Minbya Township due to the reasons mentioned above such as long closure of schools during the disaster as well as insufficient teaching staff and teaching aids after the flood.

The total value of losses in Minbya Township's educational infrastructure as publicized by the Department of General Administration is estimated at 194.4 million kyat for seven schools; however, considering the total number of affected schools is 29, the actual value of damage is estimated to be higher than the official figure. More impacts are expected unless timely rehabilitation is implemented.

Let us continue to observe the situation of the villages in Mrauk-U Township in terms of impact on the education.

2.2 Devastations in the Educational Infrastructure of Villages in Mrauk-U Township

According to the official data supplied by the Mrauk-U District Department of General Administration, four high schools, 12 middle schools and 42 primary schools add up to a total number of 58 schools affected.

Table (2.4) List of schools damaged in Mrauk-U

Sr.	Tsp	List of Office/ School	Damage	Measurement (foot)			Cost of damages (millions of kyat)
				Length	Width	Height	
1	Mrauk-U	Primary School (Pyin Hla)	40 corrugated iron sheets damaged; 10 sets of benches drifted away;	60	30	12	0.5
2		Post Primary School (Konbaung)	10 corrugated iron sheets damaged; 3 sets of benches drifted away;	38	20	12	0.13
3		Post Primary	90 feet of school	90	30	12	1.44

		School (Tin Htein Kan)	wall damaged; 18 benches drifted away;				
4		Branch Middle School (Wet Hla)	Four iron bars of 15 feet in length each broken; Five sheets of corrugated iron damaged; Five sets of benches drifted away;	90	30	12	0.158
5		Primary School (Yinthi)	Two sides of plunk walls damaged; Three sets of four seat benches drifted away;	60	30	12	0.46
6		Primary School (Kyaung Taung)	20 window glasses broken; 10 sets of benches broken;	90	30	12	0.3
7		Primary School (Bawywar Zay)	30 corrugated iron sheets damaged; Four teacher chairs drifted away;	30	15	12	0.22
8		Post Primary School (Kalar Chaung)	10 sets of low benches,				
9		Primary School (Maung Nyo Kyun)	Brick walls damaged; seven sets of benches, two tables, one cupboard damaged;	60	30	12	0.59
10		Middle School (Thin Pan Kaing)	Five doors, 30 sets of high benches, 30 sets of low benches damaged;	120	30	12	1.5
11		Primary School (Tantin)	10 corrugated iron sheets damaged; 12 sets of low benches drifted away;	60	30	12	0.17
12		Primary School	Three bamboo	90	30	12	0.2

		(ZeyaWaddy)	partitions damaged;				
13		Primary School (Sin Oh Chay)	Floor damaged; Five sets of low benches drifted away;	60	30	12	3.7
14		Primary School (Late Sin Pyin)	Concrete floor; 10 sets of low benches damaged;	40	25	12	3.8
15		Primary School (Nat Chaung Ywar Thit)	Four sides of partitions damaged; 10 sets of low benches drifted away;	40	20	12	.03
16		High School (Kywe Te')	Three doors damaged; 40 sets of high benches, 10 chairs of teachers, four tables broken;	170	30	12	2.37
		High School (Kywe Te')	40 sq ft wall, 720 sq ft floor, 20 low benches, 2 computer sets, 22" TV, 1000-ft bamboo fence;	170	30	12	5.55
17		Middle School (Byatchaung)	Eight sets of low bench flooded;	60	30	12	0.16
18		Middle School (3)	21 corrugated iron sheets damaged;	120	30	12	0.15
19		Branch High School (Kan Sauk)	38 corrugated iron sheets, six windows damaged;	120	30	12	0.85
20		Post Primary School (Par Taw)	180 corrugated iron sheets damaged; Brick wall broken;	90	30	12	2.1
21		Primary School (Payar Gyi, Wai Thar Li)	80 corrugated iron sheets damaged;	40	25	12	2.1
22		Branch Middle School (Sint Baw Gaing)	1000 corrugated iron sheets damaged; Four sides of brick walls broken; 30	90	30	12	3.1

			sets of high bench drifted away;				
23		Primary School (Kyaung Taung Shae)	Bamboo wall, floor damaged; 10 sets of low bench damaged;	40	25	12	1.4
24		Post Primary School (Lay Nyin Thar)	All school buildings damaged;	30	15	12	0.4
26		Primary School (Raw Many)	234 feet of brick wall broken;	170	30	12	2.3
27		Primary School (Htan Marick)	20 sets of benches, a cupboard drifted away;	120	30	12	1.15
28		Primary School (Dwara)	Roof, wall, bamboo floor damaged; One chair of teacher, one table damaged; Three sets of low bench damaged;	40	25	12	0.415
29		Branch Middle School (Pyaing Cha)	20 corrugated iron sheets gone;	60	30	12	0.14
30		Primary School (Taung Yat)	Four teacher chairs, two tables, 10 sets of low bench broken;	120	30	12	0.32
31		Primary School (Ngamepyin)	One cupboard, one table, three sets of low bench broken;	120	30	12	0.26
32		Primary School (Maung Thar Kone)	12 corrugated iron sheets, three sets of low bench damaged;	60	30	12	0.142
33		Primary School (Mahein Gyi)	30 concrete floors destroyed; Three sets of low bench broken;	100	30	12	0.62
34		Primary School (Tantin)	10 corrugated iron sheets destroyed; 30 feet of concrete floor	60	30	12	0.46

			damaged; Five sets of low bench broken;				
35		Branch Middle School (Myet Yeik Kyun)	15 corrugated iron sheets damaged; 40 feet of concrete floor crushed;	100	30	12	0.63
36		Primary School (Pepingone)	Five sets of low bench, 4 sets of high bench, 1 cupboard, 1 table, 2 chairs drifted away;	60	30	12	0.5
37		Primary School (Kapaingchaung)	10 sets of low bench, 2 tables, 1 cupboard, 3 chairs drifted away;	60	30	12	0.51
38		Primary School (Muchar)	Bamboo floor destroyed; One table, 1 chair, 5 sets of low bench damaged;	60	30	12	0.4
39		Primary School (Katoe)	10 sets of low bench, 1 table, 2 chairs of teacher;	75	17	12	0.47
40		Post Primary School (Letkar)	Five sets of high bench, 6 sets of low bench damaged;	90	30	12	0.49
41		Branch Middle School (Pyar Te')	20 corrugated iron sheets gone; 10 low benches drifted away;	120	30	12	0.34
42		Branch Middle School (Akyee Taw Ma (1))	100 corrugated iron sheets gone; 8 doors, 20 windows damaged; 4 high bench, 3 cupboards broken;	180	30	12	1.28
43		Middle School (Nyaung Pin Hla)	30 feet of wall damaged; 15 sets of low bench drifted away;	90	30	12	1.28

44		Branch Middle School (Nagan)	10 sets of high bench, 10 sets of low bench, 2 tables, 4 chairs drifted away;	60	30	12	0.32
45		Branch Middle School (Than Shin Pyin)	20 sets of low bench, 10 sets of high bench drifted away;	90	30	12	0.9
46		Post Primary School (Gwa Sone)	15 corrugated iron sheets damaged; Five sets of low bench, 3 teachers' chairs drifted;	90	30	12	0.23
47		Post Primary School (Taw Bway)	Three windows damaged; 2 cupboards, 1 table, 2 chairs drifted away;	60	30	12	0.62
48		Primary School (Soappa)	30 feet of concrete floor crushed; 10 sets of low benches drifted away;	60	30	12	0.56
49		Post Primary School (Shwe Kyin Pyin)	50 corrugated iron sheets (7 feet), 5 sets of low bench lost	120	30	12	0.46
50		Primary School (Myaung Bwe Chae)	20 feet of verandah destroyed; 30 planks of 10-ft floor, one stairway, two sets of bench, one table damaged;	40	24	12	1.34
51		Primary School (Nga/Khu Taung)	All floor, walls damaged; 10 low benches, one cupboard damaged;	60	30	12	0.6
52		Post Primary School (Taung Tike)	10 corrugated iron sheets, 2 stair cases, 2 of 18-ft long terraces, 5 sets of low bench	90	30	12	0.36

			drifted away;				
53		Building 1, 2 of No; (1) BEHS;	56 windows, 2 doors, 270 feet of concrete, 23 sets of high bench, 60 desks damaged;	200	30	12	6.5
54		No; (3) Middle School	3600 sq-ft concrete floor, 240 corrugated iron sheet, 7 plain sheets, 5 high benches, 2 tables	120	30	12	16.5
55		Primary School (Tan Pyin Gyi)	One cupboard, 10 low benches, 2 teachers' chairs;	60	30	12	0.42
56		Primary School (Setikone)	10 low benches, 1 teachers' chair, one table;	40	30	12	0.24
57		Primary School (Shwe Htun Phyu)	10 benches, 1 table, 2 teachers' chairs	60	30	12	0.24
58		Primary School (Myo Chaung)	15 low benches, 3 teachers' chairs, 1 table;	60	30	12	0.36
		Total					72.835

Reference: District General Administration Department, Mrauk-U District, Mrauk-U;

According to the information cited above, there was no total destruction to the whole school structure: only the roofs and walls sustained damages. Not only bamboo floors, but even cemented floors were damaged. Door leafs, window glass panes, verandahs and fences were also among the destroyed. Teachers' chairs as well as students' benches and desks drifted in the current during the flood along with the furniture. In Kywete` village, two sets of computer and one set of television were also damaged. The total value of infrastructural losses in the education sector of Mrauk-U Township is estimated at 72.835 million kyat, which is substantial.

We went to 10 villages in Mrauk-U Township to inspect the devastation firsthand, and the following is our report about the situation of damage to the education sector in the 10 villages. The villages we went include those located at the source of Lemro Creek, and those located around Myaungbwe and Mrauk-U.

Table 2.4 explains that, because of our field inspections, additional five villages (marked *) have been identified as disaster-affected communities while the government sources only identified 58 villages, hence totaling the number of villages whose education infrastructure were affected as 63.

Mostly, the 10 villages in Mrauk-U Township where we inspected saw their schools covered with mud, and their buildings and furniture destroyed.

Table (2.5) Damages to educational infrastructure in 10 villages in Mrauk-U Township

Sr	Name of Village	Number of School	Number of Students	Number of Teacher	Impact on education;	Present Condition
1	Sin Ke'* (Sin Ke' Village Tract) Population – 576, Number of Homes – 107, Household	One primary school, One middle school;	Primary Level (200) Middle Level (85)	-	Primary School Building of 72ft x 18 ft destroyed; school furniture drifted away;	School reopened; As school destroyed, students studying at monastery;
2	Nyaung Bin Hla (Byauk Chaung Village Tract) Population – 1620, Number of Homes, 276, Household	One primary school, One middle school;	Primary Level (231) Middle Level (275)	16	Mud covered more than two feet in whole campus; Benches drifted away; Furniture in school destroyed; school wall broken;	School opened in August; Some of mud removed; facing sewage problem; school flooded when it rains; damage report submitted to government;
3	Singbaw Gaing (Mawra Village Tract) Population – 1033, Number of Homes – Household -	One primary school; One attached middle school;	Primary Level (124) Middle Level (262)	10	Benches, furniture, documents destroyed; One partition to classroom collapsed; School roof destroyed; School toilets, two teachers' dorms damaged;	School reopened; Corrugated iron sheets paid for by donation of well-w hers, repaired roof; Damage report submitted to government;
4	Shwe Tun Phyu (Mya Yeik Kyun Village Tract) Population – 481 Number of Homes – 101, Household -	One primary school, One attached middle school	Primary Level (77) Attached Middle Level (over 40)	2	School covered with mud; School verandah destroyed; School furniture drifted away;	School reopened in August; Mud cleaned up; Facing teacher shortage as only two out of three teachers remained;

5	Kalaka (Kalaka Village Tract) Population – 900, Number of Homes - 700, Household – 720	One branch primary school One attached middle school	Primary Level (Over 100)	7	No damage caused to schools;	
6	Don Bway* (Butalon Village Tract) Population – 375, Number of homes – 82 Household – 83	One primary school	Primary Level (60)	6	whole school building collapsed; School furniture, benches, stationeries drifted away;	Students studying under makeshift tarps; School not reopened yet; Only one out of six teachers returned;
7	Shwe Lan* (Butalone village tract) Population – 240, Number of homes – 70, Household – 70	One primary level	Primary level (160)	6	Benches drifted away; School furniture destroyed;	School reopened; Damage report submitted to government;
8	Kye' Te' (Butalone village tract) Population – 1500, Number of homes - over 400, Household -	One high school	749	28	Windows broken; School destroyed;	School reopened; Damage report submitted to government;
9	Tan Myint Gyi* (Butalone village tract) Population - 262, Number of	One primary school	Primary level 207	5	School covered with mud; School furniture, benches drifted away;	School reopened; Mud removed; received some support from LWL group; Damage report submitted to government;

	homes – 240, Household – 262					
10	Let Than Chi village* (Butalone village tract) Population – 360, Number of homes – 80, Household – 76;	One branch primary school;	Primary level 40	1	15 benches, 3 tables, stationeries gone; School destroyed a little;	School reopened; Damage report submitted to government;

Source: Findings of field research;

In Table 2.5, the five villages that have been added to the official list where schools sustained damages are marked with asterisk (*).

Some school buildings were totally destroyed while those in some villages saw their roofs and walls vanished. Schools in some other villages saw their window glass panes cracked. Virtually all villages lost their furniture in the flood current, while the desks and benches, and stationeries damaged or lost. School toilets and fences were not spared too.

Even though mud covered up to over two feet's height in most school buildings and campuses, schools in many villages have been cleansed of the mud. However mud left severe damage to the existing drainage system, such as in the school in Nyaung Bin Hla Village, causing the areas flooded again even in the times of moderate rains.

Classes have been held in makeshift tents, or monasteries were redesigned to provide room to hold classes. Some villages found private individual donors who paid for the replacement of roofs in their schools. The list of damages has been submitted to the government officials.

Nine out of 10 villages we inspected have been able to reopen their schools but Don Bwe Village. The main reason for not reopening there is attributed by the lack of/insufficient number of teachers (A temporary school in fact has been built.) Only one out of six teachers working at that school has returned since the flood.

Like in Minbya Township, it is evident that the situation of education in the villages in Mrauk-U Township are facing enormous hardships due to long-term closure of schools, unsafe conditions of the buildings, insufficient staff, and lack of teaching aids after the flood.

The Mrauk-U District Department of General Administration estimates the value of losses sustained by the 58 schools in Mrauk-U Township at 72.835 million kyats. However, since we have identified a total of 63 schools as affected, we can argue that the damage value can be higher than the official figure. We conclude that timely action is needed to address the situation to offset further impacts.

Let us continue to observe the devastations to the education sector of Kyauktaw Township.

2.3. Devastations in the Educational Infrastructure of Villages in Kyauktaw Township

A total of 23 schools were affected by the disaster according to the Mrauk-U District GAD. Eighteen of them are primary schools, one middle school and four high schools (See Table 2.6.)

Table (2.6) List of schools damaged in Kyauktaw Township

Sr	Township	List of Office/ School	Damages	Measurement			Cost of damage (Millions of kyat)
				Length	Width	High	
1	Kyauktaw	Post primary school, Rongzon	95 corrugated iron sheets (8-ft), rafters damaged;	60	30	12	1.0
2	Kyauktaw	Primary school (Htauk Lay Min Tan)	60 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	1.5
3	Kyauktaw	Branch high school, Dote Kan Chaung	60 corrugated iron sheets (8 ft), rafters damaged;	90	30	12	4.5
4	Kyauktaw	Primary school (Late Kan)	80 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	1.5
5	Kyauktaw	High school (Apauk Wa)	200 corrugated iron sheets (8 ft), rafters damaged;	180	30	12	4.0
6	Kyauktaw	Primary school (Gar Pu)	20 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	0.6
7	Kyauktaw	Primary School (War Taung)	80 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	0.8
8	Kyauktaw	Primary School (Yin Dar)	30 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	1.0
9	Kyauktaw	Post primary school (Taung Min Kalar)	60 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	2.0
10	Kyauktaw	Primary school (Than Chaung)	30 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	0.8
11	Kyauktaw	Primary school (Lamu Dabin)	25 corrugated iron sheets (8 ft), rafters	60	30	12	1.0

			damaged;				
12	Kyauktaw	Primary school (Mahamuni)	25 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	0.5
13	Kyauktaw	Primary school (Pauk Le Taung)	60 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	1.0
14	Kyauktaw	Primary school (Wa Pyan)	25 corrugated iron sheets (8 ft), rafters damaged;	90	30	12	0.4
15	Kyauktaw	Post primary school (Barawa)	20 corrugated iron sheets (8 ft), rafters damaged;	90	30	12	0.4
16	Kyauktaw	Branch middle school (Na Gumay)	25 corrugated iron sheets (8 ft), rafters damaged;	90	30	12	0.5
17	Kyauktaw	Post primary school (Nga Pyaw Chaung)	60 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	0.5
18	Kyauktaw	Post primary school (Za Laint Taung)	100 corrugated iron sheets (8 ft), rafters damaged;	60	30	12	1.8
19	Kyauktaw	Primary school (Taung Pan Zin)	Totally flattened as it flooded, covered with sand;	60	30	12	21.6
20	Kyauktaw	Post primary school (Kyein Chaung)	63 corrugated iron sheets (8 ft), rafters damaged;	90	30	12	3.0
21	Kyauktaw	High school (Myoma)	1000 corrugated iron sheets (8 ft), rafters damaged;	150	30	12	6.0
22	Kyauktaw	High school (Kansauk)	100 corrugated iron sheets (8 ft), rafters damaged;	120	30	12	2.0
23	Kyauktaw	Pauk Le Mrauk primary school	entire school building destroyed	60	30	12	21.6
	Total						78.0

Reference: District General Administration Department, Mrauk-U District, Mrauk-U;

According to the table, we see that the villages in Kyauktaw Township lost their roofs. Of them, only the primary school in Pauk Le Myauk was completely destroyed while other schools only saw their roofs and fences gone. The total estimated value of damage is put at 78 million kyats. The Wan Lark Rural Developemnt Foundation presents the situation of the schools in the seven villages in Kyauktaw Township that were affected by the flood as follows:

Table (2.7) Damages caused to seven villages in Kyauktaw Township;

Sr.	Village Name	Damages caused to schools
1	Ohn Badi old village*	Verandah destroyed;
2	Ywat Nyo Taung village*	Collapsed;
3	Mee Yat Pyin*	Roof blown up;
4	Barawa village	Roof blown up;
5	Bomin village*	Roof blown up;
6	Ohn Badi new village*	Roof blown up; School toilets damaged;
7	Dar Wun village*	Roof blown up;

Reference: Wan Lark Rural Development Foundation (Arakan)

When we cross-checked the statistics by the Wan Lark Rural Developemnt with those of the government sources, only one out of seven villages called Barawah Village identified by the Foundation is included in the official list. The other six villages are missing on the official statistics. Therefore there have been six more villages to be put on the list in which 23 villages have been identified by the government side. Those villages saw their schools losing roofs: the verandah was damaged in Old Ohnpadee Village, while a school building collapsed in Ywet Nyo Taung Village and the school roofs opened up and toilets thrashed in New Ohnpadee Village.

Now we shall continue to observe the situation of the impact on the education sector in the 10 villages in Kyauktaw Township where we conducted inspections in person. The data gathered are shown in Table 2.8. Those villages include those along the banks of the Kissapanadi River, also known as Kaladan River, as well as those villages around Kywelann Creek. Namely, Kyaukphru, Lamutabin, Ahlamadi, Kyaungswephru, Pauk Le Taung, Pauk Le Myauk, Rongzondaung and Rongzonmyauk are the villages located along the Kissapanadi whereas Aungzeyya, Thanpyin, and Kyaungpho are the villages located in the vicinity of Kywelann Creek.

Similarly, after we had cross-checked, we discovered that the government statistics exclude six villages that have also been affected by the disaster as identified by the Wan Lark Rural Developemnt Foundation. Those additional six villages are marked with asterisk (*).

The damages of the schools include covering of mud, total and partial destructions of school buildings; and damage in school verandahs, furniture, desks, chairs, benches and stationeries, not much different from the previous townships.

Many of those villages have now cleansed the schools of dirt and mud. In the villages where schools were totally destroyed, temporary schools have been opened at public rest houses, sermon halls in monasteries and in makeshift tarps. In villages where school damages are within functioning capacities, school funds and private donations, including donations by some international charity groups, have been raised and roof and structural repairs are underway. In some villages, funds provided by the government are not enough to repair the schools, for instance in Kyaukphru Village. Some villages where only school furniture was lost, the locals paid for the replacements on their own, as in Pauk Le Myauk Village.

After cross-checking all of our data with that of the government's and of the Wan Lark Rural Developemnt Foundation's, a total of 35 schools have been identified as affected. Hence, the

total value of damage to the educational infrastructure in the township could be higher than the 78 million kyats as estimated by the government.

Likewise, Kyauktaw Township also saw its educational infrastructure suffered damages due to long closure of the schools during the flood as well as because of infrastructural needs, disproportionate teachers-and-students ratio, and inadequate teaching aids after the flood, highlighting the challenges the villages in Kyauktaw Township are facing. Unless timely support is provided, it could lead to having more severe impacts.

Now, we will move on to observe the situations of educational infrastructure in the villages in Ponnagyun Township.

2.4. Devastations in the Education Sector of Villages in Ponnagyun Township

According to the data provided by the Sittwe District GAD, a total of 37 schools in both urban and rural areas of Ponnagyun Township were affected by the disaster. The details of those 37 schools are as follows:

Table (2.8) Damages caused to schools in 11 villages in Kyauktaw Township

Sr.	Village Name	Number of School	Number of Students	Number of Teachers	Damage to education facilities because of natural d aster	Updates
1	Pauk Le Taung (Nagumay village tract) Population – 752, Number of homes – 156, Household – 182	One primary school	93	5	School roof blown up; School furniture damaged;	School reopened; Publicarerest houses hosting classrooms temporarily; Damage report submitted to government;
2	Rongzon Taung (Kyaung Swe Phyu village tract) Population – 1074, Number of homes – 182, Household – 204;	One primary school; One post primary school;	Primary level – 229, Post primary level – 79	10	Benches damaged; Post primary school completely damaged;	School reopened; Post primary school rebuilt with donation of individual well-w hers; Damage report submitted to government;
3	Lamu Dabin (Lamu Dabin village tract) Population – 1315, Number of homes – 274, Household – 288	One primary school One attached primary school	Primary level – 218, Post primary level – 29	8	Benches drifted away; School roof blown up;	School reopened; School repaired with support of MCF but school too old, number of student more than capacity of classrooms; Damage report submitted to government;
4	Kyaukphyu* (Kyaukphyu village tract) Population – over 850, Number of homes – 137, Household – 150	One primary school	57	5	School covered with mud; School partly damaged; Almost all benches damaged;	School reopened; Temporarily, school opened at monastery; 50 bags of cement received from Township Administration Department for school repairs, which delayed as no budget for construction materials; Damage report submitted to government;

5	Kyaung Swe Phyu* (Kyaung Swe Phyu village tract) Population – 730, Number of homes 111; Household – 180;	One primary school;	102	6	(Wooden) school building destroyed; (Brick foundation of school sank into ground; Benches, Stationeries damaged;	School reopened; Damage report submitted to government;
6	Aung Zay Ya* (Aung Zeyavillage track) Population – 601, Number of homes – 130, Household – 150;	One primary school; One attached middle school;	Primary level – 95 Middle level – 47	4	School covered with mud; Some part of school destroyed;	School reopened; Mud removed; After flood, a teacher transferred out of school; Primary school being rebuilt; (Government supported) middle school moved to monastery;
7	Kyaung Pho* (Pha Yar War village tract) Population – 760, Number of homes – 130, Household – 160;	One primary school; One attached middle school;	Primary level – 60; Middle level – 40;	8	School covered with mud; Benches damaged; School furniture destroyed;	School reopened; Mud removed;
8	Than Pyin* (Gwa Sone village tract) Population – 672, Number of homes – 124, Household – 134;	One primary school;	Primary level – 83;	5	School covered with mud; Some part of roof ripped off; Some benches, schoolbooks, stationeries also damaged;	School reopened; Mud removed;
9	Pauk Lay Mrauk (Nagu May village tract) Population – 752, Number of homes	One primary school;	Primary level – 133	4	School (walls, roof) completely damaged; 6 blackboards, 22 benches damaged; Text books gone;	School reopened; Students buy mats, six blackboards by themselves, studying at monastery; Damage report submitted;

	– 156, Household – 182					
10	Rongzon Mrauk (Kyaung Swe Phyu village tract) Population – 628, Number of homes – 98, Household - 116	no school;				
11	Ahla Madi* (Kyaung Swe Phyu village tract) Population – 805, Number of homes – 132, Household – 134	One attached primary school; One post primary school	Primary level – 131, Post primary level - 26	8	Roof of school destroyed; 20 benches, 2 tables drifted away;	School reopened; School roof repaired using school fund; Damage report submitted to government;

Source: Findings of field research;

We can find that a total of 37 schools across 28 villages including two in urban Ponnagyun areas were affected according to the Table.

[Remark: Details of the destructions of those schools are not available here. They are also not included in the data collected by the Wan Lark Rural Developemnt Foundation (Rakhine State).]

Nevertheless, we are able to observe the destructions of the cyclone in Ponnagyun based on the information we received by inspecting 10 villages in the region.

Table (2.9): List of schools affected in Ponnagyun Township

Sr.	District	Township	Ward	Village Tract	Village	School
1	Sittwe	Ponnagyun	Alaesu	-	-	1
2			Ywa Haung	-	-	1
3				Poe Shi Pyin	Poe Shi Pyin	2
4				Nat Taung	Nat Taung	1
5				Phaung Sate	Phaung Sate	1
6				Hmo Hin Taw	Hmo Hin Taw	1
7				Yoe Tayoke	Yoe Tayoke	3
8				Pet Khwet Sate	Pet Khwet Sate	1
9				Nga/ Pyauk Se'	Nga/ Pyauk Se'	1
10				Let Wel Myan	Let Wel Myan	1
11				Thae Tet	Thae Tet	2
12				Pyin Ywar Shae	Pyin Ywar Shae	1
13				Aung Seik	Aung Sate	2
14				Beh Go Kyein Chaung	Bell Go Kyein Chaung	1
15				Min Si Chaung	Min Si Chaung	1
16				Pel Si Nan	Pel Si Nan	1
17				Kyauk Seik	Kyauk Seik	1
18				Moe Tain Pyin	Moe Tain Pyin	1
19				Kyein Kyun	Kyein Kyun	1
20				Alel Chaung	Alel Chaung	1
21				Kalar Chaung	Kalar Chaung	1
22				Kyun Taung	Kyun Taung	2
23				Tago Ywa	Tago Ywa	1
24				Kywel Hto	Kywel Hto	1
25				Kanchaung	Kanchaung	1
26				Aung Zeya	Aung Zeya	1
27				Kha Maung Taw	Kha Maung Taw	1
28				Dipayone	Dipayone	1
29				Yarchaung	Yarchaung	1
30				Nat Seik	Nat Seik	1
31				Kyawzan	Kyawzan	1

Total	2	86	86	37

Reference: Sittwe District General Administration Department;

Government statistics show that a total of 29 schools sustained damages in Ponnagyun Township whereas we could identify additional seven schools, totaling 36 (the seven schools are marked with (*) in Table 2.10). As for Man Aung Tha Village that is marked with double asterisks (**), teachers have returned to the primary school. However this village school has since long before been provided space below the village monastery building to hold classes, the problem of lacking a school building has ever existed.

According to our primary data, damages to the school infrastructure in Ponnagyun Township include total destruction of school buildings, covering of mud, partial destruction of roofs, walls and floors, and damages and losses to desks, benches and stationeries.

In addition to those problems cited above, inadequate teaching staff is another problem faced in four out of five villages we inspected. The most affected is the school in Pauktupauk Village, with only one teacher to teach 86 teachers currently though five teachers were previously working. In other villages, one or two teachers out of six or five staff could not resume their respective duties.

Schools in many villages have now been cleansed of mud and dirt whereas in some villages with partially destroyed schools, private donations have been used to pay for repairs to schools so that students can continue their studies. Monasteries and sermon halls are also spaces for classrooms in some locations. In Pyinlyashay Village, its high school saw two out of three school buildings were totally destroyed while the other one is not safe to continue to be used. Tarpaulin sheets have been used to shelter the ruined classrooms in that dangerous building. In some villages, the students have to sit on the floor to write down since they have lost their desks and benches. The list of damage to the school buildings has reportedly been submitted to the government authorities concerned.

Ponnagyun, like Minbya, Mrauk-U and Kyauktaw townships, sustained severe damages to its educational infrastructure. Long closure of schools during the disaster, as well as concerns over the safety of the school buildings and inadequate number of teachers and teaching aids have all contributed to the impact on the education of the local students. Timely aids are required to provide so as not to sustain more severe situations.

Table (2.10) Damages to schools in 10 villages in Ponnagyun Township

Sr.	Village Name	Number of School	Number of Student	Number of Teacher	Damages to schools	Updates
1	Pyin Hla* (Myin Kattar village tract) Population – 776, Number of Homes – 150 Household – 170	One Primary School	Primary Level – 55	5	school covered with mud; School fence damaged; Stationeries, text books, blackboards damaged;	School reopened; Mud removed; Blackboards repaired; Some text books received from Department of Education but not sufficient;
2	Myin Kat Taw* (Myin Kat Taw village tract) Population – 776, Number of Homes – 150 Household – 170	One primary school, One attached middle school	Primary level 120, Middle level 32	8	Primary school floor destroyed; Blackboards damaged; Benches drifted away;	School reopened; classes opened at monastery; dining tables of villagers replaced benches;
3	Pyin Yar Shae (Pyin Yar Shae village tract) Population – 1603, Number of Homes – 305 Household – 370	One branch high school;	525	26	All three school buildings collapsed; (One building of 20 ft, one building of 90 ft, one building of 100 ft); School furniture, Stationeries damaged; Benches drifted away; School covered with mud;	School reopened; Middle school temporarily opened at monastery; High school opened at collapsed buildings under tarpaulin sheets; Damage report submitted to government;
4	Let Wel Myan* (Let Wel Myan village tract) Population –	One primary school	182	7	School covered with mud; School roof blown up; (10 corrugated iron sheets gone;) 30 benches drifted	School reopened; Damage report submitted to government;

	1226, Number of Homes – 218 Household – 226				away; Stationeries destroyed;	
5	Gwa Sone* (Gwa Sone village tract) Population – 483, Number of Homes – 90 Household – 110	One primary school	105	4	School damaged; Benches, tables drifted away; Blackboards damaged;	School reopened; Students sit on floor, no benches; Only four out of five teachers remained;
6	Man Aung Thar (Kyein Chaung village tract) Population – 405, Number of Homes – 82 Household – 94	Primary school (no building for school, school opened at monastery;	Primary level 51	5	As school opened at monastery, no obvious damage	school temporarily opened at monastery; Government reported that no school building but no plan yet; village also cannot afford to build its school by themselves;
7	Kyein Chaung (Kyein Chauing village tract) Population – 1150, Number of Homes – 80 Household – 98	One primary school	Primary level 90	4	School covered with mud;	School reopened; Only 4 out of 6 teachers remained;
8	Bel Koh* (Kyein Chaung village tract) Population – 483, Number of Homes – 90 Household – 110	One primary school;	Primary level – 60	5	School covered with mud; School windows, benches broken;	School reopened; Mud removed; Damage report submitted to government;

9	Kaung Mon* (Hmo Hin Taw village tract) Population – 250, Number of Homes – 48 Household – 48	One primary school;	Primary level – 62	4	School roof, walls damaged; Two blackboards, 4 sets of benches damaged;	School reopened; School repaired with donation of individual donor; Only four out of five teachers left;
10	Pauk Two Pauk* (Min Catter village tract) Population – 435, Number of Homes – 90 Household – 101	One primary school;	Primary level – 86	1	School covered with mud; School roof, Sign board damaged;	School roof repaired; Although school reopened, shortage of teachers; (Only one out of five teachers left ;) Damage report submitted to government;

Resource: Findings of field research;

2.5. Damages to Educational Infrastructure and Challenges

The destructions of the education infrastructure in those four townships can be summarized as follows:

1. School building
2. School furniture
3. Teaching aids, and
4. Other losses and difficulties.

Table (2.11): Damages, challenges faced by education sector

Building Damage	School Furniture Damage	Teaching Aid Damage	Others: damages, challenges;
Damaging school building completely;	Damaging benches;	Damaging books	Covering mud in School, school compound
Damaging roof	Damaging tables;	Damaging text books;	(Because of muds in school campus), sewage canals damaged, schools flooded when it rains;
Damaging wall	Damaging blackboards	Damaging Stationeries	Insufficient teachers
Damaging floor	Damaging teacher chairs	Computer, TV	Damaging roads to school
Damaging school windows	Cupboard		Damaging school uniforms
Damaging verandah			Without light at night, difficult to study
Lowering floor, foundation			Damaging documents, archives of school
Leaning of school building			
Damaging door			
Stairs			
Damaging signboards			
Damaging School			

toilets			
Damaging fences			
Damaging dormitories of teachers			
Damaging fence			

References: General Administration Department of Mrauk-U District, Wan-Lark Rural Development Foundation (Arakan), Finding of field research

2.6. Necessary measures to be taken to repair damages to the educational infrastructure in the four Rakhine State townships

The followings are the responses from the community leaders, administrators, monastery abbots and teachers in the 41 villages, as well as from local civil society organizations to our queries about which plans and methods they have contemplated to rehabilitation work to address the difficulties in the educational sector, as well as how well-wishers and aids organizations can help in this regard.

As for the damages to the school buildings, villages' ability for rehabilitation is limited such as in doing minor repair work to the schools, holding classes at monasteries or under makeshift tarps. However, it is not so easy for them to raise funds on their own to do heavy repair work to schools and other infrastructure since there are other sectors other than education that have been affected by the disaster. (See the following chapters for devastations in other sectors.)

Thus, external aids are expected in order to repair or rebuild schools. Many villages have reportedly requested the authorities concerned for official aids, but no concrete information regarding the timeframe and amount of the official aids was received from the local people.

However, we obtained some information about aids by private individuals, such as a 4.7-million-kyat worth of wood, corrugated iron sheet and cement for school reconstructions in Thaluchaung Village, Minbya Township, by Shwe Than Lwin Company. It is apparently not adequate since the total estimated cost for the whole reconstruction work is 12.6 million kyat, leaving the villagers stuck in limbo. Likewise, 50 sacks of cement have also been received for school reconstruction in Kyaukphru Village in Kyauktaw Township from private donors. Similarly, Kyaukphru villagers are unable to start the work since it is beyond their capacity to pay for other expenses. In some villages, where the schools were only partially damaged, school funds and privately donated money have been used for the repair, while in some others where it is impossible to raise funds to reconstruct totally collapsed schools, classes have been held at monasteries or villagers' homes.

The data for the private donations of school furniture was not available. In some villages, local villagers contributed as much as they could to pay for the stuff. For instance, in Pauklemyauk Village in Kyauktaw Township, the villagers paid to buy blackboards and mats for the students who are studying in the monastery. These facilities are definitely important needs for education.

Significant support to restore the lost teaching aids came in the form of supplying exercise books. News of the supplies of exercise books as well as cash donations for school reconstructions from other charity groups was also heard. Exercise books were supplied mainly by local CSOs such as the Rakhine Thahaya, and individual donors, as well as some international organizations.

Meanwhile mud that covered the schools has been removed by the villagers on their own or with help from CSOs from across the country. However, surrounding areas of the schools now face the problem of flood during the rain since the mud has ruined the existing sewage system. This should be tackled as a top priority as it can affect the students' health.

A local staff with a CSO operating in Minbya Township said the problem of insufficient number of teachers had been occurring for a long time. Some teachers reportedly did not go to their postings as assigned by the Ministry of Education. Following the disaster, some teachers were promoted and have transferred to schools in other regions while some other teachers have not returned to their schools in the affected villages, giving the region's already-underinvested education sector another blow. Among the 40 villages we inspected in person, nine villages were facing the problem of losing the teachers (see table 2.3, 2.5, 2.8 and 2.10).

In some villages, we saw that the villagers had hired private tutors by paying their salaries from their own money (more often than not, paddy rather than money is their salaries). However, not all villages could afford to do so – the salaries are substantial – hence they were expecting donors who would pay the salaries of those teachers. While those private tutors have to come to the schools regularly as a condition to get paid, some government-hired teachers are reportedly getting paid even if they are absent. Nevertheless, it is the responsibility of everyone concerned to convince those public school teachers who have been sent by the Ministry of Education not to neglect their duties. In this regard, cooperation between the local communities and the Ministry is a precondition.

The school teacher problem is linked to the transportation. Local villagers in Kyauktaw Township said transportation plays a very significant role for the development of education in the region. If their villages, they said, had good road infrastructure, the teachers would be able to make day trips to their village schools to teach the students, an example some other villages, such as some in Ponnagyun Township, have set, where the teachers did not stay in the villages but rather would travel to their workplaces by motorboats. If other villages could follow that example, it would be like killing two birds with one stone, since the villages concerned would not have to provide accommodation and other facilities for the teachers, and the teachers as well would not need to stay in those villages full time.

And those townships have only very few middle and high schools, with many villages only having primary schools, and students after graduating from their primary school have to travel to post-primary or middle or high schools located in other places. Because the disaster has destroyed most of the roads there, the students can barely travel to faraway schools using those damaged road networks. Having known this, we would like to conclude that immediate restoration of road infrastructure in this region is a prerequisite for the teachers to come to teach at those village schools as well as for the older students to be able to make long distance trips to study at schools in other places.

By improving the road infrastructure and introducing better transportation modes into those regions would have huge positive impact on the area's education. What's more, problems such as shortage of school uniform and electricity for the students are the results of the area's businesses being destroyed, particularly the agriculture that was largely affected by the disaster. It affected parents' support on their kids' study. New school uniforms need to be procured. As for the electricity, the students now have to rely only on candle light for their study. With their parents' incomes harshly affected, even candles have become an expensive stock. Only three towns in three townships out of four we inspected are connected with the national power grid; all the villages have absolutely no electricity. A village administrator we interviewed said the villages could not afford to pay for the extensions of power cables from the national grid towers to their villages – which would cost them 100 million kyat for every one mile, leaving them in the dark forever.

With a state-sponsored electricity service still far from realization, the villagers have turned to rely on solar power as the best solution. However, even before they were hit by the storm, solar panels and other accessories had been expensive for most of them. Only few families could light up their houses with solar-powered bulbs. Now that their businesses have been struck by the disaster, electrifying themselves using solar energy is even a more distant dream. In the 40 villages in the four townships we observed, the only village that received government-sponsored solar light was the 130-house Aung Zeya Village in Kyauktaw Township. To help the students study at night, supplying solar-powered electricity should be considered and it could help improve the region's education.

Last but not least important is that a committee should be formed with key stakeholders such as school masters, teachers, village administrators, community elders and respected monks; whose committee would oversee the implementations of any relief or assistance program supported by any entity. This suggestion is intended to prevent fraud in managing the funds as there have reportedly been such cases before.

Regarding this issue, it is notable how the Kyauktaw Township Emergency Relief Committee handled the assistances. This Committee formed village sub-committees in the township in order to implement emergency relief work at the grass-root levels effectively and efficiently. Similarly in the other townships, decentralization of the management of the relief work led to fruitful results. In Mrauk-U, the Emergency Flood Relief Committee comprised of local CSOs; in Minbya, the Emergency Relief Committee made up of CSOs, *Sangha* organizations, senior monks and some governmental departments, as well as the **Thazin Social Development Foundation Public Center (Minbya)**; and in Ponnagyun, youth organizations from Yotayoak Village all played key roles in linking volunteer relief workers and private donors with reliable community elders or village sub-committees so that the mission was accomplished smoothly, effectively and efficiently.

Hence it is utmost important that anyone who wants to provide aids coordinate with community elders or the village sub-committees through the relief committees in relevant townships so as to prevent corruption. Moreover, since the aids under discussion are aimed at helping the educational sector, the educational departments in relevant townships should be consulted, so that the aid programs could continue sustainably under the management of local people and educational authorities.

So far it is unfortunately not available to present detailed information about the assistance by private donors, regional actors and international organizations for the restoration of the educational infrastructure in those four townships, nor is it possible to include in this report how those individuals and organizations will further assist, as this is beyond our reach. Nevertheless, coordination meetings among those donors should be conducted as frequently as possible so as not to incur unequal and inequitable consignments of aids.

Chapter 3
Impacts on the agriculture and other livelihoods, and food security

This chapter discusses in detail the impacts of the disaster on the livelihoods of the locals, especially on the agriculture, and on the food security of the local populations in the four townships in Rakhine State, and based on the findings of our research, makes recommendations on how the necessary measures should be taken.

In so doing, this region's main livelihood – agriculture – is given more special attention than other sectors are.

3.1. Monsoon paddy damage caused by the disaster

The Department of Agriculture for Rakhine State, the Ministry of Agriculture and Irrigation, provides the data for the devastation of monsoon paddy due to the inundation of flood waters as shown in Table 3.1.

Table (3.1) Damages to monsoon paddy because of heavy rain in June, July

Sr;	Township	Number of Villages	Groups	Flood (Acres)	Affect (Acres)	Damage (Acres)
1	Sittwe	15	36	3,500	2,826	1,637
2	Ra taung	39	72	4,151	3,500	1,765
3	Ponnagyun	55	76	23,004	15,691	10,094
4	Pauktaw	48	188	18,842	14,223	8,946
5	Mrauk-U	97	346	84,745	84,745	75,242
6	Kyauktaw	65	198	51,356	51,356	41,281
7	Minbya	63	295	36,079	36,079	36,079
8	Myebon	46	123	11,200	11,200	8,550
9	Maungdaw	12	79	3,527	1,754	819
10	Buthidaung	68	178	33,502	33,502	18,129
11	Kyaukphru	15	48	6,505	4,682	1,867
12	Ann	14	54	11,893	11,425	11,397
13	Thandwe	33	65	837	837	415
14	Taunggup	25	100	1591	989	841
15	Gwa	16	59	487	345	184
	State Total	611	1,917	291,219	273,154	217,246

Source: Department of Agriculture, Ministry of Agriculture, Irrigation (Rakhine State)

The table shows that damage to the monsoon paddy occurred in a total of 611 villages in 15 townships in Rakhine State due to heavy rains in last June and July. A total of 291,219 acres of paddy was inundated, while 273,154 acres affected and 217,246 acres destroyed.

If we zoom in the situation of the four townships of our focus – Minbya, Mrauk-U, Kyauktaw and Ponnagyun – Minbya's 63 villages saw some 36,079 acres destroyed, Mrauk-U's 97 villages had 75,242 acres destroyed, and Kyauktaw's 65 villages 41,281 acres destroyed. Out of the 15 townships, Mrauk-U came as the township with the highest number of affected acres while Kyauktaw and Minbya follow as townships with the second highest and the third highest numbers respectively. Ponnagyun stood sixth most affected after Buthidaung and Ann townships.

3.2. Impacts on agriculture, other livelihoods and food security of the villages in Kyauktaw Township, and required support

As the statistics obtained from the Department of Agriculture only generalize the impacts on the 15 townships of the entire State, we need to magnify the impact on the agriculture sector of each and every township and village. Our sources are the data we gathered firsthand from the 41 villages in those four townships, as well as the statistics supplied by the township GAD. First of all, the devastations in the agriculture and livestock sectors of Kyauktaw Township, citing the Mrauk-U District GAD, are seen in Appendix 3.

(Note: The agriculture is dependent on livestock, particularly in Kyauktaw Township where only few farmers use modern farming machineries but the majority are relying heavily on the cattle for their farming. Hence, losses in the livestock sector are also discussed.)

Appendix 3 shows some inconsistencies between the statistics obtained from the Mrauk-U District GAD and those from the Department of Agriculture. The latter publicized that there were 65 villages where monsoon paddy was affected whereas the former cited 80 villages as affected. However, both departments describe the same number of acres affected as 41,281. Since the GAD's statistics in Appendix 3 is a detailed description of each village affected, the figure about the number of affected villages as put forward by the GAD should be more correct, i.e. a total of 80 villages in Mrauk-U Township suffered damage in their agriculture. Of them, eight villages namely Payapaung, Sin-oh-chai, Lamu-tabin, Letkhoppinyin, Kyaung-swe-phyu, Dukkan-chaung, Pyaungseik and Aung Zeya lost thousands of acres of their monsoon paddy fields while casualties in the other villages were in hundreds of acres or tens of acres.

According to the statistics by the Mrauk-U District GAD mentioned in the Introduction, Kyauktaw Township has a total of 92,795 acres of monsoon paddy land; hence the damage amounts to 44.48 percent of the total (41,281 acres).

A total of 20 villages lost their farming animals such as cattle: namely Payapaung, Shauk Chaung, Nga Tabaung, Kun Ohn Chaung, Thinganet, Sapaseikthari, Lammadaw, Thayet Tabin, Nyaungchaung, Ywamapyin, Kya-ninn-kan, Seikchon, Saphotha, Kadi, Apauk-wa, Pyeinchaung, Dukkan-chaung, Bomin, Barawah, and Aung Zeyya.

However, according to an announcement by the Department of Agriculture for Rakhine State, under the Ministry of Agriculture and Irrigation, paddy was replanted successfully in many acres destroyed (see Appendix 2). The announcement claims that a total of 41,276 acres was recovered, except for five acres that had been covered by sand and big trees, out of 41,282 acres of monsoon paddy land destroyed in Kyauktaw Township.

Even though official announcement boasts resilience of many of the destroyed farmland, there are many more steps yet to come in order to completely return to normal conditions. It is confirmed by the data we collected in Kyauktaw township (see Table 3.2).

The 11 villages we visited to collect data include those located along the banks of Kissapanadi River, also known as Kaladan, as well as those located around Kywelann Creek. Kyaukphru, Lamutabin, Ahlamadi, Kyaungswephyu, Paukletaung, Pauklemyauk, Rongzontaung, and Rongzonmyauk are villages along the Kissapanadi while Aung Zeya, Thanpyin and Kyaungpho are the villages in the vicinity of Kywelann Creek. Since geographical formations also play a role in agricultural activities, impacts on the villages along the Kissapanadi River and on the villages around Kywelann Creek are different.

Table (3.2): Damages to agricultural sector in 11 villages in Kyauktaw Township

Village Name	Population/ Number of Homes/ Household	Damage Condition	Condition of cultivation	Possible Consequences	Needs for Recovery
1. Aung Zeya (Aung Zeya village tract) Major source of livelihood: Agriculture (Farmland owner/ Farmer – 38) Others: Aquaculture/ Fisheries Casual labor	Population – 601 Number of Homes – 130 Household – 150	Out of total 414 acress of monsoon paddy, 389 acress destroyed by flood, silt;	150 baskets of paddy seeds received from agriculture department but it difficult for cultivation as seeds a mix of different strains; Some farmers grew their 'food paddy', some supplied seeds;	As seeds a mix of different strains, yield can decrease; It can't provide seeds for next year cultivation; If rainfall little or if crops infested with pests, monsoon paddy yield can decrease; Good yields uncertain, farmers may face financial problem for their winter crops;	fertilizers, pesticides, input supports needed; Water pumps will be needed if rainfall low; Financial support for winter crop, cattle or machineries for plowing; (They grow some winter paddy; Chili a major winter crop ;)
2. Kyaung Pho (Brawar village tract) Major source of livelihood: Agriculture (Farmland owner/ Farmer – 38) Others: Fisheries Casual Labor	Population – 760 Number of Homes – 130 Household – 160	All 390 acress of monsoon paddy destroyed by flood, silt;	300 baskets of paddy seeds provided by agriculture department but it difficult for cultivation as seeds a mix of different strains; Some farmers used their 'food paddy', some used supplied seeds to grow their crops;	As seeds a mix of different strain, yield can decrease; It cannot also get seed for next year cultivation; If rainfall little or if crops infested with pests, monsoon paddy yield can decrease; (Even though land may be rich with nutrients because of silt, pest problem may be immense;)	fertilizers, pesticides, input supports needed; Water pumps will be needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing; (Agriculture Department said that will provide pesticides sprays, asked farmers to buy pesticides by themselves;
3. Than Byin	Population –	All 770 acres	50 baskets of paddy	As seeds a mix of different	fertilizers, pesticides, input

(Gwa Son village tract) Major source of livelihood: Agriculture **(Farmland owner/ Farmer – 68) Others: Fishermen – 10 Casual Labor**	672 Number of Homes – 124 Household – 134	of monsoon paddy destroyed by flood, silt;	seeds received from agriculture department but difficult for cultivation as seeds a mix of different strains; Some farmers used their 'food paddy', some used supplied seeds to grow their crops; Paddy fields start infested pests;	strains, yield can decrease; It cannot also get seed for next year cultivation; If rainfall little or if crops infested with pests, monsoon paddy yield can decrease; (The land not cultivable for winter crops;)	supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing; (As They not suitable for winter crops, alternative livelihood opjettyunity needs to be created;)
4. Kyaukphyu (Kyaukphyu village tract) **Major source of livelihood: Agriculture** **Others: Fishermen – Casual Labor**	Population – over 850 Number of Homes – 137 Household – 150	Out of total 600 acress of monsoon paddy, over 400 acress destroyed by flood, silt;	400 bags of paddy seeds received from an individual donor; On about 400 acress of paddy grown farmers' 'food paddy', some used supplied seeds to grow their crops;	If rainfall little or if crops infested with pests, monsoon paddy yield can decrease; (Even though soil may be rich with nutrients because of silt, pest problem may be immense; pest may destroy entire paddy;)	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing; (need groundnut seeds mainly for winter crop;)
5. Paukle Mrauk (Nagu May village tract) **Major source of livelihood: Agriculture**	Population – 752 Number of Homes – 156 Household – 182	All 148 acress of monsoon paddy destroyed by flood, silt;	47 baskets of paddy seeds received from Emergency rescue team; Some farmers used their 'food paddy', some used supplied	As cultivation time late, monsoon paddy not favorable; As seeds a mix of different strains, yield can decrease; It cannot also provide seeds for next year cultivation;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing;

Others: Fishermen – Traders, Casual labor			seeds to grow their crops; minor pest problem;	If rainfall little or if crops infested with pests, monsoon paddy yield can decrease;	(They usually cultivates groundnut, corn for winter crop ;)
6. Pauk le taung (Nagu May village tract) **Major source of livelihood: Agriculture** **(Farmland owner/ Farmer – 71) Others: Fishermen – about 30 Trader Casual Labor**	Population – 752 Number of Homes – 156 Household – 182	All 180 acres of monsoon paddy destroyed by flood, silt;	Support of paddy seeds from donor organizations; Some farmers used their 'food paddy', some used supplied seeds to grow their crops; minor pest problem;	Monsoon paddy yields can decrease because of pest problem;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing; (They mainly need groundnut seed for winter crop;)
7. Lamu Tabin (Lamu Tabin village tract) **Major source of livelihood: Agriculture** **(Farmland owner/**	Population – 1315 Number of Homes – 274 Household – 288	All 1800 acress of monsoon paddy destroyed by flood, silt;	paddy seed supports from Agriculture Department; Some farmers used their 'food paddy', some used supplied seeds to grow their crops; Because of loam, soil	Monsoon yield may decrease because seeds a mix of different strains;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing; (They usually grow chili, eggplant, groundnut, etc; As it

Farmer – 52) Others: Fishermen – Casual Labor			rich with nutrients, paddy grow fast;		also aims to grow paddy, paddy seeds also needed;
8. Kyaung Swe Phyu (Kyaung Swe Phyu village tract) **Major source of livelihood: Agriculture** **(Farmland owner/ Farmer – 52) Others: Fishermen – Casual Labor**	Population – 730 Number of Homes – 111 Household – 180	All 380;25 acres of monsoon paddy destroyed by flood, silt;	Some farmers used their 'food paddy'; pest threat to paddy;	Monsoon paddy yield can decrease because of pest problem;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crops, cattle or machineries for plowing; (They usually grow groundnut, mustard;)
9. Ahla Madi (Kyaung Swe Phyu village tract) **Major source of livelihood: Agriculture** **(Farmland owner/ Farmer – 40) Others:**	Population – 805 Number of Homes – 132 Household – 134	All 515 acres of monsoon paddy destroyed by flood, silt;	support of paddy seeds from donor organizations; Some farmers used their 'food paddy';	If less rainfall or if crops infested with pests, monsoon paddy yield can decrease;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low;

Fishermen – 8 **Casual Labor**					
10. Rongzon Taung (Kyaung Swe Phyu village tract) **Major source of livelihood: Agriculture** **(Farmland owner/ Farmer – 52)** **Others:** **Fishermen – 8** **Casual Labor**	Population – 1074 Number of Homes – 182 Household – 204	All 598;9 acres of monsoon paddy destroyed by flood, silt;	Some farmers used their 'food paddy';	If less rainfall or if crops infested with pests, monsoon paddy yield can decrease;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing; (They mainly grow chili, mustard for winter crops; However, as it a low-lying area only few acres cultivable; It necessary to create alternative job opportunities;)
11. Rongzon Mrauk (Kyaung Swe Phyu village tract) **Major source of livelihood: - Agriculture** **(Farmland**	Population – 628 Number of Homes – 98 Household – 116	All 360 acres of monsoon paddy destroyed by flood, silt;	Some farmers used their 'food paddy';	If less rainfall or if crops infested with pests, monsoon paddy yield can decrease;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low;

owner/ Farmer – 31) Others:: F hermen – 60 Casual Labor					

Reference: Findings of field research;

The villages in the proximity of Kywelann Creek in Kyauktaw Township are located on a lower altitude so they suffered inundation more severely and a longer time than other communities. Virtually all acres of the monsoon paddy that had been grown since the early monsoon season were destroyed in hundreds of acres. Likewise, villages along the Kissapanadi also suffered huge impact on the agriculture because of the disaster.

Even though some acres were now growing paddy, the yield of the crops for the coming harvest has been a concern because according to local villagers the paddy seeds sowed after the flood were of mixed strains. Paddy seeds supplied by the CSOs and the authorities were a mix of slow-yield and quick-yield strains. Local farmers said some seeds they planted following the flood were originally intended for their food; hence growing seeds of a mix of different strains is a reason of a constant worry for the farmers about this year's yield. Some farmers faced higher costs as they had to sow the seeds two or three more times because of fertility failures.

Another concern for the farmers has been the supply of enough rainwater because of the late planting of the paddy.

The threat of pests is also a risk the farmers will have to take. Experienced farmers said there was a high risk of paddy being infested with insects especially of the plants grown on alluvial soil, given that many acres of paddy fields were covered with silt left by the flooded water. Even though the plants were still being monitored in some villages, those in some others had already been infested with pests, such as in the villages of Thanpyin and Pauklemyauk.

The disaster could be seen as a crippling blow to the region's economy since all the villages in Kyauktaw have been heavily relying on agriculture as a major source of livelihood. With the agriculture having been a sector that creates jobs for a wide range of local people particularly daily laborers working on the farms, many people have lost their jobs now. Few villagers who rely on fishing were also affected since many of their fishing nets were destroyed by the disaster. In Pauklemyauk Village, where a market with the capacity of more than 100 stalls is relied on by the local traders, the mud did not spare the stalls, and makeshift tents were built to continue to operate the market.

The farmers are facing a shortage of rice as the vast majority of "food paddy" (a proportion of the yield they do not trade but keep for food) was also destroyed (see Table 3.3).

Table (3.3): Food security of 11 villages in Kyauktaw Township

Village Name	Population/ Number of Homes	Damages to Food	Current situation	Possible impacts
1. Aung Zeya (Aung Zeya village tract)	Population – 601 Number of Homes – 130 Household – 150	2,970 baskets of food paddy destroyed by floods;	to depend on donations;	If more donations do not come in, possible food crisis;
2. Kyaung Pho (Brawar village	Population – 760	16,275 baskets of food paddy	to depend on donation;	Food donation necessary till harvest

tract)	Number of Homes – 130 Household – 160	damaged by floods;		time; otherwise can be a big problem;
3. Than Pyin (Gwa Son village tract)	Population – 672 Number of Homes – 124 Household – 134	2750 baskets of food paddy damaged by floods;	to depend on donations; Now, donations starting to decrease;	Food donation necessary till harvest; otherwise, can be a big problem;
4. Kyaukphyu (Kyaukphyu village tract)	Population – 850 Number of Homes – 137 Household – 15	Food paddy destroyed;	to depend on donation; a shortage of food;	Food supply necessary till harvest time; can be a big problem;
5. Pauk Lay Mrauk (Nagu Mel village tract)	Population – 752 Number of Homes – 156 Household – 182	Food paddy destroyed;	to depend on donation;	If more donations do not come in, can be food crisis, crime rates can increase;
6. Pauk Le Taung (Nagu Mel village tract)	Population – 752 Number of Homes – 156 Household – 182	About 2000 silos, where food paddy stored, damaged;	to depend on donations;	Food supply necessary till harvest; otherwise, can be a big problem;
7. Rongzon Taung (Kyaung Swe Phyu village tract)	Population – 1074 Number of Homes – 182 Household – 204	Food paddy destroyed;	to depend on donation;	If more donations do not come in, can face food related crimes;
8. Lamu Tabin (Lamu Tabin village tract)	Population – 1315 Number of Homes – 274 Household – 288	About 5000 silos, where 'food paddy' stored, damaged;	to depend on donation;	If more donations do not come in, food related problems can occur;
9. Kyaung Swe Phyu (Kyaung Swe Phyu village tract)	Population – 730 Number of Homes – 111 Household – 180	4,250 baskets of food paddy damaged by floods;	to depend on donations;	If more donations do not come in, food related problems can occur;
10. Rongzon	Population –	Food paddy	to depend on	If more donations do

Mrauk (Kyaung Swe Phyu village tract)	628 Number of Homes – 98 Household – 116	destroyed;	donation;	not come in, food related problems can occur;
11. Ahla Madi (Kyaung Swe Phyu village tract)	Population – 805 Number of Homes – 132 Household – 134	3,700 baskets of food paddy damaged of flooding;	to depend on donation;	If more donations do not come in, food related problems can occur;

Reference: Field research findings

The above information gives a general idea that aids are in dire need to provide for the affected villages in Kyauktaw Township as their food security is in a critical condition. Particularly, food supplies are required to provide at least for three or four months until the arrival of harvest for the monsoon paddy.

First of all, much assistance is needed to provide for the paddy plantations to have a good yield. Local farmers and community elders said motor pumps would be required urgently (in case few monsoon rainwater is received), so would fertilizers and pesticides. In some villages where the farmers rely on small creeks to irrigate the water from larger creeks to their farms, the floods destroyed those natural link channels as these all have been covered with sand. Hence, restoration of those channels is the key to recover the region's agriculture.

As for the threat of insects, supports should be given to help the farmers consult agriculturalists to make effective use of insecticides. Since the disaster affected all facets of the farmers' lives, it is a burden for them to buy insecticides on their own. Therefore, in addition to experts' guidance, the support of relevant chemical materials is also a required commitment.

Farmers are expecting to reduce the impacts on agriculture by growing winter crops. In that region, ground peanut, mustard, chilly and eggplant are regular winter crops. As the floods left loam on many acres of farmland, the farmers are expecting a good yield of winter crops, especially ground nut. However, the drawback is the availability of capital, and the cattle or machines. Usually, seeds for winter crops are kept but this year the seeds were also destroyed during the disaster, hence the seed problem must also be taken into consideration.

In addition to the death of hundreds of cattle, the loss of land for pasture due to the coverage of alluvium has left the animals that survived without much food, making it difficult to use them on the farms. As stated in the introduction, the entire Kyauktaw Township has 32 state-owned tractors whereas 25 tractors and 312 tractor manuals are in the hands of private farmers, highlighting a need to support farming machineries.

To have recovery in Kyawtaw Township's economy will depend on both the yields of monsoon paddy and winter crops. And long-term loans are a necessity for a successful season for winter crops, so is the support of seeds and farming machineries.

Meanwhile, creation of alternative job-supporting industries such as livestock for villages which are not favored to turn to winter crops such as those in the vicinity of Kywelann Creek, as well as lowland areas near Rongzontaung and Rongzonmyauk villages. Fishermen must also be supported with fishing tools, while the stalls in the Pauklemyauk village market should also be reconstructed at the end of the monsoon season.

Let us now continue to observe the impacts of the disaster on the agriculture and other livelihoods of the villages in Mrauk-U Township, and their food security.

3.3 Impacts on agriculture, other livelihoods and food security of the villages in Mrauk-U Township, and required support

According to the agro-department's statistics in Table 3.1, a total of 97 villages and 75,242 acres of cultivated land were destroyed in Mrauk-U Township. The detailed information about the damage of monsoon paddy at those 97 villages can be seen in Appendix 4, citing the Mrauk-U District GAD's data.

The Appendix 4 shows that out of 84,745 inundated acres of farmland cultivated by 11,256 farmers from 97 villages in Mrauk-U Township, only 9,503 acres remained unaffected but 75,242 acres were destroyed. Since the entire Mrauk-U Township has recorded paddy farmland of 133,722 acres, the 75,242 acres that were destroyed amount to 56.26% of the total paddy land.

As for the animal losses, Appendix 5 shows that 1036 buffaloes, 2462 cattle, 958 goats, 27,133 chickens, 140 pigs and 1,764 ducks (this data was publicized by the Mrauk-U District GAD).

In that region too, the deaths of farming cattle have a huge impact on the agricultural industry. Locals said the animals that survived were not fit for the farming as they had become weak due to a shortage of feed.

According to the Department of Agriculture for Rakhine State, many acres of flooded paddy fields have now been recovered (see Appendix 2). It states that of 75,142 acres of monsoon paddy that were destroyed, 75,195 acres have grown the crop again. The only exception is some 47 acres that were unable to re-grow paddy as these lands are covered by sand and big trees.

Even though official announcement boasts resilience of many of the destroyed farmland, there are many more steps yet to come in order to completely return to normal conditions. It is confirmed by the data we collected in Mrauk-U Township (see Table 3.4).

The 10 villages we inspected in Mrauk-U Township include those located at the upper parts of Lemro Creek (Shwe-Tun-Phyu, Sin-Ke, Sin-Baw-Gaing and Nyaung-Bin-Hla), those located around the Myaungbwe area (Donbwe, Kywe-Te, Let-Than-Chi-Ywagyi, Tan-Myint-Gyi and Shwe Lan), and a village located in the vicinity of the town of Mrauk-U (Kalaka).

Agriculture of those villages differs depending on the geographical locations of them. Gardening is another livelihood for the villages at the source of Lemro Creek in addition to growing monsoon paddy. During the disaster, both paddy and garden lands were affected. Particularly,

much of the banks of Lemro Creek were eroded by the flood, affecting both paddy fields and gardens. Similarly, many an acre of farmland owned by villages in the Myaungbwe areas were also covered with sand and mud, so were the farmland owned by villages near Mrauk-U.

Table 3.4 shows hundreds of acres of land cultivated by villages at the source of Lemro Creek were destroyed whereas some of the villages were now facing difficulties regarding a recovery of their farmland. Destroyed along with eroded banks of Lemro Creek were residential homes and farmland. In some villages, locals are facing a serious problem of losing soil layers as these were carried away by the floods; hence exposing pebbles from the lower layers. It will take a long time to recover gardens there as trees grown in gardens are perennials. We saw in some villages the farmers growing monsoon paddy again but concerns were mounting over the yields as they came late into the monsoon. Late harvests could result in late beginning for winter crops. Even if the farmers hoped that winter crops would come to their rescue amid paddy yield uncertainties, many challenges still remained concerning inputs such as land, capital, seeds, and cattle or machineries.

Again, farmers in the Myaungbwe area are facing uncertain crop yields for this year too since the floods destroyed many a great acres of their farmland. Fewer chances of receiving enough rain because of late activities for monsoon paddy as well as a threat of insects produced worries for the farmers.

Table (3.4) Damages to agricultural sector in 10 villages in Mrauk-U Township

Village Name	Population/ Number of Homes/ Household	Damage Condition	Condition of – cultivation	Possible Impacts	Needs for Recovery
1. Shwe Lun Phyu (Mya Yake Kyun village tract) **Major source of livelihood: Agriculture** **Others:**	Population – 481 Number of Homes – 101 Household –	All 50 acres of monsoon paddy destroyed by flood, silt;	Some of farmers - cultivated with food paddy;	If less rainfall, monsoon paddy yield can decrease; Monsoon cultivation time late, harvest time will be late; So, winter crop cultivation will be late;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crops, cattle or machineries for plowing;
2. Sin Ke (Sin Ke village tract) **Major source of livelihood: Agriculture** **Others: Wood cutting**	Population – 576 Number of Homes – 107 Household –	More than 120 acress of farmland destroyed; Some covered with silt; River banks eroded;	Because of river bank erosion, farm lands lost; Farms covered with silt need to take one year to recover;	difficulty for winter crop cultivations; It estimated that it wilListake about 10 years for orchards;	Support needed to repair farm lands; Support required to solve seed scarcity; Machines, cattle needed for plowing;
3. Sin Baw Gaing	Population – 1033	Out of total 800 acres of	orchard land eroded; Because of	Because of stones, it difficult to cultivate winter	Support needed to repair farm lands; Seed scarcity to be solved, seed support

village (Mawra village tract) **Major source of livelihood: Agriculture** **Others: Orchard**	Number of Homes – Household –	monsoon paddy, over 560 acress destroyed by flood, silt;	rocks in soil, it difficult to - cultivate;	crop;	required; Machines, cattle needed for plowing;
4. Nyaung Pin Hla (Byoke Chaung village tract **Major source of livelihood: Agriculture** **Others: Orchard**	Population – 1620 Number of Homes – 276 Household –	Out of total 800 acres of monsoon paddy, over 500 acres destroyed by flood, silt;	Some of farmers - cultivated with food paddy;	As cultivation late, monsoon rain not certain; yields can decrease;	Financial support for winter crop, cattle or machineries for plowing; They usually grow beans, corn, potato, eggplant, mustard etc; during winter; (Local people said soil most suitable for Magway groundnut;
5. Don Bwe (Butalon village tract) **Major source of livelihood: Agriculture**	Population – 375 Number of Homes – 82 Household – 83	All 241 acres of monsoon paddy destroyed by flood, silt;	Paddy seeds received from individual donors; Some of farmers cultivated their food paddy, seeds from donation;	If less rainfall, monsoon paddy yield can decrease; Late plowing can make harvest delayed; So, winter crop cultivations will be late;	fertilizers, pesticidess, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing;

Others: Orchard					
6. Kywe Te (Butalon village tract) **Major source of livelihood:: Agriculture** **Others:**	Population – 1500 Number of Homes – over 400 Household –	All 241 acres of monsoon paddy destroyed by flood, silt;	Present soil difficult to cultivate; As no sprout, it cannot cultivate;	Five baskets of paddy seed as assistance not sufficient; to eat poorly; few winter crops; It difficult to cultivate; To rely on aids for survival;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing;
7. Let Than Chi Ywagyi (Butalon village tract) **Major source of livelihood: Agriculture** **Others: ca palm Casual Labor**	Population – 360 Number of Homes – 80 Household – 76	All 100 acres of monsoon paddy damaged by flood, silt; All 10 acres of areca palm damaged;	Difficult to -cultivate; no paddy seed; It will cultivate winter crop (mustard, eggplant, beans) Seeds scarce; Assistance needed;	To rely on rescue teams; If seed support not received, -cultivation will be late, rice can become scarce;	Support needed to -cultivate in time; no paddy seed for winter; Machines, cattle needed to plow; Fertilizer, pesticides, water pumps needed;
8. Tan	Population –	All 60 acres	Difficulty to -	To rely on rescue teams;	Assistance necessary for monsoon paddy;

Myint Kyi (Butalon village tract) **Major source of livelihood: Agriculture** **Others: ca palm**	262 Number of Homes – 240 Household – 262	of monsoon paddy damaged by flood, silt; All 200 acres of areca palm damaged;	cultivate; No paddy seed; winter crop to grow; (chili)	If seed assistance not received for monsoon paddy, rice can become scarce;	no paddy seed for winter crop; Machines, cattle needed for plowing; Fertilizers, pesticidess, water pumps needed;
9. Shwe Lan (Butalon village tract) **Major source of livelihood: Agriculture** **Others:: Timber, bamboo picking.**	Population – 240 Number of Homes – 70 Household – 70	All 100 acres of monsoon paddy damaged by flood, silt;	Difficult to - cultivate; No paddy seed; Villagers worry monsoon paddy can be pest infested;	To rely on rescue teams; If seed assistance not received for monsoon paddy, rice can become scarce;	To grow winter crops (Chili, beans, mustard) To be able to cultivate in time, assistance needed; No plan to grow irrigated paddy in winter Machine, cattle needed for plowing; Fertilizer, pesticides, water pumps needed;
10. Kalaka village (Kalaka village tract) **Major source of livelihood:**	Population – 900 Number of Homes – 700 Household – 720	All 370 acres of monsoon paddy damaged by flood, silt;	Some farmers – grow food paddy, seeds received as assistance; (As seeds not pure, fields can damage;) limited winter crops;	If less rainfall, monsoon paddy field can decrease; Late monsoon paddy plough can make late harvest, late winter crops cultivations;	Water pumps also needed to pump water if rainfall low; Financial support for winter crops, cattle or machineries for plowing;

Agriculture **Others:: F hermen, Causal worker**					

Reference: Findings of field research

Moreover, since thick mud covered around the bases of betel, an alternate crop grown in these villages, the plants were slowly dying.

The disaster also affected some elements of the natural world. Mudslides vanished streams and creeks flowing through the villages; hence damaging the drainage, transport and agriculture of the local people. This area of Mrauk-U Township grows only a few winter crops.

Villages around the town of Mrauk-U too are very likely to see a lower yield this year, given many acres of destroyed paddy land, mixed seeds of different strains, and a late plough.

Like in other townships discussed above, agriculture is also a major means of livelihood for local people in the Mrauk-U area, and the impact on that sector certainly affects the area's economy. Not only farmers but farm laborers too are losing their jobs. Losses of fishing nets in vast numbers have also given the area's minority fishermen a hard tiThese villages in Mrauk-U Township too have been short of food as an enormous amount of their reserved food, i.e. rice, has been ruined (see Table 3.5).

Table (3.5) Food security of 10 villages in Mrauk-U Township

Village Name	Population/ Number of Homes	Damage Condition of Food Stock	Present Condition	Possible Impacts
1. Don Bwe (Butalon village tract)	Population – 375 Number of Homes – 82 Household – 83	Over 10,000 baskets of 'food paddy' damaged;	Relying on food supplies;	crops will be harvested after three months later; If assistance from donors decreases, will be problem in food security;
2. Shwe Lun Phyu (Mya Yeik Kyun village tract)	Population – 481 Number of Homes – 101 Household –	'food paddy' destroyed	Relying on food supplies;	If assistance from donors decreases, will be problem in food security;
3. Kywe Te (Butalon village tract)	Population – 1500 Number of Homes – over 400 Household –	Over 5000 baskets of 'food paddy' damaged;	Relying on food supplies;	If assistance from donors decreases, will be problem in food security;
4. Let Than Chi Ywar Gyi (Butalon village tract)	Population – 360 Number of Homes – 80 Household – 76	Over 1000 baskets of 'food paddy' damaged by flood;	Relying on food supplies;	If paddy seed not received on time, will be no harvest, a big food crisis can happen in long run;
5. Tan Myint Kyi (Butalon	Population – 262	Paddy silos damaged; About	Relying on food supplies;	If paddy seed not received on time,

village tract)	Number of Homes – 240 Household – 262	2,500 baskets of 'food paddy' damaged;		will be no harvest, a big food crisis can happen in long run;
6. Shwe Lan (Butalon village tract)	Population – 240 Number of Homes – 70 Household – 70	'food paddy' destroyed;	Five rice, five pots supplied by government; Relying on food supplies;	If paddy seed not received on time, will be no harvest, a big food crisis can happen in long run;
7. Kalaka village (Kalaka village tract)	Population – 900 Number of Homes – 700 Household – 720	'food paddy' destroyed; Paddy silos damaged by flood;	no government assistance; Relying on food supplies;	crops will be harvested after three months; If assistance from donors decreases, will be problem in food security;
8. Sin Ke (Sin Ke village tract)	Population – 576 Number of Homes – 107 Household –	'food paddy' destroyed;	Relying on food supplies;	If paddy seed, land not received on time, will be no harvest, a big food crisis can happen in long run;
9. Sin Baw Gaing village (Mawra village tract)	Population – 1033 Number of Homes – Household –	'food paddy' destroyed;	Relying on food supplies;	If paddy seed not received on time, will be no harvest, a big food crisis can happen in long run;
10. Nyaung Bin Hla (Byoke Chaung village tract)	Population – 1620 Number of Homes – 276 Household –	'food paddy' destroyed;	Relying on food supplies;	will be food problem if assistance from donors not received;

Reference: Findings of field examination;

Statistics shown in Table 3.5 give a message that aid is in dire need to rescue the affected villages in Mrauk-U Township since food security there is in a very concerning state. Emergency supplies of food will be required to send there for up to three to four months until the harvest time.

Expecting more jobless people in the areas at the source of Lemro Creek as farming/gardening businesses there were affected, we should be prepared to create jobs for them. Local residents in some of the villages said they expected credit loans to invest in the business of extracting pebbles from the riverbed. As a long term solution, the area is fit to plant perennials, teak and other precious hard woods.

Other emergency aid items for the farmers are motor pumps, fertilizers and pesticides. Another important task to carry out is to restore small creeks that performed dual functions of channeling water from larger ones to the vicinity of the farms, and draining surplus water from the villages (see Table 4.8 in Chapter IV). Help is also needed, such as providing machines, to remove thick mud that covered the bases and roots of betel plants to stop a slow death of them. Fishermen should also be provided with fishing equipment. While villages that grow winter crops are in need of inputs such as seeds, capital, cattle or machineries, those that do not shall need assistance on job opportunities.

Now, we shall continue to observe the impacts of the disaster on the agriculture and other livelihoods of the villages in Minbya Township, and their food security.

3.4. Impacts on agriculture, other livelihoods and food security of the villages in Minbya Township, and required support

According to the Department of Agriculture's statistics in Table 3.1, a total of 63 villages and 36,079 acres of cultivated land were destroyed in Minbya Township. However, unlike in Kyauktaw and Mrauk-U townships, detailed information about the devastations in those 63 villages in Minbya Township is not available since it was beyond our reach. Hence we will try to analyze the situation in this township by using firsthand data we collected in the 10 villages.

Referring to the facts and figures presented in Chapter I (Introduction), Minbya's 36,079 acres out of a total of 94,239 acres of paddy farms were destroyed, amounting to 38.23 percent.

Despite the losses, many acres of paddy were successfully planted in time for the season, according to a statement by the Rakhine branch of the Department of Agriculture under the Ministry of Agriculture and Irrigation (see Appendix 2). The total area of monsoon paddy farmland destroyed was 75,142 acres; however, 36,008 acres of them were recovered, except for some 71 acres submerged by sand and big trees.

Even though official announcement boasts resilience of many of the destroyed farmland, there are many more steps yet to come in order to completely return to normal conditions. It is confirmed by the data we collected in Minbya Township (see Table 3.6).

The 10 villages we inspected to collect primary data were Chinseik, Opyintaung and Pyin-yaung located along Pan Myaung Gyi Creek; Myin-Tin-Ma, Taung-Pot-Tay, Tagundai and Thaluchaung located in the vicinity of Hpontha Creek; and Khaunglaung (Ywa Haung), Naram Ywagyi and Naram Ziwha villages located along the Minbya-Mrauk-U highway.

If we look at Table 3.6, we can claim that the destruction of the disaster is huge and the area is at the risk of suffering further impacts.

A common difficulty shared by all the 10 the villages mentioned above has been the fact that the farmers had to sow a mix of different paddy strains, and that it was a late plough, much to the concern of the farmers about possible poor yields this year.

Farmers from the villages along Pan Myaung Gyi Creek received a basket each of paddy seeds for two acres. Since it was not enough, the farmers had to use even their paddy seeds kept for food as well as seeds bought from nearby villages. Certainly, using different strains of paddy was not a preferred method for the farmers since it could affect the yields. Similar stories were heard from villages near Hpontha Creek. Among the three villages along the Mrauk-U-Minbya highway, only Naram Ywagyi village received a supply of paddy seeds from well-wishers, while the other two villages had to self-rely to obtain seeds. Another big blow to those villages along the highway was that their farms had been covered with mud, garbage and big trees.

The situation severely hit the farmers hard particularly because their farm work was delayed. They were concerned particularly about the enough rainfall coveted for their paddy to fertilize. Whether it becomes a cheerful or tragic season depends on late monsoon rains, the farmers said.

We did not hear any concerns about paddy swarming insects in those 10 villages during our trips.

Of the 10 villages, all but some near Hpontha Creek rely on agriculture as a major livelihood. There are few fishermen, and in places near forests, some people feed themselves by selling vegetables and bamboo shoots they pick in the forests. There are also farm laborers who perform jobs such as broadcasting paddy seeds, transplanting the seedlings, clearing weeds and reaping ripe paddy. In some villages near Hpontha Creek, locals also rely on selling firewood to feed themselves. All the livelihoods in the area were affected to different extents after the natural disaster.

Table 3.6: Damages to agricultural sector in Minbya Township

Village Name	Population/ Number of Homes/ Household	Damage Condition	Condition of – cultivation	Possible Consequences	Needs for Recovery
1. Oh Pyin Htaung (Oh Pyin Htaung village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 80)** **Others:: F hermen Casual labor vegetable, bamboo shoots sellers**	Population – 1176 Number of Homes – 219 Household – 137	All 861 acres of monsoon paddy destroyed by flood, silt;	some paddy seed support from donor organizations; (on a rate of seeds per two acres per farmer) Some farmers grow 'food paddy', with seeds from donors;	Yield can decrease because paddy seeds a mix of different strains; Economy can be badly affected;	fertilizers, pesticidess, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crops, cattle or machineries for plowing; (They need groundnut seeds mainly for winter plantations;)
2. Pyin Yaung (Pyin Yaung village tract) **Major source of**	Population – 827 Number of Homes – Household –	All 3,000 acres of monsoon paddy destroyed by flood, silt;	some paddy seed supports from donor organizations; (per two acres per farmer)	Yield can decrease because paddy seeds a mix of different strains; As cultivation time late, monsoon paddy yield can decrease; (It will not	fertilizers, pesticidess, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support for winter crop, cattle or machineries for plowing;

livelihood: Agriculture **Others: Fishermen Casual worker Vegetable, bamboo sellers**			Some farmers grew food paddy, seeds from donors;	receive enough rain water;)	(chili, bean, eggplant, potato, mustard, grown)
3. Chin Seik (Thadoe village tract) **Major source of livelihood: Agriculture** **Others: Fishermen Casual worker Vegetable, bamboo sellers**	Population – 528 Number of Homes – 126 Household – 121	All 660 acres of monsoon paddy destroyed by flood, silt;	some paddy seed support from donor organizations; (One basket per farmer) Some farmers - cultivated with their 'food paddy', with seeds from donors;	Yield can decrease because paddy seeds a mix of different strains; As cultivation time late, monsoon paddy yield can decrease; (It will not receive enough rain water;)	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine, agriculture education, seeds for winter crop; (They usually grow chili, mustard, etc;)
4. Myin Tin Ma (Tet Yar village tract) **Major source of livelihood:**	Population – 730 Number of Homes – 165 Household – 185	All 460 acres of monsoon paddy destroyed by flood, silt;	some paddy seed support from donor organizations; (130 baskets received) Some farmers - cultivated with	Yields can decrease because paddy seeds a mix of different strains; As cultivation time late, monsoon paddy yield can decrease; (It will not	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine, agricultural education,

Agriculture (Farmer/ Farmland owner – 86) **Others: Fishermen Fire wood collect, Casual Labor**			their 'food paddy', with seeds from donors;	receive enough rain water;)	seeds for winter crops; (They usually grow chili for winter crop; where winter crop cultivation not possible, alternative job opportunities need to be created;)
5. Taung Pote Kay (Phone Thar village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 86)** **Others: Fishermen Casual Labor**	Population – 730 Number of Homes – 165 Household – 185	All 985 acres of monsoon paddy destroyed by flood;	some paddy seed support from donor organizations; (10 bags received;) Some farmers - cultivated with their 'food paddy', with seeds from donors;	Yields can decrease because paddy seeds a mix of different strains; As cultivation time late, monsoon paddy yield can decrease; (It will not receive enough rain water;)	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine, agriculture education, seeds for winter crop; (They usually grow chili for winter crop; where winter crop cultivation not possible, alternative job opportunities need to be created;)
6. Tagun Daing (Thadoe village tract)	Population – 556 Number of Homes – 130 Household –	All 370 acres of monsoon paddy destroyed by flood;	some paddy seed support from relief organizations; Some farmers -	Yield can decrease because paddy seeds a mix of different strains; As cultivation time late,	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low;

Major source of livelihood: Agriculture (Farmer/ Farmland owner – 80) **Others:: F hermen Fire wood collectors, Vegetable, bamboo sellers**	130		cultivated with their 'food paddy', with seeds from donors;	monsoon paddy yield can decrease; (It will not receive enough rain water;)	Financial support, cattle or machine, agriculture education, seeds for winter crop; They usually grow chili, eggplant, cabbage, mustard, potato, bean, etc;
7. Tha Lu Chaung (Phone Thar village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 17)** **Others: Fishermen Fire wood collect, Vegetable,**	Population – 601 Number of Homes – 120 Household – 130	All 70 acres of monsoon paddy destroyed by flood;	some paddy seed support from donor organizations; Some farmers - cultivated with their 'food paddy', with seeds from donors;	Yield can decrease because paddy seeds a mix of different strains; As cultivation time late, monsoon paddy yield can decrease; (It will not receive enough rain water;)	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine, agriculture education, seeds for winter crop; They usually grow chili, eggplant, cabbage, mustard, potato, bean, etc;

bamboo sellers					
8. Khaung Laung (Ywar Haung) Ywar Pyin village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 17)** **Others: Fishermen Casual Labor**	Population – 558 Number of Homes – 150 Household –	All paddy fields damaged;	Some farmers - cultivated with their 'food paddy'; (Government plans to loan seeds with a return; 2 baskets of seeds to be returned for every 1 basket loaned; Farmers not interested as return rate high;)	As cultivation time late, monsoon paddy yield can decrease; (It will not receive enough rain water;)	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine, agriculture education, seeds for winter crop; They usually grow mustard, eggplant, bean etc; for winter crop; This year, people want to grow bean for winter crop;
9. Narum Ywar Gyi (Narum village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 17)**	Population – 550 Number of Homes – 165 Household –	All 400 acres of monsoon paddy destroyed by flood;	some paddy seed support from relief organizations; (75 baskets of paddy seed received form Rakhine Thahaya;) Some farmers - cultivated with their 'food paddy', with seeds from	Yield can decrease because paddy seeds a mix of different strains;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine, agriculture education, seeds for winter crop; They usually grow chili, corn, mustard, eggplant, bean, etc; for winter crop;

Others: Fishermen Casual Labor			donors;		
10. Naram Zi Hwa (Naram village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 17)** **Others: Casual Labor**	Population – 294 Number of Homes – 64 Household –	All 135 acres of monsoon paddy destroyed by flood, silt;	Some farmers bought seeds with own money;	Late plough, monsoon paddy yield can decrease; (It will not receive enough rain water;)	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine, agriculture education, seeds for winter crop; They usually grow chili, bean, mustard, etc; for winter crop;

Reference: Findings of field examination

Just as the farmers lost many of their farmland, fishermen also lost a lot of their fishing nets. It did not end there yet – it produced a domino effect and the laborers relying on the farming and fishing industries were hit hard, as were those relying on the forests for things to sell. Meanwhile, firewood sellers could not find their product anymore as most of the trees near them fell down and were drifted along the currents to lower parts of the rivers, otherwise benefiting the local people there.

Villages in Minbya Township are also facing a shortage of food since their food paddy was damaged (see Table 3.7).

Table 3.7: Food security for 10 villages in Minbya Township

Village Name	Population/ Number of Homes	Damage Condition of Food Stock	Current situation	Possible Impacts
1. Oh Pyin Htaung (Oh Pyin Htaung village tract)	Population – 1176 Number of Homes – 219 Household – 137	Food paddy destroyed;	Locals relying on aids for food;	As paddy will be harvested in December, possible food crisis if donations decreased;
2. Pyin Yaung (Pyin Yaung village tract)	Population – 827 Number of Homes – Household –	Food paddy destroyed;	Locals relying on aids for food;	possible food crisis if flows of aids slowed down;
3. Chin Sate (Thadoe village tract)	Population – 528 Number of Homes – 126 Household – 121	Food paddy destroyed;	Locals relying on aids for food;	possible food crisis if flows of aids slowed down;
4. Myin Tin Ma (Tat Yar village tract)	Population – 730 Number of Homes – 165 Household – 185	Food paddy destroyed;	Locals relying on aids for food;	possible food crisis if flows of aids slowed down;
5. Taung Pote Tay (Phone Thar village tract)	Population – 730 Number of Homes – 165 Household – 185	Food paddy destroyed;	Locals relying on aids for food;	As paddy will be harvested in December, possible food crisis if flows of aids slowed down;
6. Dagun Daing (Thadoe village tract)	Population – 556 Number of Homes – 130 Household – 130	Food paddy destroyed;	Locals relying on aids for food;	As paddy will be harvested in December, possible food crisis if flows of aids slowed down;
7. Thalu Chaung (Phone Thar village tract)	Population – 601 Number of Homes – 120 Household – 130	Food paddy destroyed;	Locals relying on aids for food;	possible food crisis if flows of aids slowed down; Even now, problems as assistance not sufficient;

8. Khaung Laung (Ywa Haung) (Ywar Pyin village tract)	Population – 558 Number of Homes – 150 Household –	Food paddy destroyed;	Locals relying on aids for food;	possible food crisis if flows of aids slowed down;
9. Naram Ywa Gyi (Naram village tract)	Population – 550 Number of Homes – 165 Household –	Food paddy destroyed;	Locals relying on aids for food;	possible food crisis if flows of aids slowed down;
10. Naram Zi Hwa (Naram village tract)	Population – 294 Number of Homes – 64 Household –	Food paddy damaged;	Locals relying on aids for food;	possible food crisis if flows of aids slowed down;

Reference: Findings of field research;

Table 3.7 supports the call that flood-affected villages in Minbya Township are in urgent need of food supplies, especially during the three to four months that run up to the harvest of monsoon paddy.

Since the monsoon paddy is critical to their life, aids such as water pumps, fertilizers and pesticides should be provided.

Even after the paddy season has finished, aids such as seeds, credit loans, and cattle/machineries, are still required to support the farmers for their staple winter crops – chilly, pea, corn, potato, eggplant, mustard, and radish plant. The farmers also need to be educated on how to cope with changes in soil on their land as these were covered with silt.

Heavy machineries would be required to provide in order to clear some lands off garbage and large trees for the farmers living along the Mrauk-U-Minbya highway. Fishing nets and fishing boats are necessary for the fishermen; as well as other job opportunities for laborers and firewood sellers are a priority.

Now, we will move on to observe the situations of the villages in Ponnagyun Township.

3.5. Impacts on agriculture, other livelihoods and food security of the villages in Ponnagyun Township, and required support

According to the Department of Agriculture's statistics as shown in Table 3.1, a total of 55 villages and 10094 acres of cultivated land were destroyed in Ponnagyun Township. However, the Department of Agriculture's statistics are not consistent with those from the GAD (see Appendix 6), which states that 9657 acres of farmland were destroyed.

Nevertheless, Ponnagyun Township also saw many a great acres of its monsoon paddy destroyed.

Referring to the facts and figures presented in Chapter I (Introduction), Ponnagyun's 9657 acres out of a total of 31,345 acres of paddy farms were destroyed, amounting to 30.8 percent.

Despite the losses, many acres of paddy were successfully planted in time for the season, according to a statement by the Rakhine branch of the Department of Agriculture under the Ministry of Agriculture and Irrigation (see Appendix 2). The total area of monsoon paddy farmland destroyed was 10,094 acres; however, 9,886 acres of them were recovered, except for some 208 acres that could not be recovered by building dykes and embankments.

Even though official announcement boasts resilience of many of the destroyed farmland, there are many more steps yet to come in order to completely return to normal conditions. It is confirmed by the data we collected in Ponnagyun Township (see Table 3.8 to see the situations of the 10 villages we inspected).

The 10 villages we inspected to collect primary data included those along Yoechaung creek as well as those near Kywelann creek. If we look at Table 3.8, we can claim that the destruction of the disaster is huge and the area is at the risk of suffering further impacts.

As in previous townships, acres farmland was destroyed in thousands and hundreds in the villages we inspected in Ponnagyun Township. In some villages, farmers used seeds they received from donations, kept for their own food, and seeds they bought on their own to grow paddy on the recovered farms.

We found out that the farmers had to sow the seeds two to three times because of initial failures. What is more, they had to sow a mix of different paddy strains, and that it was a late plough, much to the concern of the farmers about possible poor yields this year. Pests were also a major concern in some villages.

The area also hosts fishermen in some of its villages who lost their fishing nets and boats.
In addition to 338 farm animals that were killed in Ponnagyun Township as described in Chapter 1, shortages of feed for the surviving cattle in the 10 villages in our scope was a huge challenge, as heaps of straw kept as feed for cattle were damaged too. Undernourished cattle were not fit for farm work.

Table (3.8) Damages to agricultural sector in 10 villages in Ponnagyun Township

Village Name	Population/ Number of Homes/ Household	Damage Condition	Condition of -cultivation	Possible Consequences	Needs for Recovery
1. Bel Koh (Kyein Chaung village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 30)** **Others: F hermen Casual Labor**	Population – 483 Number of Homes – 90 Household – 110	All 400 acres of monsoon paddy destroyed by flood, silt;	Some farmers -cultivated with their 'food paddy', seeds bought by themselves; (Government provided 1,400 kyat per acre for a total of 300 acres across three villages;)	As cultivation time late, yield can decrease; (Rainfall can be lower than average;)	Support of fertilizer, pesticides needed; Water pump to pump water from rivers, creeks as certain to receive lower rainfall; (As They grow few winter crops, necessary to create more job opportunities;)
2. Kyein Chaung (Kyein Chaung village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 30)** **Others: F hermen**	Population – 1150 Number of Homes – 80 Household – 98	All 600 acres of monsoon paddy destroyed by flood, silt;	Some farmers -cultivated with their 'food paddy', seeds bought by themselves;	As cultivation time late, yield can decrease; (Rainfall can be lower than average;)	Support of fertilizer, pesticides needed; Water pump to pump water from rivers, creeks as it certain to receive enough rainfall; (As They grow few winter crops, necessary to create job opportunities;)

Casual labor					
3. Marn Aung Thar (Kyein Chaung village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – over 60)** **Others: Fishermen Casual Labor**	Population – 405 Number of Homes – 82 Household – 94	All 400 acres of monsoon paddy destroyed by flood, silt;	Some farmers -cultivated with their 'food paddy', seeds bought by themselves; (Government supported Kyat 1400 per acres;)	As cultivation time late, yield can decrease; (Rainfall can be lower than average;) As seeds a mix of different strain, yield can decrease;	Support of fertilizer, pesticides, needed; Water pump to pump water from rivers, creeks as it certain to receive lower rainfall; Harvest for monsoon paddy; (As they grow few winter crops, it necessary to create job opportunities;)
4. Kaung Mon (Hmo Hin Taw village tract) **Major source of livelihood: Agriculture (Farmer/ Farmland owner – 7)** **Others: Casual Labor**	Population – 250 Number of Homes – 48 Household – 48	All 20 acres of monsoon paddy destroyed by flood, silt; 80 drift nets damaged; 20 tiger nets damaged 15 f hing boats damaged;	Some farmers -cultivated with their 'food paddy', seeds bought by themselves;	As cultivation time late, yield can decrease; (Rainfall can be lower than average;) As seeds a mix of different strain, yield can decrease;	Support of fertilizer, pesticides, needed; Water pump to pump water from rivers, creeks as it certain to receive lower rainfall; Harvest for monsoon paddy; (As They grow few winter crops, necessary to create job opportunities; Especially, it necessary to support f heries sector;)
5. Gwa Son (Gwa Son	Population – 250 Number of	All 680 acres of monsoon paddy	Some farmers -cultivated with their 'food paddy',	As cultivation time late, yield can	Support of fertilizer, pesticides, needed;

village tract) **Major source of livelihood: Fisheries (Fishermen – over 60)** **Others: Agriculture (Farmer/ Farmland owner – 57) Casual labor**	Homes – 48 Household – 48	destroyed by flood, silt; More than 20 tiger nets damaged;	seeds bought by themselves;	decrease; (Rainfall can be lower than average;) As seeds a mix of different strains, yield can decrease; Pests a problem;	Water pump to pump water from rivers, creeks as it certain to receive lower rainfall; Harvest for monsoon paddy; (As They grow few winter crops, it necessary to create job opportunities; Especially, necessary to support fisheries sector;)
6. Myin Kat Tar (Myin Kat Tar village tract) **Major source of livelihood: Agriculture** **Others: Casual Labor**	Population – 776 Number of Homes – 150 Household – 170	All 1200 acres of monsoon paddy destroyed by flood, silt;	They cultivated again; but destroyed by flood again; farmers -cultivated for third time with their 'food paddy';	If less rainfall, monsoon paddy yield can decrease; Because of impure seeds, yield can also decrease; As monsoon cultivation late, harvest time will be late; not convenient for winter crop;	Support of fertilizer, pesticides, needed; Water pump to pump water from rivers, creeks as certain to receive lower rainfall;
7. Pauk Too Pauk (Myin Kat Tar Taw village tract)	Population – 435 Number of Homes – 90 Household – 101	All 388 acres of monsoon paddy destroyed by flood, silt;	Some farmers -cultivated with their 'food paddy', seeds received as donations;	If less rainfall, monsoon paddy yield can decrease; Because of impure seeds, yield can also	Support of fertilizer, pesticides, needed; Water pump to pump water from rivers, creeks as it certain to receive

Major source of livelihood: Agriculture **Others: Fisheries**				decrease; As monsoon cultivation late, harvest time will be late; It not convenient for winter crop;	lower rainfall;
8. Pyin Yar Shae (Pyin Yar Shae village tract) **Major source of livelihood: Agriculture** **Others: Livestock breeding**	Population – 1603 Number of Homes – 305 Household – 370	All 1200 acres of monsoon paddy destroyed; Out of 70 tractors, some damaged;	Government provided K7000 per acre for 1948 acres;	If less rainfall, monsoon paddy yield can decrease; Because flooded by sea water, impossible for winter crop cultivation;	fertilizers, pesticides, input supports needed; Water pumps also needed to pump water if rainfall low; Financial support, cattle or machine for winter crop;
9. Pyin Hla (Myin Kat Tar village tract) **Major source of livelihood: Agriculture** **Others: Fisheries**	Population – 293 Number of Homes – 55 Household – 67	Almost all 286 acres of monsoon paddy destroyed;	Government supported only 1000 Kyat per acre; Food paddy used to grow again;	As rainfall can be late, paddy yield can decrease;	As rainfall late, it necessary to rely on irrigated water; Although one water pump, it not sufficient; support of fertilizer, pesticides, etc; needed;
10. Let We	Population –	Out of total 900 acres	Government supported	As rainfall can be	As rainfall late, it

Myan (Let Wel Myan village ract) **Major source of livelihood: Agriculture** **Others: High land cultivation, dry and cultivation, and cultivation**	1226 Number of Homes – 218 Household – 226	of monsoon paddy, 800 acres destroyed; 140 cattle died;	only 1500 Kyat per acre; Food paddy used to grow again;	late, paddy yield can decrease; problem to cultivate winter crop; Chili, mustard, *bouea burmanica*, groundnut;	necessary to rely on irrigated water; Although one water pump, it not sufficient; support of fertilizer, pesticides, etc; needed;

Reference: Findings of field examination;

These villages were also facing a shortage of human food as the "food paddy" set aside from the previous year's yields went destroyed (see Table 3.9 below). The data about the total of number of rice baskets destroyed in the entire Ponnagyun Township is not availabe since it is beyond our reach.

Table (3.9): Food security of 10 villages in Ponnagyun Township

Village Name	Population/ Number of Homes	Damage Condition of Food Stock	Present Condition	Possible Impacts
1. Bell Koh (Kyein Chaung village tract)	Population – 483 Number of Homes – 90 Household – 110	Over 500 baskets of food paddy damaged;	Villagers relying on aids for food;	crops will be harvested after three months; If assistance from donors decreases, will be problem in food security;
2. Kyein Chaung (Kyein Chaung village tract)	Population – 1150 Number of Homes – 80 Household – 98	Over 10,000 baskets of food paddy damaged;	Villagers relying on aids for food;	crops will be harvested after three months; If assistance from donors decreases, will be problem in food security;
3. Marn Aung Thar (Kyein Chaung village tract)	Population – 405 Number of Homes – 82 Household – 94	Over 5,000 baskets of paddy grains damaged;	Villagers relying on aids for food;	crops to be harvested after three months later; If assistance from donors decreases, can be problem in food security;
4. Kaung Mon (Hmo Hin Taw village tract)	Population – 250 Number of Homes – 48 Household – 48	Food paddy destroyed;	Villagers relying on aids for food;	If assistance from donors decreases, will be problem in food security;
5. Gwa Sone (Gwa Sone village tract)	Population – 250 Number of Homes – 48 Household – 48	Food paddy destroyed;	Villagers relying on aids for food;	If assistance from donors decreases, will be problem in food security;
6. Myin Kat Tar (Myin Kat Tar village tract)	Population – 776 Number of Homes – 150 Household – 170	Altoge r 6,000 baskets of paddy damaged in whole village;	victims to struggle alone; Government also supported some;	crops will be harvested after three months;, can be problem in food security;
7. Pauk Too Pauk (Myin Kat Tar Taw village tract)	Population – 435 Number of Homes – 90	About 1,000 paddy silos damaged; Two buffalos	Villagers relying on aids for food;	crops will be harvested after three months;, can be problem in food security;

	Household – 101	died; F hing nets also damaged;	difficulties for living;	
8. Pyin Yar Shae (Pyin Yar Shae village tract)	Population – 1603 Number of Homes – 305 Household – 370	Paddy silos damaged mostly;	Paddy yield decreased; weakness in rescue teams;	crops will be harvested after three months later; If assistance from donors decreases, will be problem in food security;
9. Pyin Hla (Myin Kat Tar village tract)	Population – 293 Number of Homes – 55 Household – 67	About 700 baskets of paddy damaged;	Villagers relying on aids for food;	crops will be harvested after three months; If assistance from donors decreases, will be problem in food security;
10. Let Wel Myan (Let Wel Myan village tract)	Population – 1226 Number of Homes – 218 Household – 226	Paddy silos damaged mostly;	Villagers relying on aids for food;	crops will be harvested after three months; If assistance from donors decreases, will be problem in food security;

Reference: Findings of field examination;

The table confirms that fact that the villagers had to rely solely on the donations by well-wishers for food during the emergency periods. They would continue to need them for the three or four months that run up to the harvest.

Referring to the data in Chapter 1, the township has six tractors, 24 tractor manuals, five combined harvesters and 20 water pumps for public uses but only 232 tractor manuals and six water pumps in the hands of private farmers. Many villages we inspected reported that tractors were among the affected; hence support of cattle and their feed as well as farm machineries and maintenance services are also needed.

Community elders said the Department of Agriculture did not provide paddy seeds but cash. The rate was set as 7,000 kyat per acre destroyed but the farmers reportedly did not receive that amount because the community elders said the amount of money a village received was significantly smaller than the size of acres destroyed. When the money was split among the farmers, some received as low as 1,000 or 1,400 or 1,500 kyat.

Since monsoon paddy is critically important to the local farmers, aids such as water pumps, fertilizers and pesticides are urgently needed to provide.

Shortage of manpower is also a major concern for the harvest. According to previous years' experience, many young people had left their native lands to work as migrant workers in neighboring countries, leaving a void in the region's labor market. To offset that, farm machineries and devices could only replace human workers in order to support the agriculture.

3.6. Necessary measures to be taken for local development

Locals reported that their rice did not sell at as good prices as rice from the Ayeyarwady delta in spite of same species. It is because Rakhine State does not have advanced rice mills that can

produce high quality rice. Hence, modernizing the rice mills in the region is also an utmost priority for improving the agro-business there.

Thus, we claim that seeds, credit loans, and cattle or machineries will be required for them to grow winter corps. Education programs for the farmers on how to cope with changes in soil following the coverage of silt are also a necessity.

Similarly, fishing nets and boats shall be supplied to fishermen.

Local people claimed that the average profit for a farmer to gain from an acre of paddy farm was 100,000 kyat after working the whole year round, since Rakhine State solely relies on monsoon paddy. With this situation only exacerbating in the face of a disaster, one solution to overcome that cycle has been a proposal by the farmers to diversify their livelihoods. Farmers said one option was, like in the Ayeyarwady delta, to breed adipose catfish or river catfish (*Silonia childreni*) in areas near sea water and fresh water, if these were not suitable for winter crops. Fish ponds for breeding that fish species would, they said, create spaces for breeding livestock on their banks. Diversifying the region's economy – which is currently predominantly agriculture – into livestock and fisheries would help develop the region. However it would need long-term loans in order to shift away from agriculture to other sectors.

Another key point for development for the region is having access to the markets and market information for their agricultural produces. Local business people suggest making linkages with markets prior to beginning a farming season. For example, if a farmer wants to grow beans and pulses, they should seek advice from such as the beans and pulses merchants association in advance so that they can know the market demands so that they could sell their produces at premium prices. Farmers in Rakhine State, local agriculturalists said, have long been lacking those desperate needs such as access to market and market information that they have been unable to end their sad stories.

Access to market is another priority for the farmers in Rakhine State.

According to senior officials with government departments that have much experience in commerce, the region needs to (1) reduce production costs, (2) maintain the qualities, and (3) ensure the emergence of commodity wholesale centers in order to promote the region's agricultural sector.

Mass production of agricultural produces can only reduce production costs, while a seed-bank that can supply high-yield seeds is critical. The emergence of a seed bank can not only increase the yields but also control the qualities of those produces.

They said that the farmers were still lacking knowledge on how to use chemical fertilizers properly. Only after scientific soil tests were experimented, chemical fertilizers that matched the type of soil would be identified for safe use. In addition, farm cattle should be replaced with modern farm machineries, they advised.

Following their advices will ensure production of agricultural produces effectively and efficiently. They said it is a must to establish commodity wholesale centers across the region to help farmers have access to the market to sell their produces.

Their suggestions also include establishment of laboratories for scientific livestock breeding and husbandry.

Further priorities in their suggestions include implementation of research and development programs regardless of the type of business so that the region's economy will grow. Furthermore, a certain percentage of the profits should be invested in doing research in order to support the sustainability of the businesses.

Finally, educational institutions such as universities, colleges and vocational training schools should ensure the availability of a host of degrees on agriculture and livestock that are main economic activities of the region, while having sufficient teaching aids and competent teachers are essential to help the students acquire skills and knowledge they much need.

Chapter 4
Heath facilities and health conditions; use of toilets, fresh water sources, housing and transportation of the villages in the four affected townships in Rakhine

This chapter discusses how the disaster affected the health facilities and health, the use of toilets, fresh water supply, housing and transportation in the villages in the four townships, as well as how aids should be provided to each township, based on our research findings.
First of all, we would like to cite the statistics obtained from the General Administration Department to highlight devastations suffered by the villages in Kyauktaw Township.

4.1 Health facilities and health, use of toilets, water sources, housings and transportation in the villages in Kyauktaw Township; and required support

4.1.1 Health facilities and health, the use of toilets and required support for villages in Kyauktaw Township

Table 4.1 summarizes the effect of the disaster on health facilities in Kyauktaw Township.

Table 4.1: List of damages to health sector in Kyauktaw Township

Sr.	Township	Damages	Estimated Cost (millions of kyat)	Remark
1.	Kyauktaw	15 corrugated iron sheets of Apauk Wa hospital damaged.	0.9	
2.		Bricked fence, toilet of branch village dispensary of Lanmadaw village damaged.	3.0	
3.		Bricked fence of branch village dispensary of Thayettabin village destroyed.	2.0	
	Total		5.9	

Reference: General Administration Department, Mrauk-U District;

According to the above information, the total value of damage suffered by **one** station hospital and **two** rural health sub centers located in **three** villages in Kyauktaw Township is estimated at 5.9 million kyat.

One person died as stated in the previous chapter's section about overviews of losses for Kyauktaw Township.

Though it was a low death toll, the following information highlights the fact that continued aids shall need to be provided for the region's health sector.

Now we will continue to present our findings from research conducted in 11 villages in the township. Since Pauklemyauk village was the only place that had health facilities such as dispensaries and rural health centers, data for the damages to health facilities in other villages are not available. That dispensary in Pauklemyauk was found unaffected by the disaster; hence we will only discuss our observations on health conditions of the local people in those areas. The use of toilets in those villages is also discussed here as it is related to their health. (See Table 4.2)

According to Table 4.2, outbreaks of illnesses such as fever and cold symptoms, and diseases such as malaria, dengue fever and skin infections broke out in the villages in Kyauktaw Township after the disaster. Some villages received medical relief from mobile medical teams and medicines from individual private donors, but some other villages never did so.

Of the 11 villages we inspected, only Pauklemyauk had a dispensary. According to the Township profile of Kyauktaw Township as described in Chapter 1, there are only one 50-bed hospital, two 16-bed indigenous medicinal hospital, one maternity and childcare center, one anti-tuberculosis center, and one anti-malaria center across the 79 village-tracts and 283 villages in the entire township. Hence, most of the villages are eager to have dispensaries in their own locations.

Communities without dispensaries have to rely on other villages in their vicinity and the town of Kyauktaw. Some villages have nurses but no facilities that provide health services.

Therefore, not only the damaged health facilities need to be repaired but help is much needed to help provide health services in villages where there is no clinic or dispensary at all. Since interdependency among villages is critical to have access to health services, improvement of local transport is also a necessity. Locals said they wanted to see affected rural road networks and bridges restored urgently as well as anticipated efforts to build new interconnecting roads among the villages.

One recommendation is related to the use of rural toilets that need to be improved (see Table 4.2 for data about toilets in the 11 villages). The number of toilets in those villages is disproportionately few compared to the number of houses there that are in the hundreds or thousands. Except for the monasteries and schools, many houses do not have toilets. Even those already few toilets are in need of reconstruction as they were destroyed by the disaster.

Table 4.2: Health, toilet use of 11 villages in Kyauktaw Township

Village Name	Population/ Number of Homes	Condition of Dispensary/ Health Center	Support on Health Sector after Natural D aster	Impacts of Natural Disaster	Condition of Toilet Use
1. Aung Zeya(Aung Zeyavillage tract)	Population – 601 Number of Homes – 130 Household – 150	no dispensary or health center; to rely on dispensaries of nearby villages;	A nurse from nearby village sometimes visits;	Flu, cough, cold (Note: No reports of deaths in large numbers;)	People do not usually use toilets;
2. Kyaung Pho (Brawar village tract)	Population – 760 Number of Homes – 130 Household – 160	no dispensary or health center; one nurse;	some medicines supplied by social support groups;	Flu, running nose, cough, diarrhea; (Note: No reports of deaths in large numbers;)	15 toilets in village;
3. Than Byin (Gwa Sone village tract)	Population – 672 Number of Homes – 124 Household – 134	no dispensary or health center; to rely on dispensary in Gwa Sone village;	some medicines supplied by social support groups;	Flu, running nose, cough; (Note: No reports of deaths in large numbers;)	People do not usually use toilets;
4. Kyaukphyu (Kyaukphyu village tract)	Population – Over 850 Number of Homes – 137 Household – 150	no dispensary or health center; to rely on dispensary of Ywar Thit Kay village which about two miles away;		In good health;	People do not usually use toilets;
5. Pauk Lay Mrauk (Nagu Mel	Population – 752 Number of	one dispensary, a health worker;	Doctors provided health care;	Flu, could, malaria; (Note: No reports of	Toilet use low;

village tract)	Homes – 156 Household – 182			deaths in large numbers; As organizations had provided health knowledge trainings before, health conditions not bad;)	
6. Pauk Lay Taung (Nagu Myay village tract)	Population – 752 Number of Homes – 156 Household – 182	no dispensary or health center; to rely on dispensary of nearby villages;		Children had dengue fever; Number of people who had flu increased;	Toilet use low; (four school toilets damaged)
7. Rongzon Taung (Kyaung Swe Phyu village tract)	Population – 1074 Number of Homes – 182 Household – 204	no dispensary or health center; two midwives;	Two mobile medical teams visited, provided health care;	Malaria outbreaks;	Toilet use low;
8. Lamu Tabin (Lamu Tabin village tract)	Population – 1315 Number of Homes – 274 Household – 288	no dispensary or health center; to rely on dispensary of nearby villages;	some medicines supplied by social support groups;	Diarrhea outbreaks	Toilet use low;
9. Kyaung Swe Phyu (Kyaung Swe Phyu village tract)	Population – 730 Number of Homes – 111 Household – 180	no dispensary or health center; one trained health worker;	Department of Health promoted health knowledge by asking to drink boiled water;	Flu, cough, cold, etc;	About half of population uses toilet;
10. Rongzon Mrauk (Kyaung	Population – 628 Number of	no dispensary or health center;		Outbreaks of diarrhea, hepatitis, flu (especially among children,	Toilet use low;

Swe Phyu village tract)	Homes – 98 Household – 116	to rely on nurses in Rongzon Taung village;		young;)	
11. Ahla Madi (Kyaung Swe Phyu village tract)	Population – 805 Number of Homes – 132 Household – 134	no dispensary or health center; to rely on dispensary of nearby villages;		Diarrhea, skin diseases; (Both adult, children;)	Toilet use low; About 30 home lost toilets;

Reference: Findings of field research;

Many community elders want to make the use of toilets in their villages widespread and improved but are unable to do so due to lack of funding and awareness.

4.1.2 Water sources and required support in the villages in Kyauktaw Township

According to a release by the Department of Rural Development (DRD) for Rakhine State (Appendix 7), a total of 271 ponds located across 214 villages in Kyauktaw Township were inundated with flooded water.

In the 11 villages, 201 ponds were implemented by the DRD, 44 ponds jointly built by DRD and the Tatmadaw, while 17 ponds were provided by international NGOs (see Appendix 8).

Table 4.3 states the updates of the water sources in the 11 villages we inspected.

The table shows that virtually all the ponds in many of the villages were destroyed. These were either flooded with mud, and stream and river waters, or polluted with the dirt and dung of animals who took refuge on high lying areas along the banks of the ponds.

We found that those ponds had been repaired by the villages on their own or with help from some governmental organizations and humanitarian groups. Polluted waters had been pumped out and the mud had also been washed up. However, those repaired ponds still needed clean water to contain, and it would be a challenge for them at the end of the rainy season if they faced draught, with the area relying mainly only on the rain.

(Note: Community leaders said many ponds and lakes in Kyauktaw Township dried up last summer. Now that these ponds and lakes were already drying up early that year, a shortage of water was a huge possibility for the following hot season.)

As a short-term solution, most villages were found to have relied on the bottled drinking water coming in as aids, and on the rainwater kept in makeshift tarpaulin containers. In some other villages, locals were thinking to drink the water from some of the lakes left unrepaired among others. It was a question therefore of hygiene of that water from those sources, and help was essential in this regard.

Community leaders in some villages had ideas to pump the water into the ponds from the Kissapanadi (a) Kaladan River during winter when the river water is clear. Some people were expecting a supply of water purifiers, while few others used water purification tablets. But for many people, the tablets were not a preference because of the odor the water smells.

Finally, recommendations on providing relief to the villages include restoration of affected ponds and lakes, examination of the water sources for hygienic levels, providing motor pumps and tube wells in time for the hot season. A supply of water purifiers will also do a great favor.

Table 4.3: Situations of ponds, wells in 11 villages in Kyauktaw Township

Village Name	Population/ Number of Homes	Damage Condition of Ponds, Wells	Present Condition	Remark
1. Aung Zeya (Aung Zeya village tract)	Population – 601 Number of Homes – 130 Household – 150	AlListhree ponds inundated with stream water, silt;	One pond cleaned with help of Village Development Department; Water purification tablets distributed; Only some people use it but some do not want to use it because of smell; They only rely on rain water;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; Water will be distributed in quota; Village elders think that water problem can be solved by digging a deep well; (Support needed to dig a deep well;)
2. Kyaung Pho (Brawa village tract)	Population – 760 Number of Homes – 130 Household – 160	All two ponds inundated with stream water, silt;	One pond cleaned with help of Village Development Department; Rain water mainly used for drinking;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; Village elders plan to fill pond with stream water in winter when water becomes clear; (Water pump assistance needed;)
3. Than Pyin (Gwa Sone village tract)	Population – 672 Number of Homes – 124 Household – 134	Two out of three ponds inundated with stream water, silt; pond polluted because of cattle;	One pond cleaned by help of Village Development Department; Rain water mainly used for drinking;	After rainy season, drinking water problem can happen; pond cleaned, village elders thought to wait till it deposits to use water; (Water purifiers needed;)
4. Kyaukphyu (Kyaukphyu village tract)	Population – Over 850 Number of Homes – 137 Household – 150	All three ponds inundated with stream water, silt;	F h died in one pond;	Water scarcity can occur in summer; Village elders to do something in advance to address this;
5. Pauk Lay Mrauk (Nagu Mel village tract)	Population – 752 Number of Homes – 156 Household – 182	All five ponds inundated with stream water, silt;	ponds cleaned by villagers themselves;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; Village elders thought that water problem can be solved if deep tube well can be dug;

				(Assistance needed to dig a deep tube well; To get water, to dig up to 200 feet;)
6. Pauk Lay Taung (Nagu Myay village tract)	Population – 752 Number of Homes – 156 Household – 182	Two out of three ponds inundated with stream water, silt;	army helped clean ponds; But it not complete yet;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer;
7. Rongzon Taung (Kyaung Swe Phyu Village Tract	Population – 1074 Number of Homes – 182 Household – 204	One out of two ponds inundated with stream water, silt; pond polluted because of animals;	army helped clean one pond; health department came, distributed ant eptic;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; Village elders plan to fill pond with stream water during winter when water becomes clear; (Water pump assistance needed;)
8. Lamu Tabin (Lamu Tabin village tract)	Population – 1315 Number of Homes – 274 Household – 288	All three ponds inundated with stream water, silt;	three ponds cleaned; no water problem at moment;	Water scarcity can occur in summer; Village elders plan to fill pond with stream water during winter when water becomes clear; (Water pump assistance needed;)
9. Kyaung Swe Phyu (Kyaung Swe Phyu village tract)	Population – 730 Number of Homes – 111 Household – 180	All four ponds inundated with stream water, silt;	With help of village, one pond cleaned up; army helped clean one pond; Boiling water before drinking imjettyant; Relying on aids for water too;	Water scarcity can occur in summer; Village elders plans to clean remaining ponds in summer;
10. Rongzon Mrauk (Kyaung Swe Phyu village tract)	Population – 628 Number of Homes – 98 Household – 116	All four ponds inundated with stream water, silt;	Development Committee helped clean one pond; Water from that pond being used; Rain water mainly used for drinking; Donate water drunk;	Can face water crisis after rainy season; Village elders said that water purifiers needed as assistance;
11. Ahla Madi (Kyaung Swe Phyu village	Population – 805 Number of Homes – 132 Household – 134	All three ponds inundated with stream water, silt;	Three ponds cleaned but it not ready yet to use for drinking;	After rainy season, drinking water problem can happen; Village elders plan to fill pond

tract)			Rain water mainly used for drinking; Water fetched from places;	with stream water in winter when water becomes clear; (Water pump assistance needed;)

Reference: Findings of field research;

4.1.3 Housing and transportation, and required support in the villages in Kyauktaw Township

As described in Chapter 1, a total of 1,028 homes were affected; out of which 404 saw their roofs and walls broken while 624 were completely destroyed. If we look at the road infrastructure, a total of 56.2 miles of tarred road, 4.8 miles of gravel/dirt road, one under-20-foot bridge and one under-40-foot bridge were affected. Table 4.4 summarizes the damage suffered by locals in the 11 villages in Kyauktaw Township.

Table 4.4 shows that across the 11 villages at least two homes were completely destroyed while a maximum of 21 houses were flattened. Thirteen to 40 houses were half-destroyed. In addition, monasteries also suffered damages in their living halls, dining halls, roofs and walls, while some other public rest houses were also destroyed.

We did not see aids being supplied to repair the residential homes. Villagers were found to be staying under their damaged shelters or taking refuge under makeshift tarps they built on their own, or staying with their relatives. Therefore, emergency relief for their housing is needed in great amount.

Since religious buildings such as monasteries are usually the shelters for the villagers during disasters, some local organizations consider strengthening of those religious buildings to become reliable refuge shelters during disasters. Particularly they contend that those buildings should be rebuilt not only from the perspective of preserving traditional religious architecture but from the perspective of applying disaster management knowledge too. New designs should be added to ensure that those buildings can play dual roles of serving religious functions in normal times as well as serving as shelters during disasters.

Almost all of the village streets and roads connecting other villages have been covered with mud while the bridges and jetties were affected too. In addition to a transport setback due to the damage of road networks, the loss of the jetties was a huge blow to the local people who mainly rely on water transport to travel in this area of vast rivers and streams. Village elders in Pauk le myauk village said building better road networks played an important role in the region's development as it could improve their socio-economic conditions by enhancing access to the

Table (4.4) Housing, transport of 11 villages across Kyauktaw Township

Village Name	Population/ Number of Homes	Damage to Roads (Condition of both village streets, inter-village links)	Damages to Buildings	Remark
1. Aung Zeya(Aung Zeyavillage tract)	Population – 601 Number of Homes – 130 Household – 150	Village roads covered with mud; railroad which passes by village to connect Kyauktaw badly damaged; jetty destroyed;	Partially damaged – 31 homes Totally damaged – 8 homes Dining halls of monastery damaged;	Without train services, transportation cost high to go to Kyauktaw; Water transport face problems as jettys damaged; Flood victims shelter in makeshift tarps or seek refuge with relatives
2. Kyaung Pho (Brawa village tract)	Population – 760 Number of Homes – 130 Household – 160	Village streets covered with mud; An eight-feet-long bridge in village destroyed; Roads connecting Kyauktaw town damaged;	Roof gone – 13 homes Totally damaged – 10 homes Roof of monastery gone, fences broken;	Transportation difficult as roads damaged; Flood victims shelter in makeshift tarps or seek refuge with relatives;
3. Than Pyin (Gwa Sone village tract)	Population – 672 Number of Homes – 124 Household – 134	Village roads covered with mud; It difficult to travel as road between Gwa Son, Than Pyin destroyed;	Partially damaged – 26 homes Totally damaged – 3 homes A publicarerest home damaged;	Transportation difficult as a bridge broken; Flood victims shelter in makeshift tarps or seek refuge with relatives;
4. Kyaukphyu (Kyaukphyu village tract)	Population – Over 850 Number of Homes – 137 Household – 150	Village Roads covered with mud; creek in village blocked with mud;	Partially damaged – over 40 homes Totally damaged – 4 homes	village creek blocked by mud, difficult to channel water to plantations Flood victims shelter in makeshift tarps or seek refuge with relatives;
5. Pauk Lay	Population –	Village roads	Partially damaged	Transportation

Mrauk (Nagu Mel village tract)	752 Number of Homes – 156 Household – 182	covered with mud; Three seven feet long bridges in village damaged; Village creek blocked by mud;	– over 18 homes Totally damaged – 7 homes	difficult as roads damaged; (To develop village, it urgently needed to build roads connecting with villages;) People repair their homes by themselves;
6. Pauk Lay Taung (Nagu Myay village tract)	Population – 752 Number of Homes – 156 Household – 182	Village roads covered with mud; A 10 feet bridge in village destroyed;	Partially damaged – over 40 homes Totally damaged – 21 homes Monastery ordination building, brick fence damaged;	Transportation difficult as roads damaged; Flood victims shelter in makeshift tarps or seek refuge with relatives;
7. Rongzon Taung (Kyaung Swe Phyu Village Tract	Population – 1074 Number of Homes – 182 Household – 204	Village roads covered with mud;	Partially damaged – over 17 homes Totally damaged – 4 homes	People repair their homes by themselves;
8. Lamu Tabin (Lamu Tabin village tract)	Population – 1315 Number of Homes – 274 Household – 288	Village roads covered with mud; A 300 feet long bridge in village completely, a 50 feet long bridge partially damaged; creek in village blocked with mud;		village creek blocked by mud, it difficult to channel water to fields; Transportation difficult as roads damaged;
9. Kyaung Swe Phyu (Kyaung Swe Phyu village tract)	Population – 730 Number of Homes – 111 Household – 180	Village roads covered with mud; A 20 feet long bridge in village partially damaged;	Partially damaged – over 20 homes Totally damaged – 2 homes	Transportation difficult as roads damaged; Flood victims shelter in makeshift tarps or seek refuge with relatives;

10. Rongzon Mrauk (Kyaung Swe Phyu village tract)	Population – 628 Number of Homes – 98 Household – 116	creek in village blocked with mud; jetty damaged; canals need to be repaired;	8 homes totally damaged; some homes partially damaged; monastery a little damaged;	Transportation difficult as roads, jettys damaged; Flood victims shelter in makeshift tarps or seek refuge with relatives;
11. Ahla Madi (Kyaung Swe Phyu village tract)	Population – 805 Number of Homes – 132 Household – 134	creek in village blocked with mud;		Transportation difficult by flood;

Reference: Findings of field research;

nearby town of Kyauktaw. Improvement of transportation in the region, therefore, is identified as a priority for this area's rehabilitation.

4.2 Health facilities and health, use of toilets, water sources, housing and transportation in the villages in Mrauk-U Township; and required support

4.2.1 Health facilities and health, the use of toilets and required support for villages in Mrauk-U township

Table 4.5 published by the Mrauk-U District General Administration Department (GAD) describes the damage of health infrastructure in Mrauk-U Township that suffered during last year's disaster.

Table (4.5) List of damaged hospitals/dispensaries in Mrauk-U Township

Sr.	Township	Damage Condition	Estimated Damage Cost (Millions of kyat)
1	Township hospital	Medicines	5
2	Myaung Bwe Regional Hospital	Door (12), cupboard (2), patient bed (20), child delivery bed (1), medicine, oxygen concentrator (2), baby scale (2), mucous suction pump (1)	9
3	Myaung Bwe R.H.C.	Generator (1), Dynamo (1), Motor (1), Clinicarewall, medicine.	
4	Sin Oh Chae R.H.C.	Generator (1), Dynamo (1), Motor (1), fence, medicine.	1.2
5	Tain NyOthers:.H.C.	Generator (1), Motor (1), medicine.	
6	Pyar Te R.H.C.	Signboard, mast, fence.	0.6
7	Kan Sauk R.H.C.	Corrugated iron sheet (5)	0.05
8	Bali Pyin R.H.C.	Generator (1), battery (2), medicine	1.1
9	Kyi Ra Pyin R.H.C.	Generator (1), dynamo (1), motor (1)	1.2
10	Kywe Te S.C.	Clinic wall, cupboard (1)	0.4
11	Laung Kyet S.C.	Clinic wall cement fallen down, Fence, Medicine	0.9
12	Kyaung Taung S.C.	Clinic wall, fence, medicine	1.1
13	Myet Yate Kyun	Clinic, fence, toilet, medicine	1
14	Thin Pan	Corrugated iron sheet (8), Clinicarewall	0.3

	Kaing S.C.		
15	Minglar Si S.C.	Floor, wall	0.3
16	Pyaing Cha S.C.	Front wall of clinic	0.1
17	Nat Chaung Haung S.C.	Clinic, fence, toilet	0.15
18	Nga/Mel Pyin S.C.	Clinic wall, cupboard (1), medicine	0.5
19	Kadoe S.C.	Clinic wall	0.3
20	Kyauk Kyat S.C.	Corrugated iron sheet (5)	0.05
21	Chate Chaung S.C.	Clinicarewall, fence, medicine	0.8
22	Sin Baw Kaing S.C.	Cupboard (1), medicine	0.2
23	Byat Chaung S.C.	Clinic wall, fence, toilet, medicine	0.9
24	Pyi Lone Kyi S.C.	Fence, medicine	0.4
	Total		27.45

Reference: General Administration Department, Mrauk-U District

Remark: R.H.C = Rural Health Center, SC = Sub Center

The data shows that a total of six rural health centers including the Mrauk-U Township Hospital and the Myaungbwe Station Hospital, as well as 15 rural health sub-centers were affected. Not only the physical structures of these buildings but the furniture, beds, medicines, and portable oxygen concentrators were also damaged, with their losses being estimated at 27.45 million kyat. According to Chapter (1), 13 people died in disaster-related cases in this township. Appendix 1 also shows that Mrauk-U is the township with the third highest death toll after Buthidaung and Minbya in all of the affected townships across Rakhine State. It is also the second highest in human casualties among the four townships covered in this report.

The following data can help understand how aids should be provided regarding the health of the region.

We would like to describe the health conditions in the 10 villages we observed in Mrauk-U Township first. Among the villages, Nyaungbinhla was the only village that had a dispensary and that was damaged by the mud that covered the building, so there was no report of damage to health facilities from other villages. We can report only on the general health conditions in those villages we inspected. In the table (Table 4.6) we put together the data about the use of toilets in those places as this is related to their health.

Table (4.6) Health conditions, use of toilets in 10 villages in Mrauk-U Township

Village Name	Population/ Number of Homes	Condition of Dispensary/ Clinic	Condition of assistant received for health sector after natural d aster	Consequences of natural d aster	Condition of toilet usage
1. Don Bwe (Butalon village tract)	Population – 375 Number of Homes – 82 Household – 83	No dispensary, to rely on Hospital in Myaung Bwe about 2 miles away;	Some doctors from army medical unit give relief medical aids;	Children contracted illness, diarrhea;	use of toilet rare; (some toilets damaged;)
2. Shwe Lun Phyu (Mya Yeik Kyun village tract)	Population – 481 Number of Homes – 101 Household –	No clinic, no midwife;		Hypertension, malaria among elderly, young people, more frequent among later;	use of toilets rare;
3. Kywe Te (Butalon village tract)	Population – 1500 Number of Homes – over 400 Household –	No clinic; No midwife; People go to Myaungbwe if they fall ill;	A medical team paid a visit;	More young people contracted malaria; Spred of flu	use of toilet rare;
4. Let Than Chi Ywar Gyi (Butalon village tract)	Population – 360 Number of Homes – 80 Household – 76	No clinic; People go to Myaungbwe when fall ill;		a few cases of malaria;	use of toilet rare; (some toilets damaged;)
5. Tan Myint Kyi (Butalon village tract)	Population – 262 Number of Homes – 240 Household –	No clinic; People go to Myaungbwe when fall ill;		some outbreaks of malaria, hypertension, diarrhea;	use of toilet rare; (some toilets damaged;)

	262				
6. Shwe Lan (Butalon village tract)	Population – 240 Number of Homes – 70 Household – 70	No clinic; Peole go to Myaung Bwe if y ill; No ambulance;		some cases of illness;	use of toilets rare; (some toilets damaged;)
7. Kalaka village (Kalaka village tract)	Population – 900 Number of Homes – 700 Household – 720	No clinic; People to go to Mrauk-U to receive treatment;		Running nose, cough, cold, illness happen, especially among elderly, children;	use of toilets rare; (some toilets damaged;)
8. Sin Ke (Sin Ke village tract)	Population – 576 Number of Homes – 107 Household –	One clinic, One health worker	Health care groups of San Yay, Weithandra, Young Volunteer groups visited;	No outbreaks of illness; (Normal condition)	use of toilets rare; (some toilets damaged;)
9. Sin Baw Gaing village (Mawra village tract)	Population – 1033 Number of Homes – Household –	One clinic, One nurse	As nearby villages come for treatment, one nurse not enough; nurse over 50 years of age;	Clinic covered with mud; It cannot be repaired; no special illness; (Normal condition)	use of toilets rare; (some toilets damaged;)
10. Nyaung Bin Hla (Byoke Chaung village tract)	Population – 1620 Number of Homes – 276 Household –	No clinic; to rely on midwife from Byoke Chaung	Army's medical unit, medical teams visited; Ko Ye Foundation also came to provide health care; Rakhine National Party supplied medicines;	Running nose, cough, illness;	use of toilets rare; had support for toilets before; However, people became less interested to use it after more mosquitoes breed as a result of improperly building toilets;

Reference: Findings of field research;

Table 4.6 shows that the local people of the villages in Mrauk-U Township suffered illnesses such as fever and cold symptoms, and contracted diseases such as malaria, hypertension and diarrhea. Few villages received medical care from mobile medical teams as well as medicines from aid groups but the majority of them did not have access to proper medical and health care services.

Of the 10 villages we inspected, only the village of Singbawkaing had a dispensary that had only one nurse. It was overloaded since it was treating patients from other nearby villages as well. According to the Chapter 1 data, Mrauk-U Township covers a total of 95 village-tracts and 248 villages, with one 25-bed hospital, two station hospitals, eight rural health centers, 34 rural health sub-centers, one school health center, one indigenous hospital, and one maternity and childcare center.

Locals are expecting access to more health facilities such as clinics in their area. Not only existing affected health facilities needed to be repaired but new clinics need to be introduced wherever necessary. Improvements in transportation are also preconditions for the delivery of timely health services.

Table 4.6 also lists the number of toilets in the villages where the numbers of toilets are disproportionately fewer compared with the numbers of homes ranging from 80 to 400 across the villages. Except for monasteries and schools, many households do not have toilets. Even those already few toilets are in need of repair as they were destroyed by the disaster. One feedback heard from the Nyaungbinhla village elders is noteworthy. They said their village once received toilets constructed by some aid groups, but improper ways in constructing the toilets paved the way for breeding of mosquitoes. The villagers thought it was the toilets that increased the breed of mosquitoes and feared to use them anymore. Hence, if toilets were to be built there, they should be made properly.

4.2.2. Water sources and required support in the villages in Mrauk-U Township

Let us continue to observe the situation of water sources in the villages in Mrauk-U Township. The data by the Department of Rural Department (DRD) for Rakhine State (Appendix 7) shows that a total of 15 wells and 382 lakes were affected across 200 villages in Mrauk-U Township. And according to Appendix 8, 118 lakes of them were repaired by the DRD, while 15 wells and 160 lakes were jointly implemented by the DRD and the local Tatmadaw, and five wells and 84 lakes were provided by international NGOs.

The following table shows the situations of wells and lakes in the 10 villages we inspected in Mrauk-U Township.

Table (4.7) Condition of wells, ponds in 10 villages in Mrauk-U

Village Name	Population/ Number of Homes	Damage Condition of Wells/ Ponds	Present Condition	Remark
1. Don Bwe (Butalon village tract)	Population – 375 Number of Homes – 82 Household – 83	AlListhree ponds inundated with spring water, silt;	Rain water mainly used;	After rainy season, can be drinking water problem; Water scarcity can happen in summer; All ponds to be repaired; (To add ant

				eptic, lime into water; water in pond will not be pumped up;)
2. Shwe Lun Phyu (Mya Yeik Kyun village tract)	Population – 481 Number of Homes – 101 Household –	one drinking water pond; pond inundated with water, it full of mud;	water from spring used by applying alum in it; drinking water problem;	People to work on their own; After rainy season, can be drinking water problem; Water scarcity can happen in summer; All ponds to be repaired; (To add ant eptic, lime into water; water in pond will not be pumped up;)
3. Kywe Te (Butalon village tract)	Population – 1500 Number of Homes – over 400 Household –	4 out of 9 ponds damaged;	enough drinking water;	Water scarcity can happen in summer; Four damaged ponds to be repaired;
4. Let Than Chi Ywar Gyi (Butalon village tract)	Population – 360 Number of Homes – 80 Household – 76	All three ponds inundated by floods;	Two ponds totally damaged; One repaired; It can be used; water not drinkable; Villagers drink rainwater now;	After rainy season, can be drinking water problem; Water scarcity can happen in summer; If no assistance, people to work on their own;
5. Tan Myint Gyi (Butalon village tract)	Population – 262 Number of Homes – 240 Household – 262	All seven ponds inundated with water;	Two ponds repaired; water can be used for purposes but for drinking; Villagers drink rainwater now;	After rainy season, can be drinking water problem; Water scarcity can happen in summer; If no assistance, people to rely on their own;
6. Shwe Lan (Butalon village tract)	Population – 240 Number of Homes – 70 Household – 70	All two ponds inundated with water;	army, DRD repaired one pond; Villagers drink rainwater;	After rainy season, can be drinking water problem; Water scarcity can happen in summer; If no assistance, people to rely on their own;
7. Kalaka village (Kalaka village tract)	Population – 900 Number of Homes – 700 Household – 720	One out of three ponds destroyed, two polluted with animal dirt;	For drinking water, rain water mainly used; drinking water problem;	After rainy season, can be drinking water problem; Water scarcity can happen in summer;

				Ponds not repaired yet; Waiting till pond water becomes clear; no plan to repair ponds;
8. Sin Ke (Sin Ke village tract)	Population – 576 Number of Homes – 107 Household –	No pond designated for drinking;	Water from Lemro river used for drinking;	People to drink spring water in rainy season, to drink (Lemro river) water in summer; If spring water can be stored, it will be good for summer;
9. Sin Baw Gaing village (Mawra village tract)	Population – 1033 Number of Homes – Household –	No pond designated for drinking; had an 18 feet deep well; But it does not water; (No work on it;)	spring water kept for three days to deposit, it used for drinking;	People to drink spring water in rainy season, to drink (Lemro river) water in summer; If spring water can be stored, it will be good for summer;
10. Nyaung Bin Hla (Byoke Chaung village tract)	Population – 1620 Number of Homes – 276 Household –	AlListwo ponds inundated by floods; One repaired;	Rainwater stored for drinking; spring water kept for three days to deposit, it used for drinking; However, spring water turbid as gravel extracted from spring;	If spring water from nearby places can be channeled to village through pipes, it will be more convenient in summer;

Reference: Findings from field research;

Except for Singbawkaing and Sinkae villages where there were no lakes to supply drinkable water, the rest of the villages lost many of their wells and lakes. Similar to the villages in Kyauktaw Township, the reasons for the destruction of those water sources in Mrauk-U township's villages are such as adulteration with mud and stream- and river-waters, and contamination with animal wastes.

The villages of Singbawkaing and Sinkae, which are located at the upper parts of Lemro River, do not rely on water wells or lakes but get water from nearby springs (during the rainy season when Lemro water is muddy) and from Lemro River (during summer when the river water is clear and nearby springs are dry). These villages in upper Lemro River nevertheless have been facing a water supply problem.

Like in the villages in Kyauktaw, these villages were also found tackling the problem by relying on bottled drinking water and rainwater; and by purifying natural stream water. In some villages, local residents were considering leaving some of the affected sources out of the repair list, fearing that they would end up having empty lakes after the restoration work was complete if

ever they face draught. As for sanitation, they consider treatments of this water such as applying antiseptics and putting limestone. Thus, the hygiene of the waters from those sources is in question. Community elders from the villages near Lemro River said they thought of one solution for a possible water shortage in coming summer if they could store water from nearby springs by channeling it to their places through pipes.

Finally, recommendations on providing relief to the villages include restoration of polluted ponds and lakes, examination of the water sources for hygienic levels, providing motor pumps and tube wells in time for hot season. Supply of water purifiers will also do a great favor.

(Note: Only few people prefer water purifying tablets because of its odor.)

4.2.3. Housing and transportation, and required support in the villages in Mrauk-U Township

In Mrauk-U Township, a total of 1,814 homes were affected, of which 526 suffered damage in their roofs and walls and 1,288 totally flattened (see Chapter 1.) A total of 24.04 miles of tarred road, two under-40-foot bridges, and seven over-40-foot bridges were also damaged.

Table 4.8 (below) summarizes the situation of damage to the homes and transport infrastructure in the 10 villages in Mrauk-U Township.

Table (4.8) Housing, transport situations in 10 villages in Mrauk-U Township

Village Name	Population/ Number of Homes/ Household	Damage to Roads (Village streets, inter-village roads)	Damage to Buildings	Remark
1. Don Bwe (Butalon village tract)	Population – 375 Number of Homes – 82 Household – 83	Village roads covered with mud; Four small bridges in village damaged; Water flow of stream in village not good as it covered with mud;	Partially damage – 60 homes Totally damage – 10 homes	Because of damaged roads, bridges, transportation difficult; Agriculture affected because water level in village creek gone down; Drainage poor; People taking refuge with relatives;
2. Shwe Lun Phyu (Mya Yeik Kyun village tract)	Population – 481 Number of Homes – 101 Household –	Dirt road connected with Mrauk-U destroyed; Village roads also damaged;	Partially damage – 60 homes Totally damage – 10 homes 9 sawmills, monastery also near collapse;	Because of damaged roads, bridges, transportation difficult; People sheltering in makeshift tarps;
3. Kywe Te (Butalon village tract)	Population – 1500 Number of Homes – over 400 Household –	Bridge a little damaged; Roads damaged but still possible to travel; It connected with highway;	Partially damage – about 20 homes Totally damage – 6 homes	Because of damaged roads, bridges, transportation difficult; People sheltering in makeshift tarps; y also take refuge with relatives;
4. Let Than Chi Ywar Gyi (Butalon village tract)	Population – 360 Number of Homes – 80 Household – 76	Village roads damaged; Four bridges damaged; Some Village roads became creeks;	Partially damage – 36 homes Totally damage – 7 homes	Because of damaged roads, bridges, transportation difficult; People from partially damaged homes repair their homes, live ; People whose homes totally damaged stay withs;
5. Tan Myint Gyi (Butalon village tract)	Population – 262 Number of Homes – 240 Household – 262	Roads, bridges damaged; An underpass spillway destroyed; road a little damaged; Kywe Te – Khamaung Taw dirt road	Partially damage – 109 homes Totally damage – 80 homes Generator room of	Owners of partially damaged homes live in their repaired properties; People whose homes totally damaged stay withs;

		impossible for use; Students face difficulties to go to school;	monastery destroyed;	
6. Shwe Lan (Butalon village tract)	Population – 240 Number of Homes – 70 Household – 70	A small bridge destroyed; Roads covered with mud;	Partially damage – 24 homes Totally damage – 2 homes Roofs of monasteries blown away;	Because of damaged roads, bridges, transportation difficult; Owners of partially damaged homes live in their repaired properties; People whose homes totally damaged stay withs;
7. Kalaka village (Kalaka village tract)	Population – 900 Number of Homes – 700 Household – 720	Bridges in village damaged; 6 bridges; Some drifted away with water; By flood, gravel roads covered with mud;	Partially damage – 3 homes Totally damage – 2 homes	Because of damaged roads, bridges, transportation difficult; Owners of partially damaged homes live in their repaired properties; People whose homes totally damaged stay withs;
8. Sin Ke (Sin Ke village tract)	Population – 576 Number of Homes – 107 Household –	nOthers:oad transportation; Lemro creek used for transportation; As current strong, transportation difficult;	27 homes damaged; (At foot of mountain, in village)	Water transportation mainly used; Owners of partially damaged homes live in their repaired properties; People whose homes totally damaged stay withs; Monastery in good conditions;
9. Sin Baw Gaing village (Mawra village tract)	Population – 1033 Number of Homes – Household –	Roads covered with mud; Water way mainly used; mud covered up to three feet; jetty destroyed by current;	More than 20 homes drifted away in river because of bank erosion; Trees fallen down;	Water transport mainly used; jetty damaged because of bank erosion, transportation becomes difficult; Owners of partially damaged homes live in their repaired properties; People whose homes totally damaged stay withs;

				Monastery in good conditions;
10. Nyaung Bin Hla (Byoke Chaung village tract)	Population – 1620 Number of Homes – 276 Household –	Village roads damaged with mud;	Partially damage – 7 homes Totally damage – 8 homes	Transportation difficult because roads damaged; Owners of partially damaged homes live in their repaired properties; People whose homes totally damaged stay withs; Monastery in good conditions;

Reference: Findings of field research

The numbers of complete damage to residential homes range from 2 to 80 in those 10 villages while those of partial damage range from 3 to 60. The owners sought refuge in makeshift tarps and in their relatives' homes. No obvious relief was evident.

Some villages such as Shwe Tun Phyu, Nyaungbinhla, Singbawkaing and Sinkae that are located on the banks of Lemro River not only lost their homes but their land too as the flood eroded much of the river's banks. According to the Mrauk-U Emergency Relief Committee, Yepanzin village has lost most of its land so that it is inevitable the whole village will have to move to another location.

In some villages, religious buildings such as monasteries saw their roofs gone. In Shwe-Tun-Phyu village on the edge of Lemro river bank, the village monastery is on the brink of total collapse. The monastery was originally built a few distances away from the river but it is now only one or two feet away after years of erosion of the banks, so it is no longer safe to stay.

Hence, relief and resettlement programs should also add plans to provide land apart from new homes for the villagers.

Virtually all the village streets were covered with mud while the bridges were destroyed, along with some jetties and roads connecting with other villages. Underpass spillways fixed across some road paths were also destroyed, leaving the roads in fragments. Road damages hurt local transportation badly, thus affecting the socio-economic conditions of the region.

In that light, improvements of transport infrastructure run atop the agenda for the rehabilitation of the region. (See Appendix 10 and 12 for road damages interlinking this township with others.)

4.3. Health facilities and health, use of toilets, water sources, housings and transportation in the villages of Minbya Township; and required support

4.3.1. Health facilities and health, the use of toilets and required support for villages in Minbya Township

The Mrauk-U District General Administration Department (GAD) declares that two hospitals and 11 clinics were affected health facilities in Minbya Township during last year's disaster (see Table 4.9).

Table (4.9) Damages to health sector in Minbya Township

Name of Health Center	Damage Condition	Estimate Cost of Damage (kyat million)
Pya Chaung Health Center	Building damage	4.0
	Medicine damage	0.2
Min Ywar Health Center	Building damage (Fence)	4.0
	Medicine damage	0.2

Pan Myaung Health Center	Building, Fence damage	5.0
	Medicine damage	0.5
May Lun Health Center	Building floor damage	4.0
Shwe Sub Health Center	Building damage	4.0
	Medicine damage	0.3
Min Phoo Sub Health Center	Building damage	4.0
	Medicine damage	0.3
Kaing Kyi Sub Health Center	Building damage	4.0
Kyauk Maw Sub Health Center	Mast (Fence, sign board)	1.5
Minbya Township Hospital	10 doors of main building damaged by flood	1.5
	15 windows of main building	1.5
	Verandah floor of main building (500 ft x 6 ft)	0.5
	8 windows of male patient building	0.5
	4 windows of female patient building	0.5
	4 windows of monk patient old building	0.5
Regional Hospital (Pan Myaung)	Floor, wall damage	5.0
Township Hospital (Minbya)	3 sides of fence	2.0
	Total	45.0

Reference: General Administration Department, Mrauk-U District

The table highlights that not only the physical structures of the health facilities but medicines and medical equipment used there were destroyed in Pyachaung, Min Ywa, Pan Myaung, Shwe Kyan and Minphoo villages. In other villages, physical structures alone were affected. The total value of losses is estimated at 450 million kyats.

According to the data released by the Mrauk-U District GAD [see in Chapter 1], 16 people were killed by the disaster, making Minbya's the second highest in the rankings after Buthidaung's (see Appendix 1), and the highest among the four townships covered in this report.

According to our primary data, all the villages in Minbya Township but Pyinyaung have no clinic or rural health center in use. For Pyinyaung, its village clinic did not sustain any damage reportedly. Their health conditions versus the use of toilets in the villages can be observed in Table 4.10.

We observed that following the disaster many adults and children suffered some skin infections (black spots appeared on their skins), while some kids contracted diseases such as diarrhea, malaria, and hepatitis, and illnesses such as fever, cold symptoms and body pain.

In this township as well, many villages did not have access to medical treatment although few were visited by mobile medical teams and provided with medicines.

Of the ten villages we covered in this township, only Pyinyaung had a clinic, which was served only by one nurse. Minbya has a total of 62 village tracts and 246 villages that are relying on a 25-bed hospital, one 16-bed hospital, six rural health centers, 27 rural health sub centers, one indigenous medicinal hospital, one maternity and childcare center, and one anti-tuberculosis center. Local people are anticipating having more access to health services in their own places.

Likewise, this township also needs to ensure **new** health facilities such as clinics and rural health centers be built in addition to having assistance in repairing existing ones. It should not be forgotten that improvement in transport is needed for timely delivery of health services to remote places.

According to Table 4.10, the number of toilets in each of the 10 villages is highly disproportionate to that of the homes, the numbers ranging from 64 to 219. Except for the monasteries and schools, most of the homes do not have toilets. Those who have also saw their toilets destroyed, and they need help too.

Table (4.10) Condition of health, toilet usage in 10 villages in Minbya Township

Village Name	Population/ Number of Homes	Condition of Dispensary/ Health Center	Support on Health Sector after Natural D aster	Consequences after Natural D aster	Condition of Toilet Use
1. Oh Pyin Htaung (Oh Pyin Htaung village tract)	Population – 1176 Number of Homes – 219 Household – 137	No dispensary One midwife	Some CSOs provided health care; (Metta Yinnmyit, Moe Kaung, MRA) Military's mobile medical team arrived;	Skin diseases broke out among elderly, young people; (Black spots appear on their skins;) Some children had diarrhea;	Toilet use rare; (Toilets damaged;)
2. Pyin Yaung (Pyin Yaung village tract)	Population – 827 Number of Homes – Household –	No dispensary One midwife	Military's mobile medical team arrived;	About 60 people suffered muscle pain; About 10 to 20 people had skin diseases; (Black spots appear on their skins;) Some 30 children had diarrhea;	Toilet use rare; (about 20 toilets only;)
3. Chin Sate (Thadoe village tract)	Population – 528 Number of Homes – 126 Household – 121	No dispensary (Go to Don Tha village for health care;)		some diarrhea cases;	Toilet use rare;
4. Myin Tin Ma (Tat Yar village tract)	Population – 730 Number of Homes – 165 Household – 185	No dispensary (Go to Minbya Town for health care;)		Some malaria cases, 3 people had skin diseases, (Black spots appe d on their skins;)	Toilet rarely used ;
5. Taung Pote Tay	Population – 730	No dispensary	Some CSOs arrived for health care;	some skin d ease cases; (Black spots appe d on their	Toilet rarely used ;

(Phone Thar village tract)	Number of Homes – 165 Household – 185	(Go to Kyauk Hmaw dispensary;) One midwife	(Weithandra, Young Volunteers Health CARE Group) Military's roaming clinicarearrived;	skins;) also illnesses;	
6. Dagun Daing (Thadoe village tract)	Population – 556 Number of Homes – 130 Household – 130	No dispensary (Go to Don Tha dispensary;) One midwife	Military's mobile medical team arrived;	Some cases of diarrhea (especially among young people;) About 4 or 5 cases of skin diseases; (Black spots appe d on skin;)	Toilet use rare;
7. Thalu Chaung (Phone Thar village tract)	Population – 601 Number of Homes – 120 Household – 130	No dispensary (Go to Kyauk Hmaw dispensary or Minbya for health care;)		Many cases of malaria; Fever, coughing, hepatitis;	Toilet rarely used;
8. Khaung Laung (Ywar Haung) (Ywar Pyin village tract)	Population – 558 Number of Homes – 150 Household –	No dispensary (Go to Minbya for health care;)	Some CSOs arrived for health care;	Diarrhea, muscle pain;	Toilet use rare;
9. Naram Ywar Gyi (Naram village tract)	Population – 550 Number of Homes – 165 Household –	No dispensary (Go to Minbya for health care;)		Fever, diarrhea;	Toilet use rare;

10. Naram Zi Hwa (Naram village tract)	Population – 294 Number of Homes – 64 Household –	No dispensary (Go to Minbya for health care;)		Children fell ill;	Toilet use rare; Toilets, pits damaged;

Reference: Findings of field research;

4.3.2. Water sources and required support in the villages in Minbya Township

The release by the DRD for Rakhine State states that a total of five water wells and 252 lakes across 163 villages in Minbya Township were destroyed by the flood (see Appendix 7). Of the lakes in those villages, 96 were repaired by the DRD, 101 were jointly repaired by the DRD and the Tatmadaw, and 44 by international NGOs (see Appendix 8). Table 4.11 states detailed situations the affected water sources in the 10 villages we covered.

Table (4.11) Condition of wells, ponds in 10 villages in Minbya Township

Village Name	Population/ Number of Homes	Damage Condition of Wells/ Ponds because of Natural D aster	Present Condition	Remark
1. Oh Pyin Htaung (Oh Pyin Htaung village tract)	Population – 1176 Number of Homes – 219 Household – 137	All three ponds inundated with stream water, silt;	Two ponds cleaned; Rain water mainly used for drinking; Spring water from nearby mountains used for drinking;	If less rainfall, drinking water can be scarce; Water scarcity can occur in summer;
2. Pyin Yaung (Pyin Yaung village tract)	Population – 827 Number of Homes – Household –	All four ponds inundated with stream water, silt;	One pond cleaned up; Drinking water fetched from hand dug small ponds; Rain water mainly used for drinking;	Water scarcity can occur in summer;
3. Chin Sate (Thadoe village tract)	Population – 528 Number of Homes – 126 Household – 121	AlListhree ponds inundated with stream water, silt;	Two damaged ponds repaired; Use river water, drink rain water	If less rainfall, drinking water can scarce; Water scarcity can occur in summer;
4. Myin Tin Ma (Tat Yar village tract)	Population – 730 Number of Homes – 165 Household – 185	All three ponds inundated with stream water, silt;	Damaged ponds repaired, water from those ponds used for drinking;	If less rainfall, water can scarce in summer; Want to dig a deep tube well;
5. Taung Pote	Population –	All two ponds,	One pond	If less rainfall,

Tay (Phone Thar village tract)	730 Number of Homes – 165 Household – 185	two wells damaged;	repaired, rain water mainly used for drinking;	drinking water can scarce; Water scarcity can occur in summer;
6. Dagun Daing (Thadoe village tract)	Population – 556 Number of Homes – 130 Household – 130	All three ponds inundated with stream water, silt;	One pond repaired; Stream water from nearby places used for drinking;	If less rainfall, drinking water can scarce;
7. Thalu Chaung (Phone Thar village tract)	Population – 601 Number of Homes – 120 Household – 130	All three ponds inundated with stream water, silt;	Two ponds repaired; Stream water from nearby places used for drinking;	If less rainfall, drinking water can scarce;
8. Khaung Laung (Ywar Haung) (Ywar Pyin village tract)	Population – 558 Number of Homes – 150 Household –	All four ponds inundated with stream water, silt;	Two ponds repaired; two ponds treated with tablets, water used; Drinking water fetched from a village about 2 miles away;	If less rainfall, drinking water can scarce; If less rainfall, drinking water can scarce;
9. Naram Ywar Gyi (Naram village tract)	Population – 550 Number of Homes – 165 Household –	All six ponds inundated with stream water, silt;	One pond repaired; Rain water mainly used for drinking;	Water scarcity can happen in summer;
10. Naram Zi Hwa (Naram village tract)	Population – 294 Number of Homes – 64 Household –	Out of 4 ponds, three inundated with stream water, silt;	One pond from village repaired; Two ponds repaired by themselves; Rain water used for drinking; Water also fetch from nearby villages;	If less rainfall, drinking water can scarce;

Reference: Findings of field examination

If we look at Table 4.11, virtually all the wells and lakes in all the 10 villages we inspected were destroyed by the flood especially of mud and fresh waters, or polluted by wastes dumped by the animals that flocked to the higher lake banks to flee the flood. Now, some of those destroyed

wells and lakes have been repaired or strengthened with help from the DRD, other private charity groups, as well as independently by the locals. It was a huge task indeed. All the water from the wells and lakes had to be motor pumped as well as sand and mud had to be removed. Filling fresh and clean water into these sources all depend on the rain. If the late monsoon turned into draught, it would become another calamity.

Local people were tackling the problem by relying on relief drinking water and rainwater (they stored in containers made with donated tarpaulin); and by purifying natural stream water. In some villages, local residents were considering leaving some of the affected sources out of the repair list, drinking the water from those unrepaired sources. So the hygiene of the water from those lakes is questionable. In some villages, people rely on rivers to bathe or wash but wells and lakes in their vicinity to drink. Village such as Oh-pyin-htaung, Tagundaing and Thaluchaung located near Pan Myaung Gyi and Hpontha creeks were found relying on spring waters from nearby jungles.

Finally, recommendations on providing relief to the villages include restoration of polluted ponds and lakes, examination of the water sources for hygienic levels, providing motor pumps and tube wells in time for hot season. Supply of water purifiers will also do a great favor.

(Note: In this area, people do not drink river and stream waters like in some villages in the previous two townships, even though these are necessary for other use.

Only few people prefer water purifying tablets because of its odor.)

Use of proper methods in restoration work is also important. In Tagundaing village, one of the villages along Hpontha creek, an organization came to help pump out the water from the lakes, with the villagers paying for the fuel, but later guests left in the middle of pumping. Elders from the Tagundaing village said this group was not focusing on the completion of work but rather on moving on from one village to another, without considering the effective of their help. It highlighted the more importance of quality than the quantity of aid groups.

4.3.3. Housing and transportation, and required support in the villages in Mrauk-U Township

As described in Chapter 1 (Introduction), a total of 1200 homes were destroyed of which 448 lost their roofs and walls while 752 were totally flattened. A total of 18.5 miles of gravel/dirt road, 12 under-20-feet bridges, two under 40-feetbridges and two over-40-feet bridges was damaged.

Please see Table 4.12 to know the housing and transportation problems faced by the 10 villages we covered for Minbya Township.

Table (4.12) Condition of homes, roads in 10 villages in Minbya Township

Village Name	Population/ Number of Homes/ Households	Damage to Roads (village streets, bridges; inter-village roads)	Damage Condition of Buildings	Remark
1. Oh Pyin Htaung (Oh Pyin Htaung village tract)	Population – 1176 Number of Homes – 219 Household – 137	Village roadss covered with mud; Roads connected with villages damaged; (Some roads connected with Let Ma, Pyin Yaung, etc; damaged;)	Total damage – 5 homes Roof of monastery ordination building open;	Sheltering under makeshift tarps or taking refuge with relatives;
2. Pyin Yaung (Pyin Yaung village tract)	Population – 827 Number of Homes – Household –	Roads connected with villages damaged; (Some roads such as Pyin Yaung – Pan Myaung – Min Phu damaged; Those roads damaged because five water pass small, y damaged by flood;)	Total damage – 32 homes	Sheltering under makeshift tarps or taking refuge with relatives;
3. Chin Sate (Thadoe village tract)	Population – 528 Number of Homes – 126 Household – 121	Village roadss covered with mud;	Total damage – 3 homes	Sheltering under makeshift tarps or taking refuge with relatives;
4. Myin Tin Ma (Tat Yar village tract)	Population – 730 Number of Homes – 165 Household – 185	Village streets covered with mud; Two bridges in village damaged; (One bridge drifted, one damaged; Those bridges very important for village, assistance needed;	Partial damage – 26 homes	Sheltering under repaird properties;
5. Taung Pote Tay (Phone Thar village tract)	Population – 730 Number of Homes – 165 Household – 185	Village streets covered with mud;	Roof damage – 5 homes	Live by temporarily repairing;

6. Tagun Daing (Thadoe village tract)	Population – 556 Number of Homes – 130 Household – 130	Village streets covered with mud; Two bridges in village damaged; (temporarily repaired by villagers;) Roads connected with villages damaged; (About 80 feet of dirt road connected with Tagun Daing – Don Tha – Shwe Kyan damaged;) jetty damaged;	Total damage – 1 homes	Sheltering under makeshift tarps or taking refuge with relatives;
7. Thalu Chaung (Phone Thar village tract)	Population – 601 Number of Homes – 120 Household – 130	A small village bridge damaged;		
8. Khaung Laung (Ywar Haung) (Ywar Pyin village tract)	Population – 558 Number of Homes – 150 Household –	Four small village bridges damaged; (hard to transport construction materials because village roads heavily covered with mud;) (Government plans to build a road for vehicle use from Ramaung to Gwa Son; However, villagers to give up their lands for road; Estimate cost about 128 million;)	Partial damage – 26 homes	Sheltering under their repaird properties;
9. Naram Ywa Gyi (Naram village tract)	Population – 550 Number of Homes – 165 Household –	Village roadss covered with mud; Five small bridges in village damaged; Seweage canals blocked by mud; Machines needed to	Total damage – 10 homes Wall damage – 10 homes	Sheltering under makeshift tarps or taking refuge with relatives;

		clear canals;		
10. Naram Zi Hwa (Naram village tract)	Population – 294 Number of Homes – 64 Household –	Village streets covered with mud; Seweage canals, ditches, creeks blocked with garbage, mud; Machines needed to clear canals;	Total damage – 4 homes	Sheltering under makeshift tarps or taking refuge with relatives;

Reference: Findings of field examination;

According to Table 4.12, the number of homes totally destroyed ranges from 2 to 32 across the 10 villages, while that of homes partially destroyed ranges from five to 26. The victims were staying in makeshift houses and in relatives' homes. Obvious relief plans were not found like in other townships.

In some villages, monasteries saw their roofs damaged.

Almost all the village streets had been covered with mud while small bridges across streams and canals were also affected. Jetties and inter-village roads were also destroyed, hurting the transportation badly. Socio-economic conditions were no exception.

Many roads had been fragmented due to the destruction of underpass spillways. Some parts of the Pyinyang-Panmyaung-Minphoo road network were badly damaged due to such spillways. Locals said the size of the spillway openings were too small to stand the pressure of the current. It is recommended that local advice should be sought when it comes to building roads.

Hence, improvement of transport is key to rehabilitation of this area. (See Appendix 10, 12, 13, 14 and 15 for the list of road and bridge damage in Minbya Township.)

4.4. Health facilities and health, use of toilets, water sources, housing and transportation in the villages in Ponnagyun Township; and required support

4.4.1. Health facilities and health, the use of toilets and required support for the villages in Ponnagyun Township

As we see in Chapter 1, there was no reported damage to health facilities except for three human deaths in Ponnagyun Township. Of the 10 villages located along Yoechuang and Kywelann creeks in this township, health facilities such as clinics and rural health centers were not found in all the villages except Pyinyaung, which hosts a clinic that was spared from destruction. Table 4.1.3 shows health conditions and the use of toilets in those villages.

The table highlights the outbreaks of illnesses such as fever and cold symptoms, and diseases such as diarrhea and malaria among some children. In this township too, few villages were visited by mobile medical teams and provided with medicines, but mostly the villages lacked access to medical treatment.

Only two out of the 10 villages we observed, namely Pyin Lya She and Man Aung Tha, had access to health services, while the rest did not have any clinic. No damage was reported to have occurred to the facilities in the two villages.

According to the description in Chapter 1 (Introduction), the 193 villages across Ponnagyun Township are relying on one 25-bed hospital, two 16-bed hospitals, five rural health centers, 23 rural health sub centers, one indigenous medicinal hospital, one maternity and childcare center, and one anti-malaria center, prompting many locals to have more access to healthcare services in their area. For instance, Let-Weh-Myan village, access to which is extremely poor, has to rely on the rural health center in Yoetayoak village four miles away. Main transport for the residents of Let-Weh-Myan village is traveling by boat through a canal that channels water from Yoechaung creek. The canal usually dries up during low tides, and transportation becomes a huge obstacle for local people especially when they need emergency medical treatment. There have been many death cases of pregnant women who could not make it to hospital in time.

Likewise, this township also needs to be introduced to new health facilities such as clinics and rural health centers in addition to assistance in repairing existing ones. Improvement in transport is needed for timely delivery of health services to remote places.

According to Table 4.13, the number of toilets in each of the 10 villages is highly disproportionate to that of the homes, the numbers ranging from 55 to 305. Except for the monasteries and schools, most of the homes do not have toilets. Those who have also saw their toilets destroyed, and they need help in rebuilding them too.

Table (4.13) Condition of health, toilet usage in 10 villages in Ponnagyun Township

Village Name	Population/ Number of Homes	Condition of Dispensary/ Health Center	Support on Health Sector after Natural D aster	Consequences after Natural D aster	Condition of Toilet Use
1. Bell Koh (Kyein Chaung village tract)	Population – 483 Number of Homes – 90 Household – 110	No dispensary (to rely on dispensary of Kyein Chaung village;)			about only 10 toilets in village; (Toilets damaged;)
2. Kyein Chaung (Kyein Chaung village tract)	Population – 1150 Number of Homes – 80 Household – 98	No dispensary		Cold	about only 2 toilets in village; (Toilets damaged;)
3. Marn Aung Thar (Kyein Chaung village tract)	Population – 405 Number of Homes – 82 Household – 94	One dispensary; One nurse, one superv or		Cold, diarrhea	about only 20 or 30 toilets in village; (Toilets damaged;)
4. Kaung Mon (Hmo Hin Taw village tract)	Population – 250 Number of Homes – 48 Household – 48	No dispensary (to rely on Rural Health Center in Yoe Tayoke village;)		Cold, cough;	about only 4 toilets in village;
5. Gwa Sone (Gwa Sone village tract)	Population – 250 Number of Homes – 48 Household – 48	No dispensary (to rely on Rural Health Center in Yoe Tayoke village;)	Health department provided water purification medicine;	Cold, malaria;	about 5 toilets only in village;
6. Myin Kat Tar (Myin Kat Tar village tract)	Population – 776 Number of Homes – 150 Household	No dispensary Listet Health Center comes once a month; If		Running nose, cough, ill;	Toilet use rare; about only 30 toilets in village; Toilets damaged;

	– 170	emergency, people to go to Yoe Tayoke;)			
7. Pauk Too Pauk (Myin Kat Tar Taw village tract)	Population – 435 Number of Homes – 90 Household – 101	No dispensary Listet Health Center comes once a month; If emergency, people to go to Yoe Tayoke;)		Running nose, cough, ill;	4 toilets only in village; Toilet use rare; Planning to build toilets;
8. Pyin Yar Shae (Pyin Yar Shae village tract)	Population – 1603 Number of Homes – 305 Household – 370	One rural health center;	some medical donations from non-government donors;	Children catch cold;	Almost everybody uses toilets in village; Toilets damaged;
9. Pyin Hla (Myin Kat Tar village tract)	Population – 293 Number of Homes – 55 Household – 67	No dispensary; If illness, people to go to Pyin Yar Shae;)		Flu, running nose;	Toilet use rare; more than 10 toilets in village; (One toilet damaged;)
10. Let Wel Myan (Let Wel Myan village tract)	Population – 1226 Number of Homes – 218 Household – 226	No dispensary Staff from The' Tet Health Center visits once a month; If emergency, people to go to Yoe Tayoke;)		many diarrhea cases;	Toilet use rare; more than 10 toilets in village; Planning to increase use of toilet;

Reference: Findings of field examination;

4.4.2 Water sources and required support in the villages in Ponnagyun Township

The release by the DRD for Rakhine State states that a total of 60 lakes across 51 villages in Ponnagyun Township were destroyed by the flood (see Appendix 7). Of the lakes in those villages, **37** were repaired by the DRD, **five** were jointly repaired by the DRD and the Tatmadaw, and another **five** repaired by international NGOs (see Appendix 8). Table 4.15 states detailed situations of the affected water sources in the 10 villages we covered.

Table (4.14) Damage of wells/ponds in villages in Ponnagyun Township;

Sr.	District	Township	Ward	Village Tract	Village	Pond
	Sittwe	Ponnagyun		Hmo Hin Taw	Hmo Hin Taw	4
				Ganan Taung	Ganan Taung	4
				Kywe Lan Chaung	Kywe Lan Chaung	2
				Let Wel Myan	Let Wel Myan	2
				Thae Tet	Thae Tet	2
				Pyin Yar Shae	Pyin Yar Shae	4
				Aung Sate	Aung Sate	7
				Myin Kat Taw	Myin Kat Taw	2
				Gwa Sone	Gwa Sone	2
				Bel Koh Kyein Chaung	Bel Koh Kyein Chaung	6
				Min Zi Chaung	Min Zi Chaung	3
				Yin Chin	Yin Chin	3
				Nyaung Chone	Nyaung Chone	2
				Thar Pone	Thar Pone	3
				Sin Htein Kyi	Sin Htein Kyi	3
				Chin Thaye	Chin Thaye	2
				Myet Thauk	Myet Thauk	6
				Pe Si Nan	Pe Si Nan	2
				Kalar Chaung	Kalar Chaung	3
				Met Kallar Kya	Met Kallar Kya	3
				Kywel Hto	Kywel Hto	1
				Sapar Htar	Sapar Htar	3
				Aung Zayya	Aung Zayya	3
				Khin Maung Taw	Khin Maung Taw	4
	Total		3	86	86	78

Reference: General Administration Department, Sittwe District

Table (4.15) Condition of wells/ponds in 10 villages in Ponnagyun Township

Village Name	Population/ Number of Homes	Damage to Wells/Ponds	Current situation	Remark
1. Bell Koh (Kyein Chaung village tract)	Population – 483 Number of Homes – 90 Household – 110	Out of 2 ponds, 1inundated with stream water, silt;	pond repaired; Rain water mainly used for drinking water;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; not possible to dig a deep tube well;
2. Kyein Chaung (Kyein Chaung village tract)	Population – 1150 Number of Homes – 80 Household – 98	All two ponds inundated with stream water, silt;	ponds repaired; Rain water mainly used for drinking water;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer;
3. Marn Aung Thar (Kyein Chaung village tract)	Population – 405 Number of Homes – 82 Household – 94	All three ponds inundated with stream water, silt;	One pond repaired; Rain water mainly used for drinking water; (A deep tube well dug up to 60 feet but water not found)	After rainy season, drinking water problem can happen; Water scarcity can occur in summer;
4. Kaung Mon (Hmo Hin Taw village tract)	Population – 250 Number of Homes – 48 Household – 48	All two ponds inundated with stream water, silt;	One pond repaired; Rain water mainly used for drinking water;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer;
5. Gwa Sone (Gwa Sone village tract)	Population – 250 Number of	All three ponds inundated with stream water,	Two ponds repaired;	After rainy season, drinking water

	Homes – 48 Household – 48	silt;	Rain water mainly used for drinking water;	problem can happen; Water scarcity can occur in summer; It planned to drink water from creek;
6. Myin Kat Tar (Myin Kat Tar village tract)	Population – 776 Number of Homes – 150 Household – 170	All four ponds inundated with stream water, silt;	Trying to be able to use water from three ponds by treating it with tablets; One pond pumped up; Rain water relied on for time being; When a deep tube well dug, salt water comes out;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; Ponds to be repaired; To add antiseptic, to purify water, to add lime;
7. Pauk Too Pauk (Myin Kat Tar Taw village tract)	Population – 435 Number of Homes – 90 Household – 101	All four ponds inundated with stream water, silt;	Two ponds repaired; Water purification tablets used; Rain water mainly used for drinking water;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; Ponds to be repaired; (To add antiseptic, to purify water, to add lime;)
8. Pyin Yar Shae (Pyin Yar Shae village tract)	Population – 1603 Number of Homes – 305 Household –	One drinking water pond, four water ponds damaged;	village repaired one pond;	After rainy season, drinking water problem can happen; Water

	370			scarcity can occur in summer; a plan to dig a deep tube well; Water not found until 60 ft depth under ground;
9. Pyin Hla (Myin Kat Tar village tract)	Population – 293 Number of Homes – 55 Household – 67	One drinking water pond, one water pond damaged;	Pond repaired;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; Ponds to be repaired; (To add antiseptic, to purify water, to add lime;)
10. Let Wel Myan (Let Wel Myan village tract)	Population – 1226 Number of Homes – 218 Household – 226	All three ponds damaged; Two ponds repaired;	drinking water problem;	After rainy season, drinking water problem can happen; Water scarcity can occur in summer; a plan to dig a deep tube well;

Reference: Findings of field examination;

If we look at Table 4.15, all the lakes in all the 10 villages along Yoechaung and Kywelann creeks were destroyed by the flood especially of mud and fresh waters, or polluted by wastes dumped by the animals that flocked to the higher lake banks to flee the flood.

Like in the other townships, local people here were tackling the problem by relying on donated drinking water and rainwater (they accumulated rainwater in containers made with donated tarpaulin). In some villages, locals had weak knowledge about the proper use of water purifying tablets provided by the donors. Only few people prefer water purifying tablets because of the odor the water smells. In Let-Weh-Myan village, villagers put the tablets into their wells and lakes instead of their water set aside for drinking, falsely believing that doing so would purify all the wells and lakes. So the hygiene of the water from those lakes is questionable. Local villagers must be educated on how to use the tablets properly, as well as their use be monitored after aid

groups deliver the aid items. Staff from development agencies will be required to stay on in these villages for a period of time.

Like in the previous townships, local residents were considering leaving some of the affected sources out of the repair list, viewing them as reserved drinking water sources. In some villages, only some of the wells and lakes were being repaired. The hygiene of the sources left unrepaired is also questionable.

Similarly, recommendations on providing relief to those villages include restoration of polluted ponds and lakes, examination of the water sources for hygienic levels, providing tube wells in time for summer where possible. Supplies of water purifiers will also do a great favor.

(Note: This area is far from thick forests and jungles; hence relying on spring water is not a solution, nor is drinking the water from rivers and streams since it is mixed with some sea water, being close to the sea compared with the other townships.)

4.4.3. Housing and transportation, and required support in the villages in Ponnagyun Township

As described in Chapter 2, a total of 2,223 homes and four bridges were destroyed in this township.

Please see Table 4.16 to know the housing and transportation problems faced by the 10 villages we selected for Ponnagyun Township.

According to Table 4.16, the number of homes totally destroyed ranges from 2 to 18 across the 10 villages, while that of homes partially destroyed ranges from 8 to 60. The victims were staying in makeshift houses and in relatives' homes. Obvious relief plans were not found there like in elsewhere. In some villages, an emergency tent was provided to each village but the villagers did not know how to install these tents.

In some villages, monasteries suffered damages in its structures and facilities.

Almost all the village streets had been covered with mud while small bridges across streams and canals were also affected. Jetties and inter-village roads were also destroyed, hurting the transportation badly. Impacts on their socio-economic conditions were no exception.

Table (4.16) Condition of homes, roads in 10 villages in Ponnagyun Township

Village Name	Population/ Number of Homes/ Household	Damage to roads (Village streets, inter-village roads)	Damage to Buildings	Remark
1. Bell Koh (Kyein Chaung village tract)	Population – 483 Number of Homes – 90 Household – 110	Village roads covered with mud; Two small bridges in village damaged; jetty of village destroyed;	Partial damage – 4 homes Total damage – 4 homes Roof of monastery ordination hall gone; (One emergency shelter received from government;)	Sheltering in makeshift tarps or staying with relatives
2. Kyein Chaung (Kyein Chaung village tract)	Population – 1150 Number of Homes – 80 Household – 98	Village roads covered with mud;	Total damage – 8 homes (One emergency shelter received from government)	Sheltering in makeshift tarps or staying with relatives
3. Marn Aung Thar (Kyein Chaung village tract)	Population – 405 Number of Homes – 82 Household – 94	Village roads covered with mud; A 30 feet long bridge, connecting Wet Oo Pin village, destroyed; jetty of village destroyed;	Total damage – 14 homes	Sheltering in makeshift tarps or staying with relatives
4. Kaung Mon (Hmo Hin Taw village tract)	Population – 250 Number of Homes – 48 Household – 48	Village roads covered with mud; A 20 feet long bridge in village destroyed;	Total damage – 14 homes (One emergency shelter received from government;) Roof of monastery gone;	Sheltering in makeshift tarps or staying with relatives
5. Gwa Sone (Gwa Sone village tract)	Population – 250 Number of Homes – 48 Household	Village roads covered with mud; One 10-feet	Total damage – over 10 homes Partial damage - 37 homes Monastery destroyed;	Sheltering in makeshift tarps or staying with relatives

	– 48	bridge, 3 (8 ft) bridges, one 120-ft bridge damaged;		
6. Myin Kattaw (Myin Kattaw village tract)	Population – 776 Number of Homes – 150 Household – 170	Village roads covered with mud; Some bridges also damaged;	Partial damage – 9 homes Total damage – 3 homes	Government provideds one makeshift tent for 20 households
7. PauktuPauk (Myin Kat Tar Taw village tract)	Population – 435 Number of Homes – 90 Household – 101	Village roads covered with mud; To connect with villages, a waterway;	Partial damage – 17 homes Total damage – 10 homes Monastery also damaged a little;	Sheltering in makeshift tarps or staying with relatives; no govt support;
8. Pyin Yar Shae (Pyin Yar Shae village tract)	Population – 1603 Number of Homes – 305 Household – 370	A bridge in village destroyed a little;	Partial damage – 38 homes Total damage – 11 homes	Sheltering in makeshift tarps or staying with relatives; no govt support;
9. Pyin Hla (Myin Kat Tar village tract)	Population – 293 Number of Homes – 55 Household – 67	a bridge in village, Village roads damaged a little;	Partial damage – homes Total damage – 2 homes	Sheltering in makeshift tarps or staying with relatives; no govt support;
10. Let Wel Myan (Let Wel Myan village tract)	Population – 1226 Number of Homes – 218 Household – 226	three bridges connecting with villages, 13 bridges in village; only a small damage; Village roads covered with mud;	Partial damage – 30 homes Total damage – 18 homes Roof of monastery gone;	Sheltering in makeshift tarps or staying with relatives; no govt support;

Reference: Findings of field research

Some small creeks had disappeared following massive coverage of sand and mud, hurting the transportation of this area relying much on waterways, as well as affecting their plantations that had lost their water sources.

Community elders said the emergence of inter-village road networks was essential to the region's better transport services. If it was possible to build roads interconnecting Be`kho, Kyeinchaung, Yinchaung, and Mizichaung villages; Letmaseik, The`tet, Kadi, Kywelannchaung, Let-Weh-Myan, Pyin-Lya-She and Aukseik villages; and Myin-katta, Pauktupauk and Gwazon villages, it would contribute a lot to the regional development.

Hence, improvements in transport are key to rehabilitation of this area.

Chapter 5
Conclusion

As we saw in the previous chapters, the scale of destructions Rakhine State suffered from the cyclone in July and August of 2015 is immense, and devastated all the sectors within the state. There may be huge impacts, and requirements for the relief and resettlement programs are substantial.

The development status of Rakhine, which was already the second poorest state in Myanmar, has now plunged into further plights because of the disaster. All the sectors of education, health, livelihoods, housing and transportation were badly affected as described in Chapter 2, 3 and 4 respectively. If emergency rescue and relief could not be implemented, there would become a vicious cycle difficult to break.

As described in Chapter 3, local populations had been facing a shortage of food as a vast majority of their 'food paddy' was lost in the disaster. Until the harvest comes, they will have to rely solely on the food rations supplied by humanitarian groups. Their daily needs of survival have reached at a critical condition as these rations are gradually running few and more aids have stopped coming in large amounts. Many elders said local people were facing so much difficulties that they would have to feed themselves on money by pawning and selling their small household properties. Leaders of some local organizations we met feared that hunger and starvation would lead to more crimes and violence.

There is a good example of what consequences a disaster usually brings into an affected population. On May 10, 1968, Rakhine was hit by a powerful storm, and subsequent shortages of food led to riots in the state capital Sittwe in which people fought to vie for scarce rice, leaving scores of deaths. Therefore, implementing the rehabilitation programs properly, efficiently and effectively is key to prevention of such chaos.

Ensuring an effective and efficient implementation of proper rehabilitation programs would require achieving synergy effects among various stakeholders across different sectors involved in humanitarian works in Rakhine. Only then, will multiple needs in the said areas be fulfilled. For those who are helping to rehabilitate Rakhine, a comprehensive project design that would act as a master plan is required. We would like to put as examples the The Post-Cyclone Nargis Initiative Project implemented in the Ayeyarwady delta by Metta Foundation, and the Tat Lan Project implemented in Rakhine State by a consortium of international and local NGOs.

The three-year Post-Cyclone Nargis Initiative Project (2008 to 2011) implemented by the Metta Foundation to rehabilitate, reconstruct and develop the Ayeyarwady delta region that was worst-affected by Cyclone Nargis stands as an example for those who want to follow suit. This project, providing sustainable development for the affected areas, successfully helped recover a great many lives of local people from 205 villages across nine townships who survived the cyclone that struck the area on May 2, 2008.

The project encompasses six sectors: food security, health, education, disaster risk reduction and prevention, transportation, and finally capacity building of the locals. (These capacity-building trainings were aimed not just at improving socioeconomic conditions of the region but at

transforming the local people into a well-informed community that is fully aware of a sustainable development tract.)

To cut a long story short, the Metta Foundation helped rebuild thousands of homes for the villagers, conducted hundreds of capacity-building and agricultural trainings, and provided farm animals, farm equipment and seeds for the farmers and boats and fishing nets for the fishermen. For the local education sector, they opened Early Childhood Care and Development Centers, as well as rebuilt lots of schools along with water storage tanks and standard toilets.

Furthermore, the Foundation repaired water wells and lakes, built new ones, distribute large water containers, and built standard toilets. Apart from the physical needs, they also improved the knowledge and awareness of the local people by conducting numerous health education trainings and workshops across various communities.

As for risk mitigation, Metta Foundation helped grow many acres of mangrove trees along the coastal lines to prevent destructive tidal waves; conducted various research on local livelihoods and businesses such as fishing and forestry; and installed early warning systems to help local people reduce impacts of future disasters.

Improving transport infrastructures such as roads, bridges and jetties was also included in their project, in which new 'emergency roads' were built with an aim of rescuing people in case they face another disaster. Villages that were under threat of river bank erosion were also moved with help from the Foundation to safe locations.

After Rakhine State had been badly affected by Cyclone Giri in 2010, a long-term project aimed at rehabilitating four worst affected townships was designed. This project, called the Tat Lan Project, too set an example for those who want to design similar projects to help severe disaster-affected areas.

(Note: The Tat Lan Project was jointly designed and implemented by international NGOs such as the International Rescue Committee, Save the Children UK (SC) and Oxfam, and a local NGO named the Better Life Organization. The project was designed to implement rehabilitation and development programs in four townships most affected by Cyclone Giri. We would like to clarify that we intend to give that project as an example for similar projects and have no intention of assessing their results by any means.)

The Tat Lan Project had generally four main focus areas: developing infrastructure, development in fishing, development in agriculture, and providing financial assistance.

Infrastructure development programs included building numerous needs such as housing, toilets, roads and bridges, water wells and lakes that are essential to the regional development. The project was also designed to cover expenses for providing all these needs.

Secondly, in order to enhance fisheries, village-level fishing industries were improved, the skills of local people in fishing was polished, and all those involved in fishing regardless of sex were trained to be able to earn more income while balancing economic and environmental sustainability on the other hand.

Thirdly, local farmers were assisted in areas such as increasing yields of paddy and other crops, as well as provided with seeds, fertilizers and farming techniques.

Finally, all the farmers and fishermen in the targeted areas were provided with credit loans in order to help boost the economy of local industries.

If we look at the strategies formulated in both examples, they focused on a comprehensive support, community-based planning, introducing new techniques/technologies, forming linkages with governmental organizations, and finally targeting to benefit various strata of the societies (youths, grassroots and women).

Both the project implemented by the Metta Foundation and the Tat Lan Project set big agendas, properly used effective strategies, cooperated with different stakeholders, put efforts and considerations in an all-encompassing manner.

We would like to call upon all the stakeholders involved in the rehabilitations of the disaster-affected areas in Rakhine State to pay full attention to having a comprehensive project design by observing the examples of Post-Cyclone Nargis Initiative Project implemented by the Metta Foundation and the Tat Lan led by a consortium of local and international NGOs.

Appendix Table (1) - Damage Condition (20-9-2015)

Township	Die		Lost		Flood affected household	Flood affected population	Submerged / Flooded					Collapse/ Damage								
	Man	Cattle	Man	Cattle			House	School	Monastery	Building/ Other	Farm (acre)	House	School	Monastery	Building/ Other	Dam	Bridge	Road	Farm (acre)	Cost of damage (Kyat million)
Sittwe											1530	806	16	5	56	1		6	1530	1585.47
Ponnagyun	3	338			3024	13083	1334			3735	23004	2065	46	5	14	3		4	9045	4297.547
Rathedaung	3	142			1066	5350					4151	2216	83	1	15	3	25	2	1510	57.275
Pauktaw		606			1461	6949	256				18842	1462	5		15	6			8946	1038.994
Mrauk-U	13	180			1029	19176	41155	58	1		84745	1295	10	2	46		7	14	74829	6038.619
Kyauktaw	1	1404			2566	11342	2525	101	40		51356	1036	27	15	19	2	1	6	41219	3263.231
Minbya	16	1147			907	6049	1200	204	10	2	50000	1203	47	50	17	9	19	34	36079	6155.8996
Myebon					61	244	59	2			8550	59	1		10	17		6	5623	130.711
Maungdaw	1				811	2579	29376	79	18	238	12819	559	32	12	32	1	8	5	274	492.2855
Buthidaung	18	725			2842	18659	36192	117	41	2432	39188	2344	19	32	38		3	6	29189	1213.26
Kyaukphru											6505	12	2		5	56		2	1823	2235.3
Ramree													1					1		
Mann Aung												13	1							1.43
Ann	1	144			2569	2569	2569	7	2	2	12719	612	2	1	25	10	6	19	5739	18427.7866
Thandwe											128.1	19					2	7	415	19.652
Taunggup												11				2	1	7	841	18.117
Gwa											20	29				1			184	5.7148
Total	56	4686			16336	96165	114666	568	112	6409	313557.1	13741	292	123	292	111	72	11	217246	44981.296

Reference: General Administration Department, Rakhine State

Condition of Re-cultivation upon Damaged Monsoon Paddy

Sr.	Township	Damage (Acre)	Re-cultivated (Acre)	Cannot re-cultivated (Acre)		
				Can't built dyke	**Covered with sand/ big trees**	**Total**
1	Sittwe	1637	1637	-	-	-
2	Rathedaung	1765	1765	-	-	-
3	Ponnagyun	10094	9886	208	-	208
4	Pauktaw	8946	7424	-	-	-
5	Mrauk-U	75242	75195	-	47	47
6	Kyauktaw	41281	41276	-	5	5
7	Minbya	360079	36008	-	71	71
8	Myebon	8550	8493	57	-	57
9	Maungdaw	819	792	-	27	27
10	Buthidaung	18129	16609	-	55	55
11	Kyaukphru	1867	4115	739	-	739
12	Ann	11397	11152	239	6	245
13	Thandwe	415	415	-	-	-
14	Taunggup	841	841	-	-	-
15	Gwa	184	184	-	-	-
	State Total	**217246**	**215792**	**1243**	**211**	**1454**

Reference: Department of Agriculture, Ministry of Agriculture and Irrigation (Rakhine State)

Appendix Table (3) Damage Condition for Agriculture and Livestock Sectors in the Villages in Kyauktaw Township

Sr.	Township	Ward/ Village Tract	Damage (Agriculture, Livestock)						
			Agriculture Land (Acre)	**Chicken**	**Duck**	**Pig**	**Buffalo**	**Cow**	**Goat**
1	Kyauktaw	Than Hmyaw	131						
2		Sapar Sate (Pee)	350						
3		Kyin Kyee	281						
4		Taung Mu Zi	940						
5		Tha Pauk Kan	180						
6		Aung Ya	985						
7		Than Taung	693						
8		Nagarar	564						
9		Taung Bway	111						
10		Ma Tin Hmaing Chaung	282						

11		Yadanarbon	173						
12		Mee Wa	35						
13		Mon Daunk	104						
14		Laung Shae	119						
15		Tinn Ma	250						
16		Marlar	138						
17		Myauk Taung	110						
18		Myoma	801						
19		Wakin	380						
20		Aung Paik Thi	370						
21		Let Saung Kauk	520						
22		Payar Paung	1103	2580	188	342	40	50	78
23	Kyauktaw	Shauk Chaung	326						
24		Nga/ Ta Paung	631	1840	120	202	28	42	56
25		Kwn Ohn Chaung	375	1022	46	168	20	22	24
26		Thinganet	322	1120	40	148	14	20	26
27		Taung Htaung	750						
28		Tayar	603						
29		Pee Htu	250						
30		Wel Gyi Daunk	290						
31		Shin Gyan	680						
32		Ngar Saung Bet	720						
33		Htauk Lay Min Dan	350						
34		Thar Si	255						
35		Alal Kyun	185						
36		Minthar Taung	155						
37		Pauktaw Thari	20						
38		Sapar Sate Thari	340	880	30	122	16	24	36
39		Thit Ta Bone	200						
40		Gaung Toke	42						
41		Lam Madaw	177	3980	22	30	0	18	22
42		Kyauk Talone	30						
43		Thayet Tabin	405	2734	122	290	38	74	74
44		Nyaung Chaung	220	840	20	98	18	32	30
45	Kyauktaw	Ywar Ma Pyin	644	3700	120	244	42	168	122

46		Kyar Nin Kan	685	2430	116	216	52	130	118
47		Thawin Gaing	875						
48		Sin Oh Chaing	1378						
49		Pauktaw Palaung	390						
50		Kathit Taw	350						
51		Ywar Thit Kay	230						
52		Kyaukphru	660						
53		Sein Chone	621	1740	28	148	42	76	86
54		Sapho Thar	597	840	40	102	24	50	36
55		Yun Chaung	918						
56		Lamu Tabin	1358						
57		Yapwi Htaunt	563						
58		Akha Sar	650						
59		Na Gu May	881						
60		Zin Khar Shae	459						
61		Let Khoke Pin Yin	1318						
62		Gar Raw Mani	365						
63		Kyaung Swe Phyu	1513						
64		Cardi	422	848	32	102	16	18	22
65		Apauk Wa	930	2844	160	342	34	46	62
66		Pyane Chaung	677	850	22	96	12	16	24
67	Kyauktaw	Doke Kan Chaung	1108	1280	34	110	20	32	48
68		Bo Min	691	1608	16	112	26	36	42
69		Pyaung Sate	1277						
70		Gwa Sone	674						
71		Bra War	632	902	20	94	14	22	32
72		Aung Zay Ya	1350	1606	32	180	28	44	50
73		Ohn Badi	682						
74		Auk Lar	796						
75		Kan Sauk	480						
76		Panbel Chaung	450						
77		Thalu Chaung	7						
78		Taung Min Kalar	250						
79		Kha Maung Taw	285						
80		Chaung Tu	169						

		Total	41281	32944	1208	3146	484	920	988

Reference: General Administration Department, Mrauk-U District

Appendix (4)
List of Monsoon Paddy Damaged in Mrauk-U Township because of Flood from July 25 to August 7

Name of Village Tract	Number of Fields	Number of Farmer	Flooded Acre	Water Decreased Acre	Damage Acre	Left Acre
1. Tan Tin	5	90	981	981	800	181
2. Maung Hna Ma	2	48	750	750	750	-
3. Nyaung Pin Lel (Pa Pa)	4	95	820	820	360	460
4. Pyaung Paw	5	123	600	600	410	190
5. Akyi Taw Ma	4	64	490	490	410	80
6. Et Thar	6	96	1200	1200	943	257
7. Alel Chaung	9	117	1325	1325	1152	173
8. Zee Pin Gyee	4	93	806	806	698	108
9. Nyaung Pin Lel (Ka La Pa)	5	85	1520	1520	1229	291
10. Zet Chaung	7	153	860	860	830	30
11. Thar Yar Kone	7	78	625	625	516	109
12. A Ngel Taw	9	75	781	781	485	296
13. Zee Pin Yin	3	95	1040	1040	820	220
14. Kone Baung (Shan Taung)	2	86	510	510	430	80
15. El Pyin	3	63	435	435	310	125
16. Nan Tet (Par Taw)	3	85	380	380	190	190
17. Kant Thari	3	64	540	540	270	270
18. Abaw	2	39	690	690	680	10
19. Haw Htee	2	39	80	80	80	-
20. Yaing Thi	3	327	1100	1100	950	150
21. Nan Kyar	1	186	530	530	528	2
22. Okkar Kyaw	4	136	420	420	310	110
23. Zee Zar	1	50	120	120	110	10
24. Myang Bway	2	169	675	675	675	-
25. Myat Yeik Kyun	4	216	1300	1300	1300	-
26. Taung Myint	2	90	1200	1200	920	280
27. Paung Toke	4	212	1200	1200	1200	-
28. Pu Rain	2	160	460	460	450	10

29. Let Pan Taw	2	60	202	202	188	14
30. Yel Phyar	3	208	1720	1720	1500	220
31. Kyar Kan	7	430	2413	2413	2012	401
32. Ma Kyar Sel	5	45	309	309	79	230
33. Tha Byay Kan	2	82	553	553	509	44
34. Taung Tike	3	82	835	835	779	56
35. Than Chaung	3	152	766	766	661	105
36. Wethali	4	78	361	361	313	48
37. Buu Ywet Ma Hnyo	4	83	1004	1004	974	30
38. Maw Ywar	2	35	105	105	80	25
39. Chate Chaung	3	38	150	150	95	55
40. Kyay Pin Lel	3	44	230	230	120	110
41. Shauk Pone Kyun	1	2	3	3	3	-
42. Pyay Hla	3	70	581	581	432	149
43. Thin Pan Kaing	5	148	1134	1134	1000	134
44. Pyar Tel	5	95	782	782	535	247
45. Naung Min	3	98	854	854	750	104
46. Pauk Pin Kwin	3	103	950	950	615	335
47. Taung Oo	2	90	510	510	341	169
48. Shin Shae	5	120	1605	1605	1530	75
49. Bu Ta Lone	4	203	1700	1700	1700	-
50. Tain Nyo	4	161	1800	1800	1700	100
51. Oakkan	2	104	699	699	666	33
52. Kyi Yar Pyin	2	120	600	600	600	-
53. Shwe Kyin Pyin	2	150	1050	1050	1000	50
54. Than Tha Yar	3	134	270	270	220	50
55. Kin Sate	2	140	1148	1148	1146	2
56. Pazun Pe	4	125	889	889	871	18
57. Ka Da Wa	3	140	935	935	900	35
58. Nakan	4	110	1900	1900	1855	45
59. Payar Myar	6	110	1100	1100	1050	50
60. Htam Mariz	1	26	90	90	70	20
61. Konbaung (Rakhine)	2	85	320	320	300	20
62. Pyaing Cha	2	93	588	588	384	204
63. Lay Hnyin Thar	3	45	1456	1456	1401	55

64. Oh Htane	3	156	889	889	873	16
65. Htate Wa Pyin	4	49	573	573	343	230
66. Goan Kyun	8	172	899	899	865	34
67. Byoke Chaung	6	153	811	811	778	33
68. Kan Sauk	2	135	813	813	500	313
69. Wet Hla	3	180	1301	1301	1272	29
70. Yan Aung Pyin	4	75	240	240	230	10
71. Shar Shae Pyin	2	153	680	680	650	30
72. Law Ka Mu	2	19	70	70	60	10
73. Let Kauk Zay	1	3	10	10	5	5
74. Nyaung Bin Zay	1	10	36	36	30	6
75. Ka La Ka	8	155	2035	2035	2000	35
76. Aung Tat	3	65	512	512	450	62
77. Baung Duit	4	112	855	855	800	55
78. Gadoe	4	134	1302	1302	1250	52
79. Bar Nyo	2	95	1090	1090	1060	30
80. Taw Bwe	3	110	1220	1220	1200	20
81. Su Yit Chaung	4	110	1800	1800	1598	202
82. Ayet Thama	4	208	1920	1920	1920	-
83. Kin Chaung	5	363	2200	2200	1950	250
84. Maung Shwee Kan	4	85	1018	1018	961	57
85. Cha Yar	3	260	1321	1321	1299	22
86. Tin Htein Kan	4	210	2188	2188	2100	88
87. Lay Hnyin Taung	3	59	219	219	215	4
88. Ywar Haung Taw	2	300	1350	1350	1200	150
89. Let Than Chi	2	75	301	301	290	11
90. Payar Gyi	5	72	850	850	306	544
91. Than Shin Pyin	4	85	1586	1586	1544	42
92. Kywel Tel	2	110	435	435	420	15
93. Kyein Chaung	3	53	401	401	398	3
94. Koke Kariz Daunt	8	62	1190	1190	1170	20
95. Kyauk Kyat	5	120	1100	1100	920	180
96. Gwa Sone	2	105	960	960	900	60
97. Sin Oh	6	260	1520	1520	1500	20
Township Total	**346**	**11256**	**84745**	**84745**	**75242**	**9503**

Reference: General Administration Department, Mrauk-U District

Appendix Table (5)
List of Cattle and Animal Died in Mrauk-U Township

Ward/ Village Tract	Village	Number of Dead Animal								Remark
		Buffalo	Cow	Goat	Chicken	Pig	Duck	Sheep	Horse	
Tham Mariz	Tham Mariz	-	47	9	1700	7	57			
Than Tayar	Than Tayar	8	-	15	100	12	170			
	Dwar Ra	12	-	20	200	30	200			
Sin Oh	Sin Oh Chae	2	15	-	-	-	-			
	Chaung Thit	1	30	-	-	5	-			
	Raw Mani	-	90	-	-	-	-			
Kin Sate	Kin Sate	20	15	-	500	-	100			
Ywar Haung Taw	Ywar Haung Taw	-	2	6	360	3	18			
	Kyar Chae	-	-	7	27	2	16			
	Pepin Kone	-	1	-	307	1	27			
	Maung Thar Kone	-	1	8	228	2	9			
	Thayet Oak	-	2	5	130	3	6			
	Chin Ywar	2	-	-	83	41	45			
Bazun Phae	Bazun Phae	20	15	10	100	15	-			
Ka Da Wa	Ka Da Wa	20	5	-	70	16	200			
Nakan	Nakan	15	10	-	-	-	-			
Maung Hna Ma	Maung Hna Ma	8	-	-	-	-	-			
	Kabaing Chaung	15	-	-	-	-	-			
Payar Myar	Payar Myar	26	1	-	20	6	38			
	Min Nyar	6	2		10	-	20			
Ayet Thama	Ayet Thama	6	12	9	29	3	9			
	Yann Wa	3	2	3	20	-	10			
	Thar Si Haung	4	3	-	-	-	-			
	Thar Si Thit	2	5	-	-	-	-			
Sin Ke	Pan Paung	2	2	5	10	3	-			
	Chaw May	-	3	2	8	2	-			
	Saing Tin	-	-	-	2	-	-			
	Kone Chaung	-	3	5	10	1	-			

	Kyee Chaung	-	2	-	-	-	-			
	Sin Ke	5	8	27	50	15	-			
	Madi Kaing	-	-	5	5	3	-			
	Letpan Taw	2	3	5	10	2	-			
	Pat Chaung	-	-	3	10	3	-			
Konbaung	Kone Baung	-	4	-	-	-	-			
	Shan Taung	-	4	-	-	-	-			
Pyaing Cha	Pyaing Cha	1	3	200	-	-				
Yin Shae	Yin Shae	4	-	-	1	1	-			
	Thayetpin Gyi	1	-	2	10	1	-			
	Min Gan	4	-	-	15	2	-			
	Nga Khu Taung	-	2	5	20	2	-			
Shauk Pone Kyun	Shauk Pone Kyun	-	20	-	100	5	30			
Butalone	Tan Pyin Kyee	-	65	100	350	150	-			
	Myaung Bway Chae	-	5	200	2000	50	-			
	Don Bway	-	135	20	2400	40	-			
	Shwe Lan	-	5	50	1300	20	-			
	Bu Ta Lone	-	25	3	300	-	-			
	A Hmyaung Htaung	-	6	20	500	-	-			
Tain Nyo	Tain Nyo Thit	2	19	-	-	-	-			
	Tain Nyo Haung	1	11	-	-	-	-			
	Pyin Nyar Thae	1	6	-	-	-	-			
Kyi Yar Pyin	Kyi Yar Pyin	-	23	-	-	-	-			
Kant Thari	Kant Thari	-	11	-	320	5	-			
	Thayettaw	3	153	-	598	60	20			
	Muchar	10	28	-	300	-	10			
Shwe Kyin Pyin	Shwe Kyin Pyin	-	50	10	538	30	50			
Gon Kyun	Gon Kyun	4	2	-	-	-	-			
	Kyaung Taung	6	8	-	-	-	-			
	Mel Zali Kone	2	1	4	16	-	-			
	Inn Shae	4	5	-	-	-	-			
Byoke Chaung	Byoke Chaung	-	54	7	-	-	-			
	Nyaung Pin Hla	45	120	5	-	-	-			
	Khae Maung Sate	-	23	-	-	-	-			
Kan Sauk	Kan Sauk	3	7	-	-	-	-			

Oh Htain	Oh Htain	7	14	6	-	4	-			
Wet Hla	Wet Hla	18	29	-	-	-	-			
	Shin Kyaw	1	8	-	-	-	-			
Yan Aung Pyin	Yan Aung Pyin	2	2	-	-	-	-			
	Thar Kyaw	-	2	-	-	-	-			
	Nar Late	3	1	-	-	-	-			
	Sin Oh	-	2	-	-	-	-			
Tin Htein Kan	Ywar Thit Kay	-	55	-	850	2	-			
	Tin Htein Kan	-	90	-	1000	1				
	Auk Lay Hnyin Taung	-	3	-	-	-	-			
	Ahtet Lay Hnyin Taung	-	1	-	-	-	-			
	Mahar Htee	-	5	-	-	-	-			
Let Than Chi	Let Than Chi	-	3	-	105	5	70			
	Let Than Chi	-	8	-	120	4	50			
Kin Chaung	Kin Chaung	4	10	-	-	-	-			
	Pyun Khaung	3	-	-	-	-	-			
	Gway Tauk	2	-	-	-	-	-			
	Sar Thay Ma	1	-	-	-	-	-			
Let Pan Taw	Ahtet Thay Ma	-	15	-	-	-	-			
	Let Pan Taw	-	6	-	-	-	-			
	Chauk Se	-	9	-	-	-	-			
Ba Nyo	Ba Nyo	4	-	-	-	-	-			
	Ma Hnyar Chaung	-	1	-	-	-	-			
Oak Kan	Oak Kan	7	19	-	-	-	-			
Pyi Lone Kyi	Pyi Lone Kyi	11	40	100	500	45	-			
Htake Wa Pyin	Htake Wa Pyin	-	2	-	-	-	-			
	Yoke Shin	-	3	-	-	-	-			
Akyi Tawma	Akyi Tawma	49	-	-	-	-	-			
Pu Rain			20	50	56	15	-			
Buu Ywet Ma Hnyo	Buu Ywet Ma Hnyo	10	41	-	-	-	-			
Ma Kyar Se	Ma Kyar Se	35	36	-	-	-	-			
Maung Shwi Kan	Maung Shwi Kan	21	10	-	-	-	-			

Thabaw	Thabaw	60	-	-	-	-	-			
Thin Pan Kaing	Thin Pan Kaing	25	80	-	-	-	-			
Nat Chaung	Nat Chaung	45	-	-	-	-	-			
Kyauk Se Pyin	Kyauk Se Pyin	56	35	5	25	18	22			
Total		1036	2462	958	27133	140	1764			

Reference: General Administration Department, Mrauk-U District

Appendix Table (6)
Damage Condition of Monsoon Paddy in Ponnagyun Township

Sr.	District	Township	Village Tract	Village	Field (Acre)
1	Sittwe	Ponnagyun	Aww Rama	Aww Rama	21
2			Sin Thi	Sin Thi	51
			Pane Nel Taw	Pane Nel Taw	
3			Poe Shi Pyin	Poe Shi Pyin	32
4			Kan Buu	Kan Buu	35
5			Phaung Sate	Phaung Sate	39
6			Hmo Hin Taw	Hmo Hin Taw	210
7			Thae Taw	Thae Taw	51
8			Ganan Taung	Ganan Taung	81
9			Ahtet Myet Hlae	Ahtet Myet Hlae	23
10			Pet Khwet Sate	Pet Khwet Sate	362
11			Nga/ Pyauk Se	Nga/ Pyauk Se	320
12			Kywel Lan Chaung	Kywel Lan Chaung	174
13			Let Wel Myan	Let Wel Myan	346
14			Thae Tet	The' Tet	236
15			Pyin Yar Shae	Pyin Yar Shae	194
16			Kardi	Kardi	121
17			Aung Sate	Aung Sate	198
18			Myin Kat Taw	Myin Kat Taw	79
19			Gwa Sone	Gwa Sone	497
20			Bel Koh Kyein Chaung	Bel Koh Kyein Chaung	357
21			Min Zi Chaung	Min Zi Chaung	207
22			Yin Chin	Yin Chin	210
23			Nyaung Chone	Nyaung Chone	216
24			Thabone	Thabone	580

25			Sar Ngan Kan	Sar Ngan Kan	254
26			Tauk Sone	Tauk Sone	278
27			Kyan Kin	Kyan Kin	124
28			Pann Nilar	Pann Nilar	187
29			Payar Gyi	Payar Gyi	320
30			Chin Thae	Chin Thae	210
31			Myet Thauk	Myet Thauk	310
32			Aung Phyu Pyin	Aung Phyu Pyin	228
33			Pel Si Nan	Pel Si Nan	184
34			Yoe Ngu	Yoe Ngu	108
35			Thar Si	Thar Si	1
36			Moe Tain Pyin	Moe Tain Pyin	118
37			Tabet Lan	Tabet Lan	87
38			Kyein Kyin	Kyein Kyin	82
39			Magyi Chaung	Magyi Chaung	246
40			Thin Pone Tan	Thin Pone Tan	218
41			Kan Pyin	Kan Pyin	93
42			Kalar Chaung	Kalar Chaung	83
43			Met Kalar Kya	Met Kalar Kya	236
44			Kone Tan Kyein Chaung	Kone Tan Kyein Chaung	302
45			Kyun Taung	Kyun Taung	98
46			Hnget Kyi Kyun	Hnget Kyi Kyun	63
47			Tangoe Ywar	Tangoe Ywar	56
48			Kywel Hto	Kywel Hto	214
49			Kan Chaung	Kan Chaung	274
50			Sabar Htar	Sabar Htar	263
51	Sittwe	Ponnagyun	Aung Zay Ya	Aung Zay Ya	153
52			Kha Maung Taw	Kha Maung Taw	182
53			Nat Sate	Nat Sate	27
54			Alel Kyun	Alel Kyun	27
	Total		**86**	**86**	**9657**

Reference: General Administration Department, Sittwe District.

Appendix Table (7)
Total of Damaged Wells and Ponds

Sr	Township	Flooded Ward/ Village	Damaged by flood			Remark
			Well	**Pond**	**Total**	
1	Sittwe	3		3	3	
2	Pauktaw	44	7	61	68	
3	Rathedaung	22		37	37	
4	Ponnagyun	51		60	60	
5	Buthidaung	41		68	68	
6	Kyauktaw	214		271	271	
7	Mrauk-U	200	15	382	397	
8	Minbya	163	5	252	257	
9	Myebon	13	55	8	63	
10	Maungdaw	21		35	35	
11	Thandwe	2		2	2	
	Total	**774**	**82**	**1179**	**1261**	

Reference: Department of Rural Area Development, (Rakhine State)

Appendix Table (8)

	Township	Number of Ward/ Village	Repairing Well/ Pond					Remark
			Pond Worked by Rural Department	**Pond Worked by Rural Department and Military**		**Pond Worked by INGOs**		
				Well	**Pond**	**Well**	**Pond**	
1	Sittwe	3	3					The ponds to be worked are proposed to UNICEF.
2	Pauktaw	44	24	7	3		15	
3	Rathedaung	22	7		24			
4	Ponnagyun	51	37		5		5	
5	Buthidaung	41	19		49			
6	Kyauktaw	214	201		44			
7	Mrauk-U	200	118	15	160	5	84	
8	Minbya	163	96		101	44		
9	Myebon	13		55	2		6	

10	Maungdaw	21			13	5	22	
11	Thandwe	2	2					
	Total	**774**	**507**	**77**	**401**	**10**	**193**	

Reference: Department of Rural Area Development, (Rakhine State)

Appendix (9)
Condition of Houses damaged in Ponnagyun Township

Sr.	District	Township	Ward	Village Tract	Village	Monastery	House
1	Sittwe	Ponnagyun	San Pya			1	55
2				Ahtet Thin Pone Tan	Ahtet Thin Pone Tan	2	154
3				Parpway	Parpway	-	33
4				Pyaing Taung	Pyaing Taung	-	12
5				Poe Shi Pyin	Poe Shi Pyin	-	17
6				Ya Hat Tung	Ya Hat Tung	-	1
7				Gant Gar (Rakhine)	Gant Gar	-	41
8				Kyet Sin Talin	Kyet Sin Talin	-	7
9				Seti Pyin	Seti Pyin	-	2
10				Taw Phyar Kan Chaung	Taw Phyar Kan Chaung	-	21
11				Doe Tan	Doe Tan	-	2
12				Pauktaw Pyin	Pauktaw Pyin	-	8
13				Nat Taung	Nat Taung	2	30
14				Khami Kyein Chaung	Khami Kyein Chaung	-	8
15				Gant Gar (Kahmi)	Gant Gar Kyi	-	1
16				Htaung Laung Pawn	Htaung Laung Pawn	2	16
17				Phaung Sate	Phaung Sate	1	100
18				Myo Ywar	Myo Ywar	-	22
19				Hmo Hin Taw	Hmo Hin Taw	-	36
20				Yoe Tayoke	Yoe Tayoke	-	25
21				Shin Taw	Shin Taw	-	30
22				Thae Taw	Thae Taw	-	11
23				Ganan Taung	Ganan Taung	-	33
24				Ahtet Myet Hlae	Ahtet Myet Hlae	-	-
25				Pet Khwet Sate	Pet Khwet Sate	-	4
26				Nga/ Pyauk Se	Nga/ Pyauk Se	-	61
27				Kywel Lan Chaung	Kywel Lan Chaung	-	25
28				Let Wel Myan	Let Wel Myan	-	47
29				Thae Tet	Thae Tet	-	100
30				Pyin Yar Shae	Pyin Yar Shae	-	37
31				Kardi	Kardi	-	66
31				Aung Sate	Aung Sate	-	13

32				Myin Kat Taw	Myin Kat Taw	-	22
33				Gwa Sone	Gwa Sone	-	78
34				Bel Koh Kyein Chaung	Bel Koh Kyein Chaung	2	70
35				Min Zi Chaung	Min Zi Chaung	-	35
36				Yin Chin	Yin Chin	-	12
37				Nyaung Chone	Nyaung Chone	-	4
38				Thabone	Thabone	-	5
39				Sar Ngan Kan	Sar Ngan Kan	-	25
40				Tauk Sone	Tauk Sone	-	6
41				Kyan Khin	Kyan Khin	-	21
42				Pan Nilar	Pan Nilar	-	7
43				Payar Gyi	Payar Gyi	-	7
44				Chin Thae	Chin Thae	-	7
45				Myet Thauk	Myet Thauk	-	8
46				Aung Phyu Pyin	Aung Phyu Pyin	-	11
47				Pel Si Nan	Pel Si Nan	1	9
48				Kyauk Sate	Kyauk Sate	-	79
49				Thae Phyu Chaung	Thae Phyu Chaung	-	10
50				Thar Si	Thar Si	-	28
51				Let Wel Sar Tike	Let Wel Sar Tike	1	6
52				Tabet Lan	Tabet Lan	-	34
53				Kyein Kyun	Kyein Kyun	-	49
54				Magyi Chaung	Magyi Chaung	-	7
55				Thin Pone Tan	Thin Pone Tan	-	10
56				Kan Pyin	Kan Pyin	-	15
57				Kalar Chaung	Kalar Chaung	-	84
58				Met Kalar Kya	Met Kalar Kya	-	27
59				Kone Tan Kyein Chaung	Kone Tan Kyein Chaung	-	30
60				Kyun Tauk	Kyun Tauk	-	14
61				Ai Tin	Ai Tin	-	16
62				Hnet Kyi Kyun	Hnet Kyi Kyun	-	12
63				Kywel Hto	Kywel Hto	1	50
64				Kan Chaung	Kan Chaung	-	35
65				Sapar Htar	Sapar Htar	-	42
66				Aung Zay Ya	Aung Zay Ya	1	11

67				Kha Maung Taw	Kha Maung Taw	-	31
68				A Mel Khin	A Mel Khin	-	4
69				Dipar Yone	Dipar Yone	-	25
70				Wet Hnote Thee	Wet Hnote Thee	-	38
71				Yar Chaung	Yar Chaung	-	4
72				Yay Pauk Chaung	Yay Pauk Chaung	-	18
73				Nat Sate	Nat Sate	-	68
74				Tan Swel	Tan Swel	-	70
75				Kyaw Zan	Kyaw Zan	-	5
76				Alel Kyun	Alel Kyun	-	32
77				Paday Thar	Paday Thar	-	22
78				Ahtote The	Ahtote The	-	2
		Total				14	2223

Reference: General Administration Department, Sittwe District.

Appendix Table (10)
Condition of Roads and Bridges Damaged in Minbya Township

Sr	District	Township	Name of Road	Name of Project	Estimate Cost (Kyat million)	Remark
1	Mrauk-U	Minbya	Pauktaw – Minbya	Building road's earth shoulder where there are damages for 2 mile and 7 furlong from mile post 6/3 to 20/0. Repairing the damaged roads with 2" – 41/2" gravel and 11/2" gravels for 6" high up to 11220 feet. (30%)	85.00	
2	Mrauk-U	Minbya	Myebon – Minbya	Rebuilding the approach way to a 30 feet long wooden bridge (Bridge No. 1/23) between mile post 12/4 and 14/7. (550)	6.00	
3	Mrauk-U	Minbya	Kyauktaw – Mrauk-U – Minbya	Building an earth wall at the both sides of the approach way of 80 feet long bridge (Bridge No. 2/47) at mile post 46/7. (80)	2.00	
				Total	93.00	

Reference: General Administration Department, Mrauk-U District

Appendix Table (11)
Condition of Roads and Bridges Damaged in Minbya Township

Damage	Current Work	Temporary Repair Cost	Future Plan	Expense (Kyat Million)	Remark
Dock of Nga Tan Pyin Bridge	The bridge department has worked for the convenient use of the bridge temporarily.	1.0 million	Building 160 feet long concrete bridge for the long use instead of 120 feet long wooden bridge of Nga Tan Pyin Bridge.	480.000	Bridge Special Task Force (8)
Damage of Pan Myaung – Shwe Kyan – Pyin Yaung-Min Phoo dirt road (0.5 mile)	Currently there is no repairing.		That part of dirt road will be repaired after rainy season.	8.75	Rural
Two underpasses of	Currently there is no		Changing RC pipes.	4.0	Rural

Pan Myaung – Pyin Yaung Road.	repairing.				
Lemro river bank, Yay Tamar village tract, Let Ma (Rakhine) village	Currently, there is no repairing.		Building stone river bank structure.	40.00	
	Total	**1.00**		**532.75**	

Reference: General Administration Department, Mrauk-U District

Appendix Table (12)
Condition of Roads and Bridges Damaged in Mrauk-U Township

Sr.	Damage	Work Condition	Future Plan	Cost of Damage	Cost of Maintenance	
					Temporary	**Permanent**
1	Myebon – Minbya Road Because of raining from 29-7-2015 to 1-8-2015, earth shoulder between mile post 23/4 and 24/7 and the bridge approach way of bridge no. 1/23 were damaged.	Clearing the fallen trees and refilling earth to the damaged approach way of bridge no. 1/23 have been done.	Repairing the approach way of bridge no. (1/23) between mile 23/4 and 24/7. Repairing the earth shoulder of damaged parts of the road.	15.0	6.0	6.0
2	Kyauktaw – Mrauk-U – Minbya road Both docks of Bridge No. 25/47 at mile were damaged.	Reinforced posts for the bridge are being built.	Building earth walls from both sides of bridge no. 2/47 at mile 46.	3.5	2.00	2.0

Reference: General Administration Department, Mrauk-U District.

Appendix Table (13)
Condition of Roads and Bridges Damaged in Mrauk-U District

Sr.	Damage	Work Condition	Future Plan	Cost of Damage	Cost of Maintenance (Kyat million)	
					Temporary	**Permanent**
1	Pauktaw – Minbya Road Because of rain from 29-7-2015 to 1-8-2015, the road surface of one mile from 16/0 to 17/0 was damaged and the road shoulder was damaged.	Refilling the damaged earth road shoulder and clearing the fallen trees are being carried out.	From mile 16/0 to 17/0, 40 percent of one mile length will be repaired with 2" – 4" gravel for 6' thick and 1 ½" marvel of 12' wide. Refilling earth to the damaged parts of the road shoulder.	40.00	25.00	60.00
2	Pauktaw – Minbya Road Because of rain from 29-7-2015 to 1-8-2015, the road surface of one furlong from mile 15/0 to 16/0 was damaged and the road shoulders were damaged.	Refilling the damaged earth road shoulder and clearing the fallen trees are being carried out.	The damaged part of the road between mile posts 15/0 and 16/0 of one furlong length will be repaired with 2" – 4" gravel for 6' thick and 1 ½" marvel of 12' wide. Refilling earth to the damaged parts of the road shoulder.	20.00	6.00	50.0

Reference: General Administration Department, Mrauk-U District.

Appendix Table (14)
List of Roads, Bridges and Ponds Damaged which are be Worked by Rural Area Development Department.

Sr.	District	Township	Name of Bridge	Name of Project	Estimate Cost (Kyat million)
1	Mrauk-U	Minbya	Kanni Entrance Bridge	Brick foundation and wooden bridge (10 feet)	5.00
			Kyaung Shae Creek Village Bridge	Wooden bridge (10 feet)	3.50
			Narum Village Entrance Bridge	Concrete bridge (10 feet)	10.00

			Taung Po Gyi – Tway Masote village connection bridge	Wooden bridge (10 feet)	3.50
			Two bridges on Sin Kyi Pyin village road	Wooden bridge (10 feet)	7.00
			Phyar Myo village entrance bridge	Brick foundation and wooden bridge (10 feet)	5.00
			Three water passes on Pan Myaung – Shwe Kyan road	Water Tube (5 feet)	6.00
			Two water passes on Mon Phoo – Pyin Yaung road	Water Tube (5 feet)	4.00

Reference: Rural Area Development Department.

Appendix Table (15)
List of Road, Bridge and Pond Damaged by Flood and that Rural Department Will Work

Sr	District	Township	Name of Bridge	Name of Project	Estimate Cost (Kyat million)
1	Mrauk-U	Minbya	Southern part of Fa Laung Pyin village entrance road	Gravel road (0/7) mile	56.872
			Northern part of Falaung Pyin village entrance road	Gravel road (0/6) mile	48.748
			Chaung Net village entrance road	Gravel road (0/2.2) mile	18.465
			Kyaung Shae Chaung village entrance road	Gravel road (0/3.3) mile	24.62
			Thin Paung Chaung village entrance road	Gravel road (1/0) mile	27.082
			Zibingyi village entrance road	Gravel road (0/7.3) mile	64.997

			Gwa Son village entrance road	Gravel road (0/1.4) mile	59.09
			Min Ywar village entrance road	Dirt road (24 feet)	11.079
			Arr Bu Taung –Nga Tan Pyin village road	Dirt road (1/2) mile	4.091
			Shwe Kyan – Pann Myaung village road	Dirt road (0/7) mile	24.948
			Min Phoo – Pyin Yaung village road	Dirt road (20 feet)	17.464
			Kay Thalar Pyun Wa village road		
	Total				**353.531**

Reference: Department of Rural Development.

Appendix Table (16)
List of Road, Bridge and Pond Damaged by Flood and that Rural Department Will Work

Sr	District	Township	Name of Bridge	Name of Project	Estimate Cost (Kyat million)
1.	Mrauk-U	Minbya	Kin Eight pond	Repairing earth pond	0.45
			Khaung Laung Ywar Thit pond	Repairing earth pond	0.45
			Letma (Rakhine) pond	Repairing earth pond	0.45
			Apyin Don Chaung pond	Repairing earth pond	0.45
			2 Kywel Tet ponds	Repairing earth pond	0.90
			Pha Laung Pyin pond	Repairing earth pond	0.45
			2 Shwe Kyan ponds	Repairing earth pond	0.90
			3 Khaung Laung Chaung ponds	Repairing earth pond	1.35

			Min Ywar pond Pha Laung Pyin pond Ai Ywar pond	Repairing earth pond Repairing earth pond Repairing earth pond	0.45 0.45 0.45
	Total				**6.75**

Reference: Department of Rural Area Development

Appendix Table (17)
List of Road, Bridge and Pond Damaged by Flood and that Rural Department Will Work

Sr	District	Township	Name of Bridge	Name of Project	Estimate Cost (Kyat million)
1.	Mrauk-U	Minbya	Kanni entrance bridge Kyaung Shae Chaung village bridge Naram village entrance bridge Taung Po Gyi – Tway Ma Sote village connection bridge 2 bridges on Sin Kyi Pyin village road Huu Myo village entrance bridge 3 water passes on Pan Myaung – Shwe Kyan road 2 water passes on Min Phoo – Pyin Yaung road	Brick foundation and wooden bridge (10 feet) Wooden bridge (10 feet) Concrete bridge (10 feet) Wooden bridge (10 feet) Wooden bridge (10 feet) Brick foundation and wooden bridge (10 feet) Water Tube (5 feet) Water Tube (5 feet)	5.00 3.50 10.00 3.50 7.00 5.00 6.00 4.00
	Total				44.00

Reference: Department of Rural Development

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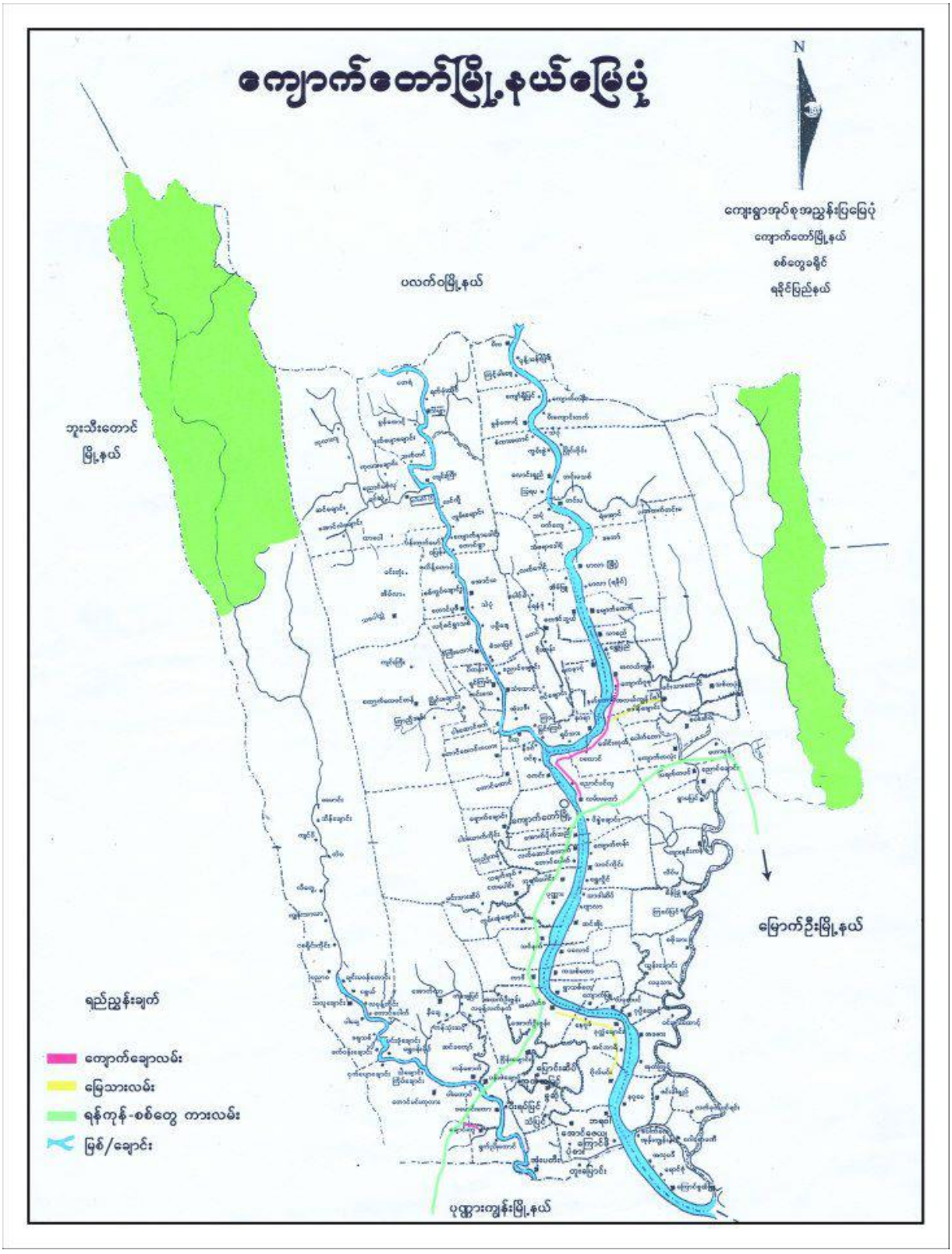
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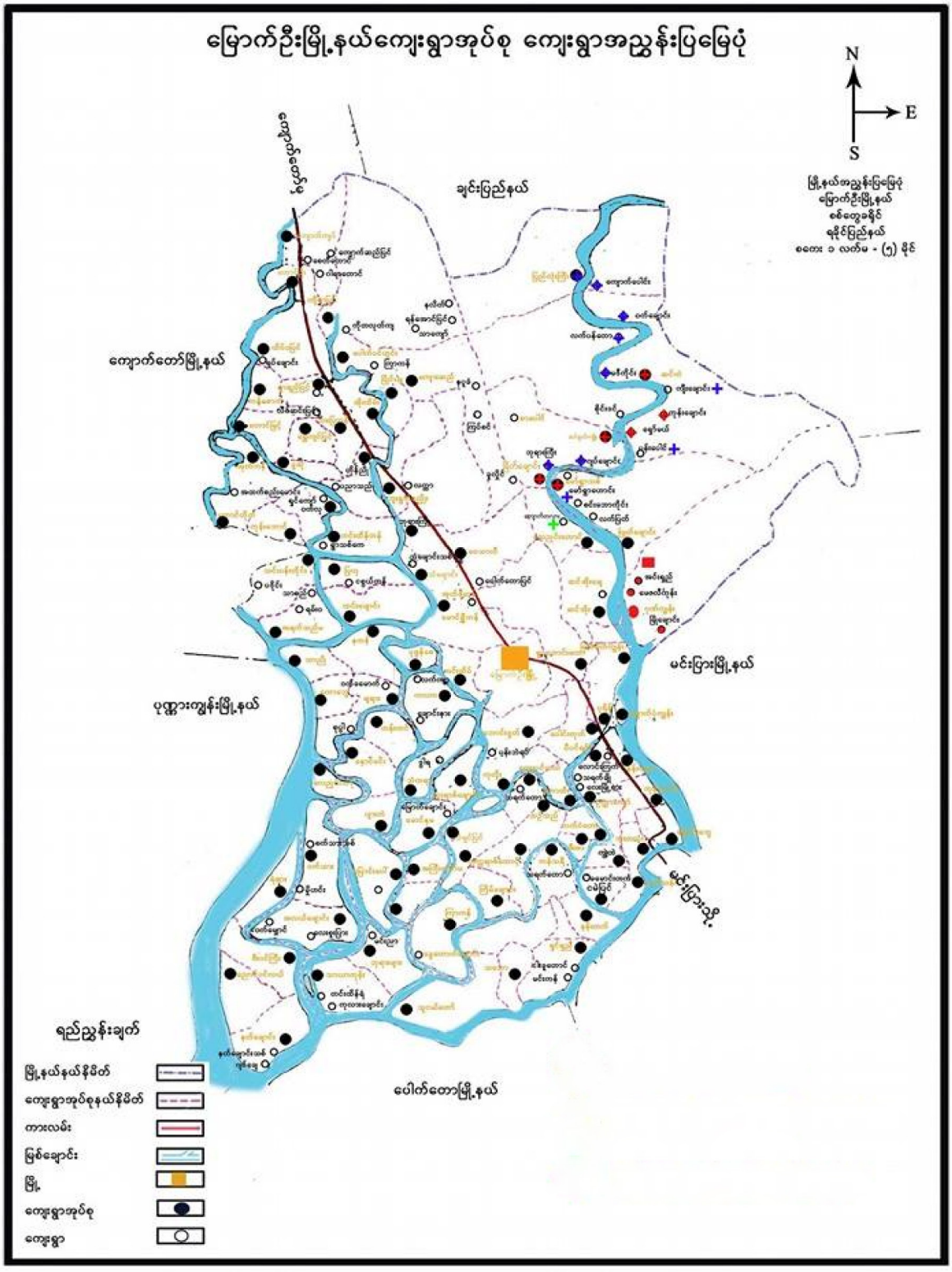
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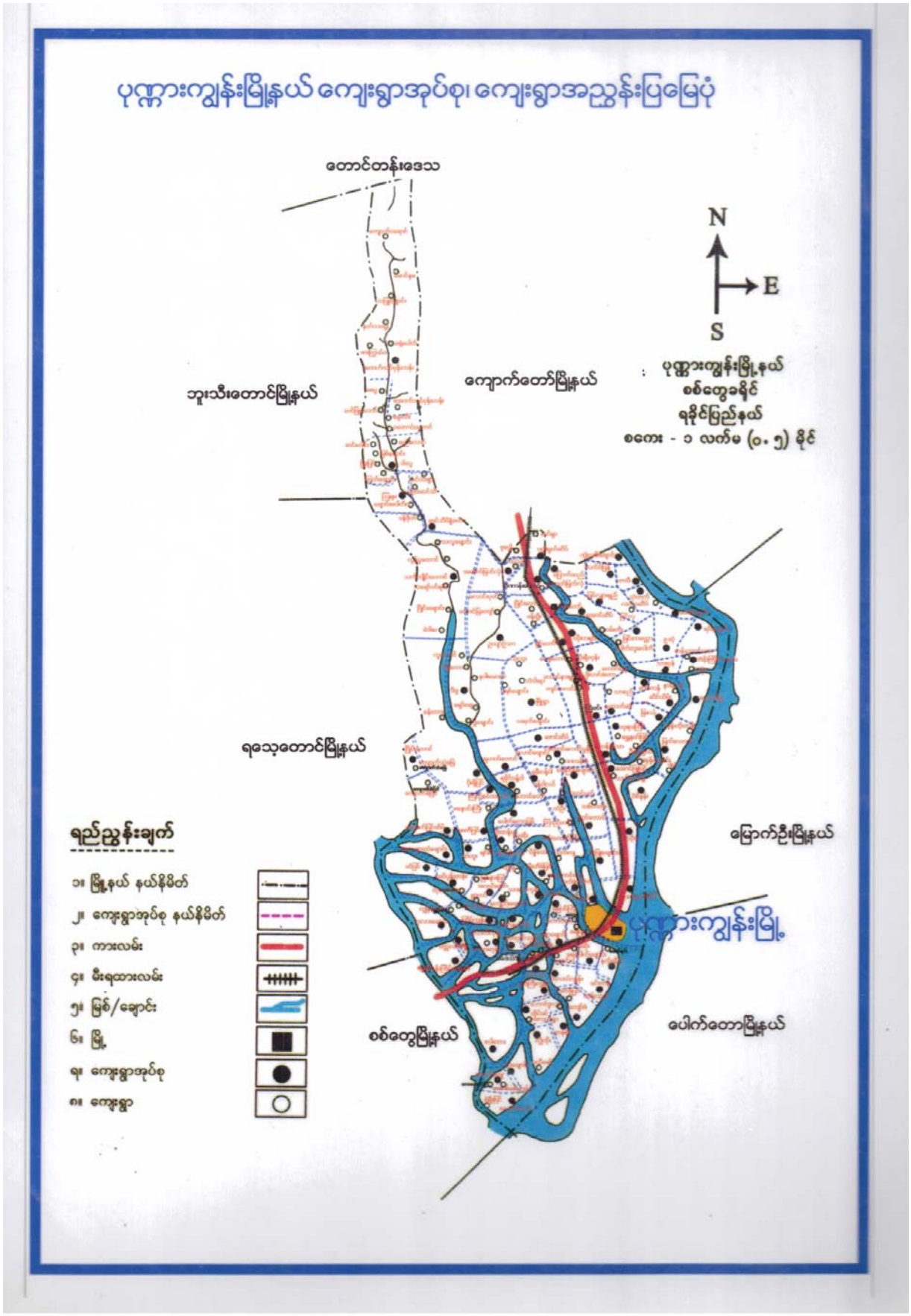
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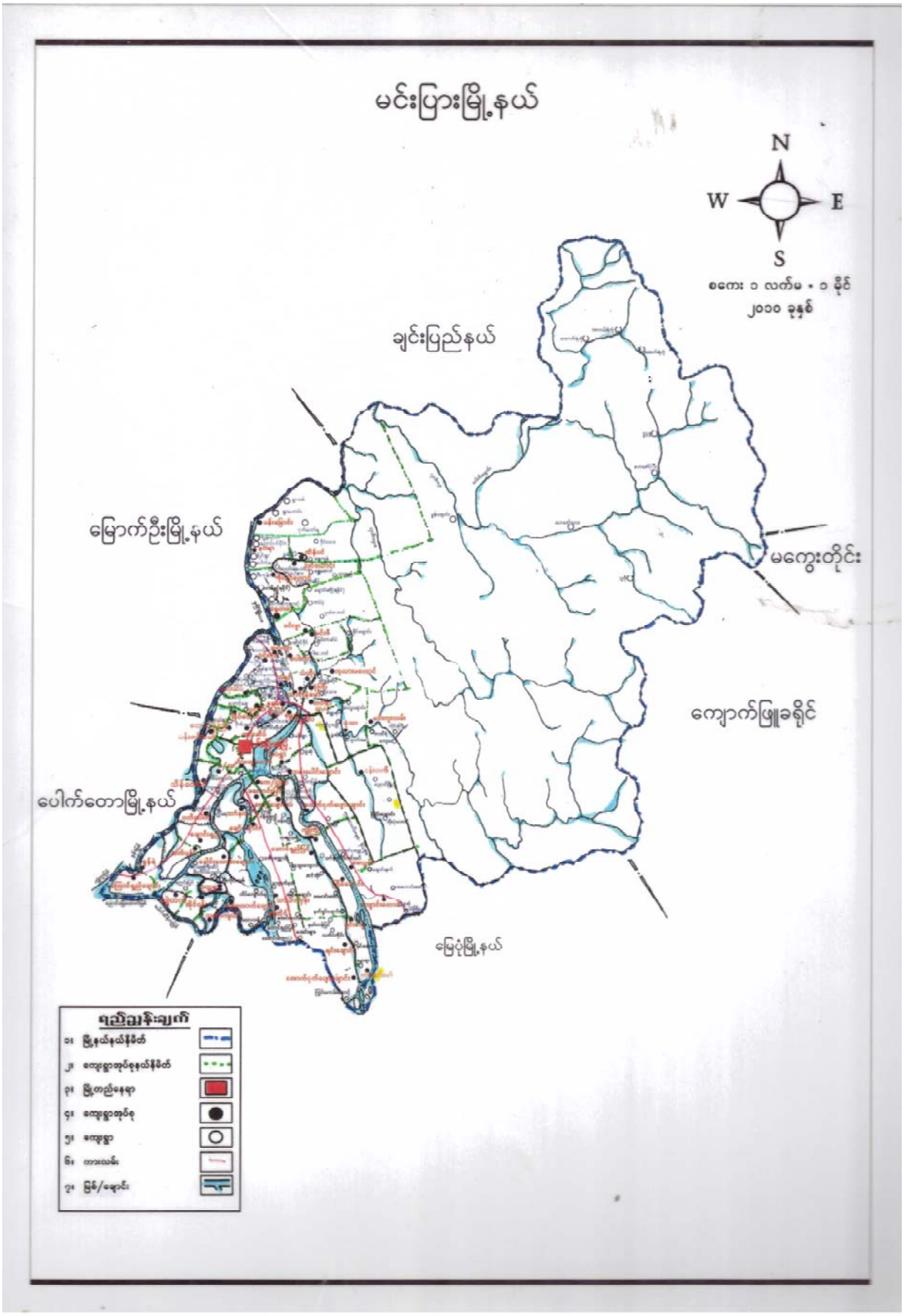
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“The development status of Rakhine,
which was already the second poorest state
in Myanmar, has now plunged
into further plights because of the disaster.”

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