MALARIA ON THE MOVE

2012

Mapping of Population Migration and Malaria in the South-Eastern Region of Myanmar

Cover Photos : Migrant workers departing from Bilin Township, Mon State for a gold mine in Shwegyin Township, Bago (East) Region

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LIST OF MAPS AND TABLES

	Page
Map 1. Study Sites	8
Map 2.1 Location of Mapped Migrant Settlements in Shwegyin, Bago (East) Region	14
Map 2.2 Location of Mapped Migrant Settlements in Mon State	15
Map 2.3 Location of Mapped Migrant Settlements in Tanintharyi Region	17
Map 3. Main Occupations of the Migrant Clusters by State/Region and Township	22
Map 4.1 Migration Volume and Pattern in Shwegyin, Bago (East) Region	24
Map 4.2 Migration Volume and Pattern in Mon State	25
Map 4.3 Migration Volume and Pattern in Tanintharyi Region	26
Table 1. Distribution of Mapped Settlements and Estimated Population Size	12
Table 2. Mapping of Malaria Hotspots	31

TABLE OF CONTENTS

	Page
LIST OF ACRONYMS	I
EXECUTIVE SUMMARY	2
BACKGROUND	2
METHODOLOGY	2
1. Study Process and Timeline	8
2. Study Sites Selection	8
3. Informant Selection	9
4. Study Tools	9
5. Data Collection and Entry	9
6. Data Verification, Cleaning and Analysis	9
LIMITATIONS	11
KEY FINDINGS	12
1. Locations and Types of Settlements	12
2. Demographic and Characteristics of the Population	19
2.1. Population Size	19
2.2. Characteristics	19
2.2.1 Sex	19
2.2.2 Age	19
2.2.3 Language Use	20
2.2.4 Occupation	20
2.3 Migration Volume and Pattern	23
2.3.1 Migration Volume	23
2.3.2 Migration Pattern	23
3. Access to Public Health and Malaria Services	27
3.1. Access to Public Health Facilities	27
3.2. Availability of Malaria Services	28
4. Reported Malaria Epidemic	28
5. Mapping of Malaria Hotspots	31
RECOMMENDATIONS	32
1. For Future Design and Implementation of Mapping Studies	32
1.1 Study Protocol, Procedures, and Tool	32
1.2 Management/Monitoring of the Study from Start to Finish	33
1.3 Informant Selection	33
2. For Programmatic Response	33
2.1 Identify Higher Risk Group	33
2.2 Promote the National Malaria Campaign and Safe Migration	34
2.3 Conduct Targeted Interventions in Key Source Communities	35
2.4 Get Back to Basic on Strategic Information, and Encourage Data Analysis and Maximize Data Use at Field Implementation Level	35
BIBLIOGRAPHY	36
ANNEXES	37
Annex I. Concept Note	37
Annex II. Study Tools	38
Annex III. List of GPS Reading Corrections	39
Annex IV. List of Mapped Settlements by Type, Pattern, and Township	44
Annex V. Estimated Population by Residential Status, Sex, Age, and Township	46
Annex VI. Source Communities of Migrant Clusters	50

LIST OF ACRONYMS

3DF	Three Diseases Fund
ACT	Artemisinin-based Combination Therapy
CoV	Cut-off village
DMR-LM	Department of Medical Research - Lower Myanmar, the Ministry of Health
GIS	Geographic Information System
GPS	Global Positioning System
IOM	International Organization for Migration
IP	Implementing partners
ITN	Insecticide-treated bednet
LC	Large cluster (of migrant settlements)
MARC	Strategic Framework for Artemisinin Resistance Containment in Myanmar (2011-2015)
MIMU	Myanmar Information Management Unit
MMK	Myanmar Kyat
MMP	Mobile and migrant population
NGO	Non-government organization
RDT	Rapid diagnostic test
RHC	Rural health centre
SC	Small cluster (of migrant settlements)
SH	Station hospital
P.*f.*	Plasmodium *falciparum*
TH	Township hospital
TSG	Technical Strategic Group (for Malaria in Myanmar)
VBDC	State/Regional Vector-borne Diseases Control Teams
WHO	World Health Organization

EXECUTIVE SUMMARY

BACKGROUND

Malaria is still one of the major public health concerns in Myanmar as some 1.5 million cases and over 3,200 malaria deaths were estimated in the past two years.Several factors contribute to the spread of malaria and apart from forest/forest-fringe dwellers, mobile and migrant populations (MMP) are considered the major risk group for malaria transmission.Accordingly, the 2011-2015 Strategic Framework for Artemisinin Resistance Containment (MARC) in Myanmar calls for mapping of population migration to assist development of township plans to combat malaria.With financial support from the Three Diseases Fund and as a collaborative effort between the International Organization for Migration (IOM), the State/ Regional Vector-borne Diseases Control (VBDC) Teams and the Department of Medical Research - Lower Myanmar (DMR-LM) of the Ministry of Health, and the World Health Organization (WHO), a study to map population movement was conducted in 21 south-eastern townships categorized as the Tier I (high levels of transmission and drug resistance) with the following objectives:

1. To locate migrant pockets in all urban, semi urban and rural areas in the study townships;
2. To estimate the size of MMP and their demographic composition;
3. To assess the migration pattern of community members in the study areas;
4. To determine factors related to their malaria risk and vulnerability such as their occupations and malaria related knowledge and services access;
5. To explore possible mechanisms and approaches for introducing effective malaria control programmes; and
6. To provide lessons learned and recommendations for implementation of similar exercises in the future.

METHODOLOGY

This study was conducted between November 2011 and January 2013.A standardize mapping tool was used, along with the Geographic Positioning System (GPS) device, to identify clusters of MMP settlements and their characteristics.Key informant interview with community leaders, authorities, and MMP was employed for data collection.The data obtained was entered into EpiData Software and the analysis was performed both with the SPSS statistical Software and the Geographical Information System (GIS) Maps for visual-aid analysis.Preliminary findings were presented to the Technical Support Group for Malaria and additional inputs were incorporated into the final report.

LIMITATIONS

There were some limitations to this study and the major ones are: the lack of clarity on the definition of migrants in the malaria context; limited information on migration pattern and flow; and lack of information on malaria knowledge and prevention among the targeted MMP.Several verifications and triangulation of available data from this mapping and other sources were conducted to ensure the accuracy of the data and its interpretation to the most possible extent.

KEY FINDINGS

1. Locations and Types of Settlements

A total of 3,805 settlements were mapped in 21 targeted townships; 22% were in Shwegyin Township, Bago (East) Region and the rest of 78% distributed across the remaining 20 townships in Mon State and Tanintharyi Region.44% and 30% were cut-off villages and small clusters located close to the villages, and 17% were large clusters located at a distance from administrative villages.59% were temporary settlements and more of them were found in Shwegyin; Kyaikmaraw, Thanbyuzayat, Mudon, Paung, Mawlamyine; Myeik), Yebyu, and Kyunsu Townships.More permanent settlements were found in Kawthaung, Bokpyin, and Kyaikto Townships with large numbers of plantations.

2. Demographics and Migration

Over 1.12 million inhabitants were estimated in the 21 targeted townships; of which 13% were MMP.The central part of Mon State, i.e. Chaungzon, Kyaikmaraw, Mudon,Paung, Thanbyuzayat, and Mawlamyine Townships were more populated than other studied townships but higher proportions of MMP were reported from Shwegyin, Kyaikto, Bilin, Ye, Dawei, Myeik, and Bokpyin.Proportions of male population were much higher in Shwegyin, Dawei, Thayetchaung, Yebyu, and,Launglon (59%-69% male), mainly due to the high proportion of male MMP.The vast majority of the people in the mapped settlements could speak (94%) and read (87%) Myanmar language and only 1% and 3% of them admitted that they could not communicate in Myanmar verbally and in writing; mostly in Kyunsu, Myeik, and Thayetchaung Townships of Tanintharyi Region, and Mawlamyine and Paung Townships in Mon State.

The mapped MMP were originally from 15 out of 17 States/Regions across Myanmar; except Shan (North) and Shan (East) Regions.More of the internal migrations within the same township and/or within the same state/region were reported across the studied sites, except Kyaikmaraw, Mawlamyine, and Thanbyuzayat in Mon State andDawei, Bokpyin, Kawthaung, and Yebyu in Tanintharyi Region.Majority of the MMP from outside of the 21 studied townships were from Bago (East),Ayeyarwady, Yangon, and Bago (West) Regions.The clusters in Tanintharyi Region (5.6 (±10) years) tended to be older than those in Mon State (4.3 (±4.9) years) andShwegyin Township (2.5 (±3.9) years).Only 40% of the mapped clusters in all 21 townships planned to move in the next 1-2 years and their next migration destinations were similar to those of their places of origin, i.e. within the studied areas or to Bago, Ayeyarwady, and Yangon Regions.

About 55% of the mapped MMP clusters worked in the high risk environment; i.e. in the forest (2%); in the dense plantation/hillside farming (40%); and mining/hydropower plant areas (12%), whereas only 4% were forest dwellers.Only 6% of the mapped clusters worked during the night, and they were concentrated in Thanbyuzayat, Kyaikmaraw, and Mudon Townships in Mon State, and Kawthaung Township in Tanintharyi Region due to their large volumes of plantations.

3. Access to Public Health and Malaria Services

Most of the mapped clusters could access the nearest public health facility within 15-30 minutes by car and cost between MMK 500-8,000; probably because majority of the clusters identified were close to the village.However, Chaungzon, Thayetchaung, and Bokpyin tended to require longer time and cost (one hour for about MMK 10,000) to access the nearest health facility by car.Kyunsu, Shwegyin, and Bokpyin Townships were the only areas that a boat was reported as a more common means for transportation and usually took more than 1 or 1.5 hours to access the health facility for MMK 2,000-5,500.Nevertheless, non-government organizations were the major malaria service providers for the mapped clusters.

A wide range of types of malaria service providers were reported to be available in all the mapped townships from those who were specifically trained for malaria services, e.g. malaria volunteers, to untrained/ unprofessional providers like village chief and unknown types of providers.The larger townships like Dawei and Kyaikmaraw tended to report more of the availability of professional providers for malaria services for their clusters (52%-86%); whereas Palaw and Thayetchaung Township reported more trained malaria service providers (71%, 89%) and Bilin and Kyunsu Townships reported more of the unprofessional providers (54%, 43%) but less of the malaria service providers (24%, 20%) than other townships.

4. Reported Malaria Epidemic

In 2011, Myeik, Kawthaung and Launglon Townships, all in Tanintharyi Region reported the highest malaria morbidity rates among the 21 townships (66.4, 58.6, and 55.4 per 1,000 population, respectively).Overall, reported malaria morbidity rates in all the 10 townships of Tanintharyi Region and Shwegyin Township were much higher than in Mon State.In general, more than half of the cases reported were P.*f*. malaria cases (50%-98%), but tended to be extraordinary high in Bokpyin (98%), Thaton (83%), and Yebyu (80%) Townships.Much higher mortality rates were reported from Dawei (8.9 per 100,000 population), Myeik (6.2), and Bokpyin (5.7).However, these were based on where the cases were identified/reported rather than where the transmissions took place.

5. Malaria Hotspots

Among the 21 Tier I townships, Shwegyin in Bago (East) and Thayetchaung, Launglon, Yebyu, Dawei, and Kawthaung Townships of Tanintharyi Regions tended to report more of associated risks to malaria, i.e. higher proportions of male and MMP populations and forest dwellers and those involve in high risk work environments.All 10 townships of Mon State reported much lower levels of these factors but Ye, Thanbyuzayat, Kyaikmaraw, Bilin, and Kyaikto Townships could probably be considered hotter spots for malaria concern in Mon State.

RECOMMENDATIONS

This study provided some useful information for further development of malaria programmatic responses as well as some lessons learned for future similar studies as summarized below.

I. For Future Design and Implementation of Mapping Study

A protocol and tool should: 1) define targeted MMP in the context of malaria rather than using general definition of MMP; 2) map the entire processes of migration from departure, transit, arrival, and return as well as associated risks to malaria at each step of migration processes; 3) assess work environment rather than occupations to determine malaria risk/vulnerability; 4) include relevant information connecting migration and malaria, e.g. forest coverage and behavioural data; and 5) integrate qualitative methods to the study to explore migration and malaria situation that the quantitative mapping could not capture.The mapping information should be obtained from the MMP rather than other key informants or through “expert opinions.”

2. For Programmatic Response

2.1 Identify Higher Risk Group

It is important to note that migration is not a definitive risk for malaria and not all MMP will affect/be affected by malaria.To maximize the use of limited resources, identifying and reaching to highest risk groups should be considered.Besides mapping, other means, e.g. patient investigation and partnership among multisectoral actors involve in malaria-prone areas should be conducted.Seasonal factors affecting population migration in different labour sectors should also be taken into consideration when map or identify targeted groups.In addition, mapping of employers of MMP is also very strategic in identifying more MMP and their associated risks to malaria and drug-resistance.

2.2 Promote the National Malaria Campaign and Safe Migration

As evident from this study that the MMP were from almost all the townships across Myanmar, it might be worthwhile to conduct a national campaign to raise the public awareness on the threat of malaria, and especially the drug-resistant malaria.Safe and healthy migration should also be included in the campaign to ensure that the audience gain some basic information on how to stay malaria-free if migrated to endemic areas.

2.3 Conduct Targeted Interventions in Key Source Communities

This study revealed that there were some key source communities for migration into the 21 studied townships, i.e. Bago (East), Ayeyarwady, and Yangon Regions.Pre-departure programme could be conducted across these regions to equip them with the knowledge and skills to protect themselves before they enter the high risk zone.Early diagnosis and appropriate treatment should also be strengthened in the non-endemic areas where migrants often return to ensure completeness of the treatment and that the patients are cured.

2.4 Get "Back to Basics" on Strategic Information

Mappings of high risk time, locations, and populations are very valid for public health problem solving but it has to be conducted regularly.It is highly recommended that a routine reporting of population movement and relevant factors be conducted at the village level.Most importantly, the data has to be analysed and used for local planning and action to ensure the intervention's impact.Results from the standardized routine mapping at the village level can be compiled to monitor trends at higher levels on a regular basis and when the signs for situation changes took place such as after large-scale natural and/or human-made disasters or changes of policies that affect population migration.

BACKGROUND

Malaria is still one of the major public health burdens to Myanmar.According to the World Malaria Report 2012 (WHO, 2012a), it was estimated that there were between 1.2 and 1.9 million (midpoint 1.5 million) malaria cases in the country with the estimated 1,644 to 5,345 (midpoint 3,244) malaria attributed deaths in 2010.The country reported 465,294 confirmed malaria cases, either with microscopy or rapid diagnostic test (RDT) in the same year; making malaria burden in Myanmar the highest and far beyond the otherMekong countries.Approximately 68% of the confirmed cases were caused by Plasmodium *falciparum* (P.*f*.) parasite.While the proportion of at-risk population protected by an insecticide-treated bednet (ITN) is unknown for the lack of household survey data, the routine malaria programme report revealed that only 13% of the targeted population was protected by ITN delivered by the programme in 2011.

The national malaria treatment policy adopted the principle of Artemisinin-based Combination Therapy (ACT) in 2002, and followed the 2007 World Health Assembly that calls for withdrawal of artemisinin-based monotherapies; resulting in the current 100% ACT coverage for confirmed malaria cases (WHO, 2012a).However, the scale and reach of implementation has been far from sufficient and a large proportion of the population continues to seek (mainly presumptive) treatment in the private sector; contributing to the high level of delayed parasite clearance time.The Update on Artemisinin Resistant Update, April 2012 (WHO, 2012b) reported that the routine monitoring data reported over 20% of the patients in Mon State still parasitaemic after three days of treatment with dihydroartemisinin-peperaquinein 2010.The same report also indicated that in 2011, a 7-day artesunate monotherapy study found that 27% of the patients in Kawthoung Township, Tanintharyi Region still parasitaemic after three days of treatment whereas similar studies in the north and west of the country reported lower than 3% of the Day-3 parasitaemia.These suggested that artemisinin resistance is emerging in south-east Myanmar.Although it is still unclear whether the new foci in the south-east Myanmar represent the spread or *de novo* emergence of artemisinin resistance, the failure to control the resistance will have serious consequences for the Sub-region and the globe.

Several factors contribute to the spread of malaria such as forest coverage and tropical climate.Some studies in Mekong countries have suggested that transmission has been greatly reduced in forest-fringe villages but remains active in forests and is primarily maintained between the forest vector and ethnic inhabitants (Dysoley L*et al*, 2008; Abe T *et al*, 2009).Apart from forest dwellers and people residing in forest fringe villages, mobile and migrant populations (MMP),who are often induced by economic opportunities such as logging or mining in forested areas or road or dam construction and maintenance, are considered the major risk group for malaria transmission (MOH & WHO, 2011).

Myanmar has experienced large volumes of most, if not all, types of migration within and beyond its frontiers.Many people have undergone several (with some reporting over 100) migration episodes (Skidmore and Wilson, 2007; Bosson, 2007).National development activities are the main drivers for migration of people in Myanmar today, in addition to economic reasons.However, progression in causes of population movement is not strictly linear and many people are said to be in cyclical transition between different phases or conditions and could be categorized in different ways at different times of migration.The volume of economic migrants within the country is very large, involving millions of people.The top sources of internal migrants are Ayeyarwady, Mandalay, Bago and Sagaing, while the top destinations include the urban and semi-urban areas of Yangon and Mandalay(UNDP, 2008).Due to the land development and strong establishment of border trade with Thailand, a large number of people, mainly from the central dry zones of Myanmar, migrate for working and staying in the south-east, i.e. Mon State, Tanintharyi Region and Bago (East) Region(IOM, 2011).There are large numbers of MMP in plantations including in the areas where artemisinin resistance is suspected(MOH & WHO, 2011) and over two million residents of Myanmar also cross the border to Thailand and other countries in the Greater Mekong Sub-region and the flow is forecasted to be continued to grow (Lewis D*et al*, 2010).Nevertheless, few activities have focused on this population due mainly to the lack of information on their characteristics and associated risks to malaria.

Accordingly, the 2011-2015 Strategic Framework for Artemisinin Resistance Containment (MARC) in Myanmar defines MMP as one of its targeted populations.The Framework alsospecifies mapping of population migration for developing township plans for targeting MMP as one of its strategic approach to combat malaria, including the drug-resistant one (MOH & WHO, 2011).With financial support fromthe Three Diseases Fund (3DF), a study to map population movement was conducted in south-east Myanmar categorized as the Tier I area for malaria programmewhere the population movement is said to be intense and the artemisinin resistance is highly suspected.The study was conducted as a collaborative effort between the International Organization for Migration (IOM), the State/Regional Vector-borne Diseases Control (VBDC) Teams and the Department of Medical Research - Lower Myanmar (DMR-LM) of the Ministry of Health, and the World Health Organization (WHO).Specifically, the objectives of the study are:

1. To locate migrant pockets in all urban, semi urban and rural areas in the study townships;
2. To estimate the size of MMP and their demographic composition;
3. To assess the migration pattern of community members in the study areas;
4. To determine factors related to their malaria risk and vulnerability such as their occupations and malaria related knowledge and services access;
5. To explore possible mechanisms andapproaches for introducing effective malaria control programmes; and To provide lessons learned and recommendations for implementation of similar exercises in the future.

METHODOLOGY

This study was conducted between November 2011 and January 2013 and included both primary and secondary data collection and analysis.The primary data collection was focused on locating pockets where the MMP settlements are concentrated; identifying their characteristics such as population size and its composition, occupations, and migration pattern; assessing their vulnerability to health and malaria such as distance to public health facilities, their level of malaria knowledge, and their access to malaria prevention, diagnosis and treatment services.The secondary data collection was centredon epidemiological and behavioural data in relation to malaria situation in the study sites.

I. Study Process and Timeline

In summary, the study involved the following key processes and timelines.

1. ***Development of the mapping concept and tools and tasks distribution plan (November 2011 – March 2012)***:The concept note and tools were developed by IOM and presented to the Technical Support Group (TSG) and MARC partnersto incorporate their inputs into the final versions of the concept note and tools as well as to agree on the distribution of the sites to be mapped by relevant implementing partners (IP).
2. ***Training of the field data collection teams (April 2012)***:Following the finalization of the concept/ procedure and tools, IOM provided trainingto the field data collection teams from allparticipating IPs on implementation of the actual mapping exercises.The training on the use of the Global Positioning System (GPS) device was also provided by the Myanmar Information Management Unit (MIMU).
3. ***Data entry training (June 2012)***: The data entry training, using EpiData software, was conducted for the data entry operators from each of the IPs by DMR.
4. ***Field data collection and data entry (May-September 2012)***: The trained individuals conducted the mapping by visiting various types of settlements in the targeted areas and entered the data obtained into the EpiData file.
5. ***Data translation, compilation, cleaning and analysis (October-December 2012)***: Mapping data from all IPs were forwarded to IOM for compilation, translation from Myanmar into English, cleaning and analysis.
6. ***Report writing and publication (January 2013)***: IOM took the responsibility in drafting the mapping report that was shared with relevant partners for their reviewed and further inputs.Feedbacks from partners were incorporated into this final report.

2. Study Sites Selection

Map 1. Study Sites

The study was conducted in 21 townships in south-east Myanmar.These include one township in Bago (East) Region, all 10 townships of Mon State, and all 10 townships of Tanintharyi Region (Map 1).These areas are categorized as Tier I under the MARC Framework for their credible evidence of artemisinin resistance, widespread ecological and social risk factors, and intensive population movement.

The four IPs involved in this study shared the responsibility to conduct the mapping and data entry in their relevant implementing sites under the MARC Framework as listed in Table 1.

3. Informant Selection

Informant selection involved a few key steps.Firstly, the data collection team discussed with the key informants such as the Township Administrator and the Immigration and the Police Officers at the township level to obtain the information on the location, size and occupation of the migrants in the whole township area.According to the data obtained from the township level, the teams visit every identified villages and conducted interviews with the village leaders to obtain more precise information on the location where migrants were concentrated, especially in the rural areas outside of the village.The teams then visit each location identified through the township and village administrators and conducted individual or group interviews with health service providers and/or representative(s) of the migrant clusters.The vast majority of the informants were community leaders and managers/owners of the migrant workplaces, and only approximate 11% of the informants interviewed were migrants themselves.

4. Study Tools

Together with theconcept note, thestructured paper-based data collectionforms were developed to capture the information on population migration and the informants.The forms contains detail questions on exact locations of the mapped settlements through the GPS coding;estimated population size and their demography and characteristics; types of the settlements and migration pattern of the community members, i.e.their places of origin and intended places for further migration; availability and access to public health and malaria services; basic malaria knowledge; and types of the informants.Please refer to the concept note in Annex I and the tool in Annex II for more details.

5. Data Collection and Entry

The field data collection teams from each of the IPs conducted interviews with selected informants and filled out the mapping form for every single settlement they mapped.The data entry operators of each IPs entered the data from the filled out forms into the EpiData Software as provided and trained by the DMR.The data files from all IPs were then forwarded to IOM for compilation, translation from Myanmar into English, cleaning and analysis.

6. Data Verification, Cleaning,and Analysis

Several verifications were sought from responsible IPs to ensure the accuracy during the data cleaning process.The key ones that are important to note for their concerns on the data quality,analysis, and interpretation are as described below.

1. ***Locations of the settlements mapped***: The questions on the mapped location names in the mapping tools are open-ended and the information obtained was not encodedfor the data entry; resulting in various English spellings of the names of the same administrative locations from state/region down to village levels that were not appropriate for analysis.To solve this issue, the villages and village tracks with similar pronunciations were renamed in the data file according to the MIMU spelling.

2. ***Mismatches of the locations mapped and the GPS readings***: Approximately 13% of the mapped locations reported the mismatch of GPS readings and the administrative locations but these were mainly due to the errors when the data were recorded on the mapping forms and/or typing errors during the data entry.The mismatches that were obviously due to recording or typing errors were corrected as appropriate.As some GPS readings were outside of the villages, village tracts, or townships recorded on the mapping forms, the GPS devices were cross-checked by the Geographic Information System (GIS) specialist and found that the settings were accurate.This led to a conclusion

that the remaining errors or mismatches after the recording/typing errors were corrected could be caused by: 1) poor GPS satellite signals especially in the rural areas; and 2) lack of a clear knowledge on boundaries of the administrative locations among the data collection teams, thus, a possibility that they might map the settlements in the adjacent villages but recorded the village names according to their knowledge and/or entry points from where they accessed the mapped settlements.Therefore, following means or assumptions were used for the data analysis and this report.

a) The tolerance limit of 1km distance was set and no corrections were made to the recorded GPS readings that were within 1km distance from the recorded village and/or village track boundaries.
b) For the GPS readings that were beyond 1km distance from the recorded village and/or village tract boundaries but were still within the same townships as appeared on the mapping records, no corrections were made.
c) For the GPS readings that were beyond 1km distance from the recorded village and/or village tract boundaries, and were also located outside of the townships as appeared on the mapping records, the GPS values were corrected to move the GPS reading locations to the village tracts that were appeared on the records.These accounted for about 5% (194/3,805) of the locations mapped and the details on the GPS reading corrections can be found in Annex III.

3. ***Main occupations of the mapped community members***: The open-ended question on occupation allowed any kinds of responses from the informants as well as different ways to record the data on the mapping form.Many sites reported the products (e.g. stone, charcoal, water) while many others report actions or tasks (e.g. break stone, finishing jobs, guard, workshop) rather than the actual occupations and where there workplaces were located.These were verified with the IPs to the most possible extent and were categorized according to their levels of malaria risk (see details in the Findings section).The records that could not be verified (due to staff turn-over or lack of detail records), and the ones that did not have a strong evidence for high risk for malaria, were categorized in the low-risk groups of occupation for the analysis.

4. ***Time and cost for accessing public health facility***: Besides many typing errors during the data entry, many records on the mapping forms regarding time and cost required for accessing the nearest public health facility were unrealistic (e.g. required 3 days and MMK 150,000 by boat or 30 hours by car, or required some costs by bicycle or on foot).This type of obvious errors was excluded from the analysis to avoid extreme outliers that could affect the results.Other suspected errors that were not obvious and could not be proved as errors were maintained and included in the analysis.

Both conventional method of statistical analysis of the primary data and visual-aid analysis were conducted.As appropriate, the raw data (e.g. locations of settlements mapped) and/or data from the descriptive analysis were transferred to the GIS platform to produce maps for visual-aid analysis.To the most possible extent, triangulation of multiple variables of the mapping data as well as that of the primary and secondary data obtained was conducted to draw the clearer pictures of the migrants and malaria situation in the targeted townships.

LIMITATIONS

This study has some limitations and challenges, as well as some lessons to be learned from.The key limitations/challenges as well as ways to overcome some of the challenges are as described below.

1. ***Lack of clarity on the definition of MMP and/or harmonized information in the context of migration and malaria***: The MARC Framework defines migrants as anyone who moves from their permanent residence and stays in a malaria endemic area regardless of the durationand purpose of stay and classifies them into three groups: 1) easy-to-reach migrants who stay within 5km of the health facility, 2) intermediate-to-reach migrants who stay within reach of malaria volunteers, and 3) hard-to-reach migrants such as those who engage in activities in the forests; and defines mobile population as any person who move from one area to another for less than one month.Nonetheless, the mapping captured the means and time required for accessing the nearest public health facility instead of the distance; and the size of population settlements and whether they are permanent or temporally settlements, etc., but not the systematic information on the reach of malaria volunteers and distance from the forests or plantations.

2. ***Insufficient information on migration pattern and flow***: This exercise captured information on the places of origin of the targeted communities but missed out the placesthey were before residing at the targeted sites, thus, the limitation on migration patterns.As the question on migration was focused on the clusters of settlements rather than human mobility, many of the settlements might be reported as permanent settlements despite of certain degree of population movement.In addition, it was not accounted for information on in-, out-, and net-migration, and therefore, the migration flow was unclear.

3. ***Anecdotal information on migration and insufficient information on malaria knowledge***: Since the mapping was conducted through interviews with informants and most of them were community leaders, local administrators, health care providers, entrepreneurs and business managers, many of the data were “expert opinions” and could be considered anecdotal.Many questions captured the information of the majority of the community members, e.g. places of origin and occupations, some of the high risk groups for malaria who were outside of the majority groups (such as forest-goers residing in a distance from the forest) could be missed out.In addition, the malaria knowledge obtained was those of the informants rather than the community members or MMP, and unfortunately, it could not be included in the analysis.

4. ***Lack of information on malaria and risks***: As in other Mekong countries, most malaria cases and deaths in Myanmar are likely to occur among people residing in or near the forests (MOH & WHO 2011) as well as the forest-liked environments such as rubber and oil palm plantations but the updated information on the forest/plantation coverage was not available.According to the MARC Framework, areas within 2km distance from the forest or the like should be considered a risk zone but the information on distance of the settlements mapped to the forest/plantation was not available.On the other hand, residents in the same high/low risk environments might not have the same level of risk since malaria infection is also behaviour-driven, i.e. use of personal protections, and this information was not collected.As mentioned earlier, the information on occupation was not specific enough and posed a challenge on determination of their level of risk to malaria infection.

5. ***Inconsistency of some information***: Since the mappings were conducted using different versions of the tools, some of the information was inconsistent.Some of the information could not be obtained from all 21 townships.These were taken into consideration and the most appropriate data for each type of information were selected from different versions of the mapping tool for the data analysis and interpretation.

A combination of these limitations resulted in a large amount of time required for data verification and cleaning, data quality, and a relatively blurred picture of the relationship between population migration and their level of exposure to malaria risk and vulnerability; and especially the movement of malaria epidemic in relation to population movement.To somewhat overcome the limitations, triangulation of available primary and secondary data was conducted to gain a better understanding on the situation and a more appropriate interpretation of the data.

KEY FINDINGS

1. Locations and Types of Settlements

As shown in Table 1, a total of 3,805 settlements were mapped in 21 targeted townships.Although it is very likely that not all the clusters of settlements were reached and mapped through this exercise, the mapping was conducted with the same guidelines and methodology and the results could somewhat be considered systematic.Accordingly, it seemed that the targeted township of Shwegyin in Bago (East) had a much higher density of the clusters of settlements than others as 22% of the reported clusters were identified in Shwegyin alone; leaving the rest of 78% of the clusters mapped distributed across the other remaining 20 townships (3%-4% per township on average).

Table 1. Distribution of Mapped Settlements and Estimated Population Size

State/ Region	Township	Number of Mapped Settlements	Estimated TotalPopulation	Estimated Migrant Population (%)	Responsible Organization
Bago (East)	Shwegyin	826	19,457	15,899 (81.7%)	VBDC & WHO
Total Bago (East)		***826 (22%)***	***19,457 (1.7%)***	***15,899 (10.8%)***	
Mon	Bilin	127	29,333	6,964 (23.7%)	IOM
	Chaungzon	109	128,770	2,405 (1.9%)	VBDC & WHO
	Mawlamyine	145	180,824	5,329 (2.9%)	VBDC & WHO
	Mudon	163	116,240	8,100 (7.0%)	VBDC & WHO
	Kyaikmaraw	328	106,703	9,057 (8.5%)	VBDC & WHO
	Kyaikto	147	15,678	5,297 (33.8%)	IOM
	Paung	230	146,829	6,953 (4.7%)	VBDC & WHO
	Thanbyuzayat	340	145,586	18,291 (12.6%)	VBDC & WHO
	Thaton	248	65,834	7,960 (12.1%)	IOM
	Ye	110	22,050	6,548 (29.7%)	IOM
Total Mon State		***1,947 (51%)***	***957,847 (85.1%)***	***76,904 (52.1%)***	
Tanintharyi	Bokpyin	65	20,723	9,970 (48.1%)	DMR, LM
	Dawei	88	3,367	3,055 (90.7%)	VBDC & WHO
	Kawthoung	127	49,643	18,224 (36.7%)	DMR, LM
	Kyunsu	147	28,245	8,392 (29.7%)	VBDC & WHO
	Launglon	95	1,538	1,467 (95.4%)	VBDC & WHO
	Myeik	103	9,413	3,530 (37.5%)	VBDC & WHO
	Palaw	79	9,922	2,392 (24.1%)	VBDC & WHO
	Tanintharyi	77	16,770	1,513 (9.0%)	VBDC & WHO
	Thayetchaung	70	1,726	1,682 (97.5%)	VBDC & WHO
	Yebyu	181	6,497	4,579 (70.5%)	VBDC & WHO
Total Tanintharyi		***1,032 (27%)***	***147,844 (13.1%)***	***54,804 (37.1%)***	
Grand Total		**3,805 (100%)**	**1,125,148 (100%)**	**147,607 (13.1%)**	

The most common(44%) type of settlements identified were cut-off villages (CoV); defining as the settlements that were located close to administrative villages and share some resources with and economically dependent on the villages.The second most common type of settlements (30%) wassmall clusters (SC)located close to the administrative villages and places of economic action with the population size of 60and below.Approximately 17% of the mapped settlements were large clusters (LC) that were located ata distance from administrative villages with more than 60 inhabitants and homogenous in occupation such as those in rubber or oil palm plantation and mining areas.Approximately 5% of the mapped migrant settlements were in the villages in Bilin, Kyaikto, Thaton, and Ye Townships (10% - 43% of the mapped settlements in these townships).This was mainly because the mappings in the 4 townships were conducted in the targeted areas of MARC implementation that also include MMP living and/or working in the villages.Almost 7% were unidentified type of settlements; mostly reported from six townships in Mon State including Chaungzon, Kyaikmaraw, Mawlamyine,Mudon, Thanbyuzayat, and Paung Townships (7% - 27% of mapped settlements in these townships).Detailed breakdown of the mapped settlements by type, pattern, and township is as shown in Annex IV of this report.

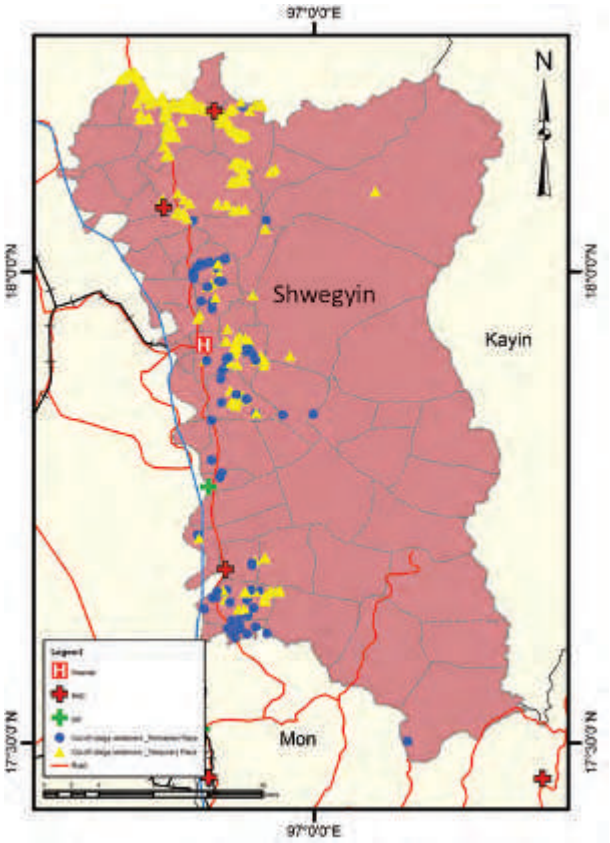
More of the mapped clusters were reported to be temporary settlements (59%) whereas about one-third (32%) were permanent settlements and the rest (9%) were unknown pattern of settlements.Tabulation of types and patterns of settlements found that 67% of the CoV, 64% of SC, and 49% of LC were temporary settlements.Township-wise, many more temporary settlements were found in Shwegyin (71%); Kyaikmaraw (73%), Thanbyuzayat (71%), Mudon (70%), Paung (68%), Mawlamyine (65%); Myeik (93%), Yebyu (64%), and Kyunsu (61%).More permanent settlements were found in Kawthaung (91%) and Bokpyin (77%)Townships in Tanintharyi Region as well as in Kyaikto Township (69%) of Mon State with many large scale plantations.

As shown in the Map 2.1-2.3, most of the settlements mapped were on the roadside or close to road access and more of the CoV and SC were identified than LC as the CoV and SC were close to the administrative villages by definition.Since the actual mapping was mainly conducted during the rainy season,the data collection teams could not extend their search to harder-to-reach settlements; in addition to the fact that some township mappings were focused only in the MARC implementation areas.With the circumstance, Kawthaung (57%) and Bokpyin (48%) in Tanintharyi Region were the only townships that reported many more of the LC than other types of settlements; reflecting their higher proportion of large scale plantations along/close to the road connections.

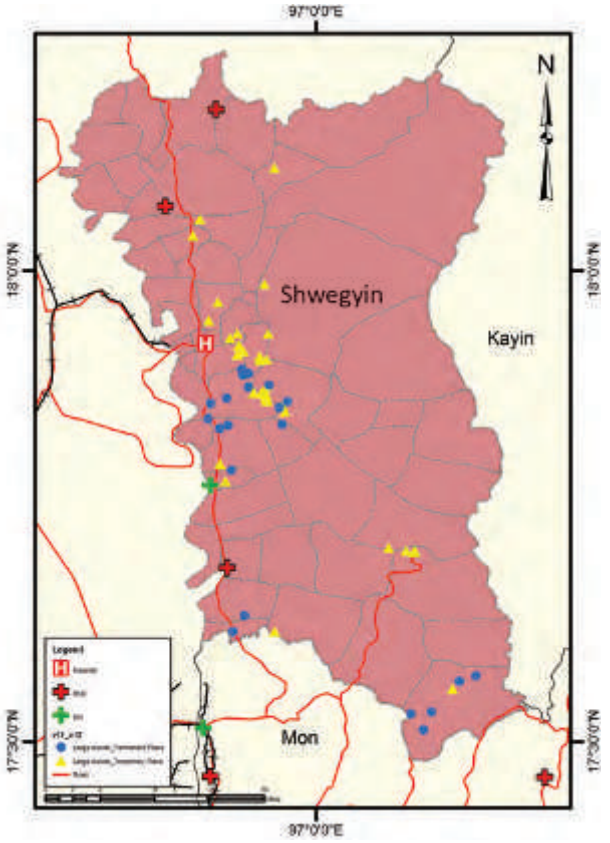
In ***Shwegyin*** (Map 2.1),probably because the Township has only two main roads – one connecting its northern and southernareas along the western part of the Township and the other connecting the south-eastern part of the Township with Mon State – and the eastern part of the Township is a dense forest of "*Bago Yoma*", most of the settlements identified were concentrated more on the western side of the Township.It was visible that temporary settlements, especially the CoV and SC, were concentrated more towards the plains in the northern part of the Township neighbouring to Kyaukkyi Township.On the other hand, more of the permanent settlements could be found in the central part with a large area of plain where the Township's capital is located, as well as towards the southernplain that is adjacent to Kyaikto Township of Mon State.The LC, both permanent and temporary,that could be considered the higher risk areas by definition were found more in the centralpart; off the major road from the Shwegyin's capitaltowards the plains accompanying by two main river lines in the eastern part of Shwegyin's capital and towards the *Bago Yoma* mountain range.Some LC were also found in the south-eastern part of the Township, but with a much smaller number than the central part; including those far away from Shwegyin's road connections but closer to Mon State.This reflected a finding from a field visit to Mon State by the author that there are a number of gold mines in the south-eastern part of Shwegyin; and some of them are not accessible from Shwegyin side but rather from Bilin and Kyaikto Townships of Mon State (Jitthai N, 2012).

Map 2.1 Location of Mapped Migrant Settlements in Shwegyin, Bago (East) Region

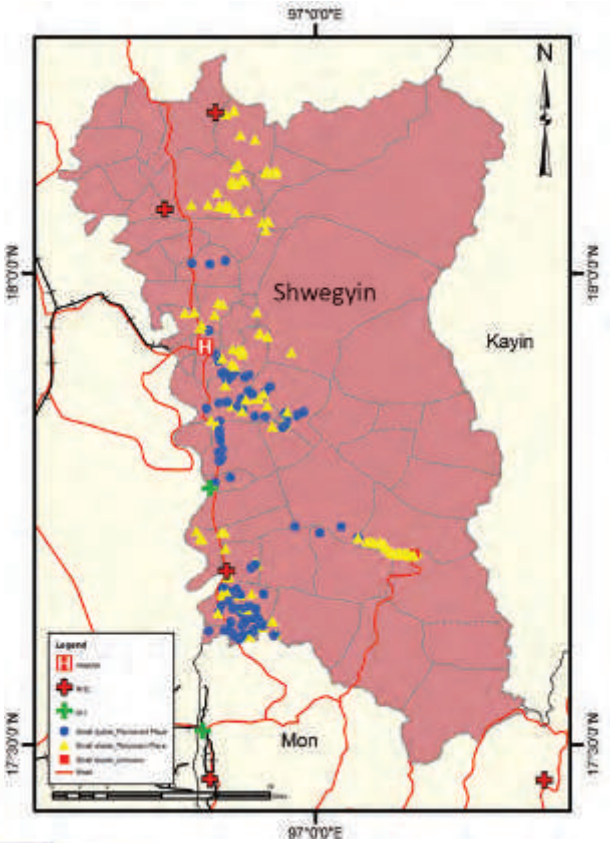
2.1a) Cut-off Village



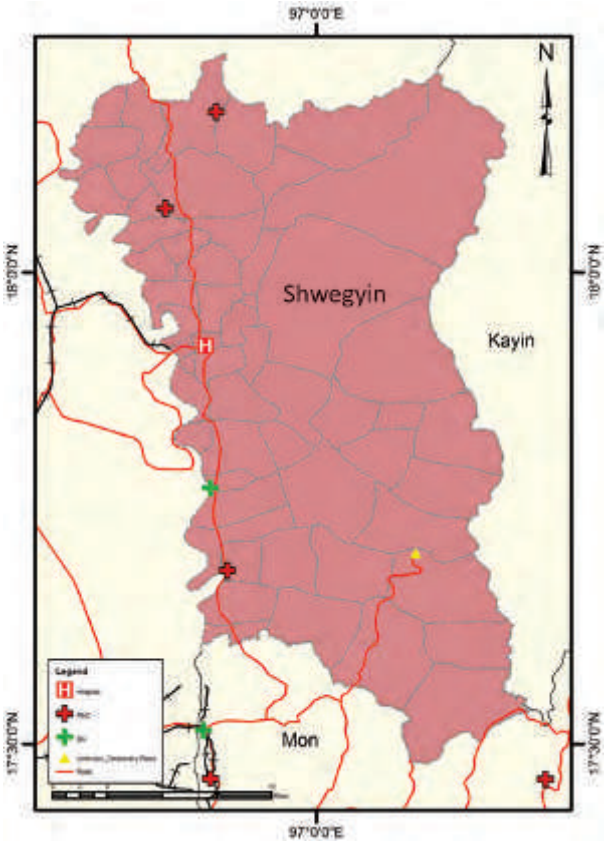
2.1b) Small Cluster



2.1c) Large Cluster



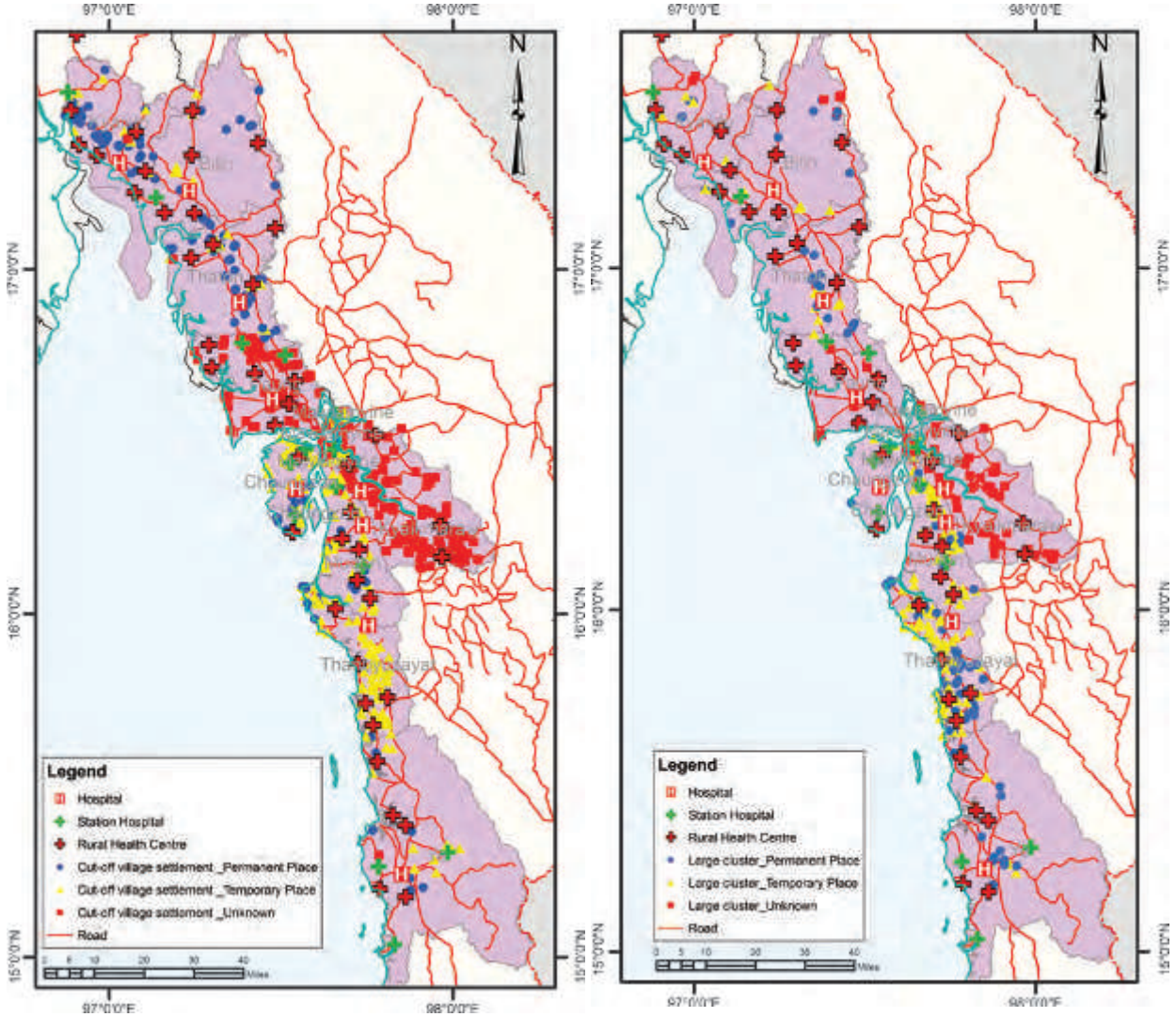
2.1d) Unknown Type of Settlement



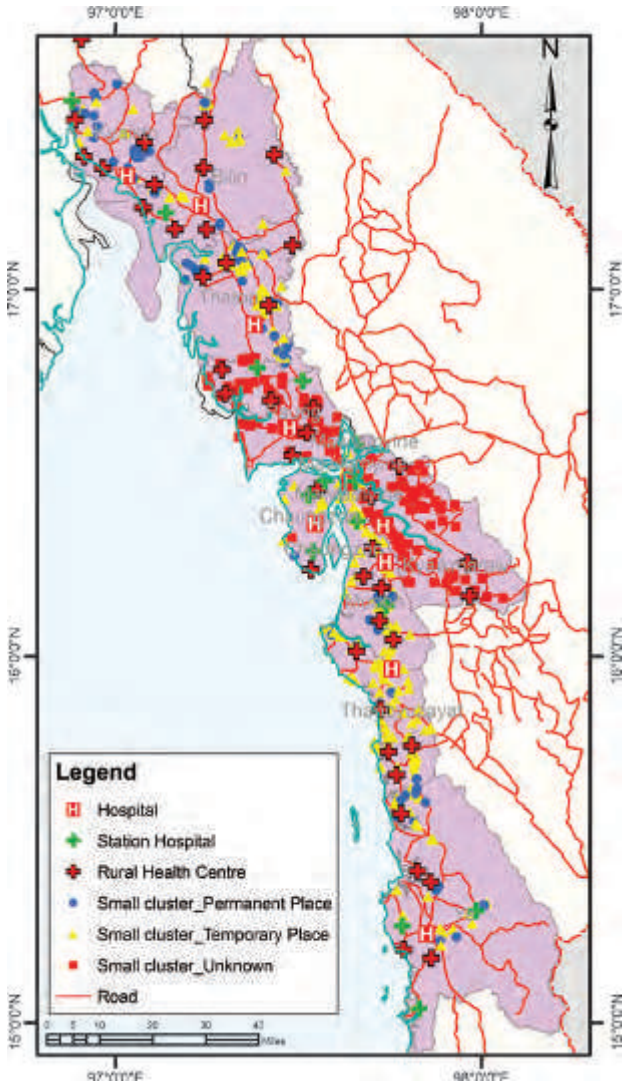
In ***MonState*** (Map 2.2), the identified settlements were scattered across its boundary, probably because of its extensive road networks and relatively small mountainous areas, but denser in the central and upper southern parts (i.e. Paung, Thaton, and Thanbyuzayat Townships) and the eastern Township of Kyaikmaraw with relatively easy access to Thailand.Thanbyuzayat and Kyaikmaraw Townships tended to host more of the MMP settlements with over 300 clusters identified.The 3 types of settlements (CoV, LC, SC) in Thanbyuzayat had similar share in terms of number, but obviously more of the temporary settlements (70%).More of the clusters identified in Kyaikmaraw were CoV (54%) and most of them were temporary settlements.Permanent settlements, regardless of the type and size except the LC, were likely to be found in the northern part of the State (i.e. Kyaikto, Bilin,and Thaton Townships) and in Ye Township in the most southern part of Mon State.On the other hand, temporary settlements were identifiedmore in the central part from Chaungzon down to Thanbyuzayat Township, regardless of the type and size.The LC were concentrated more in Mudon, Kyaikmaraw, Mawlamyine, Thanbyuzayat, and Ye Townships.

Map 2.2 Location of Mapped Migrant Settlements in Mon State

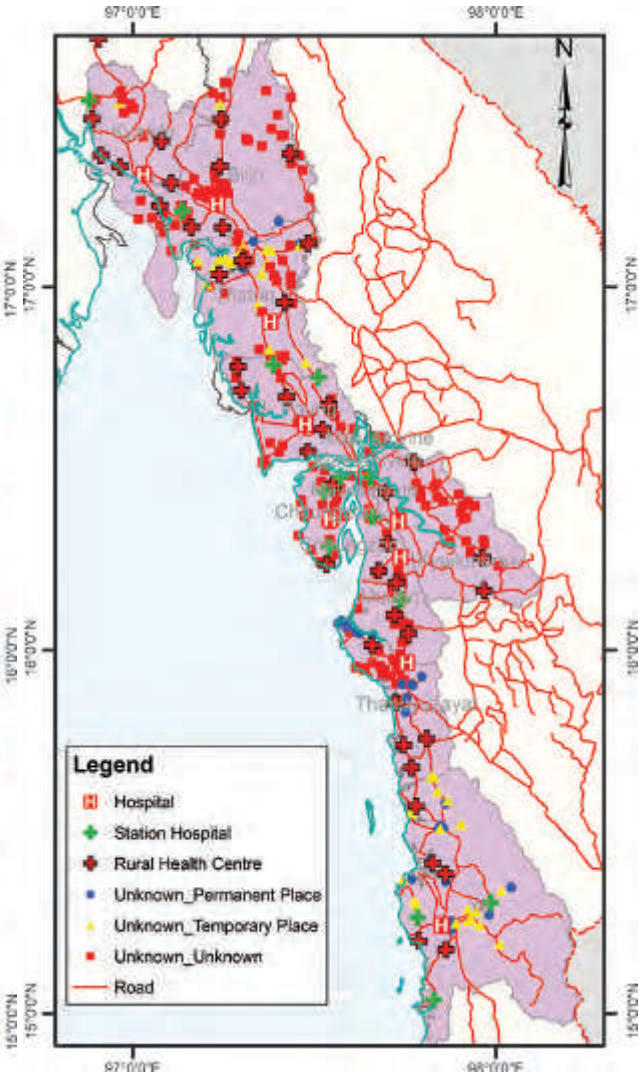
2.2a) Cut-off Village **2.2b) Large Cluster**



2.2c) Small Cluster



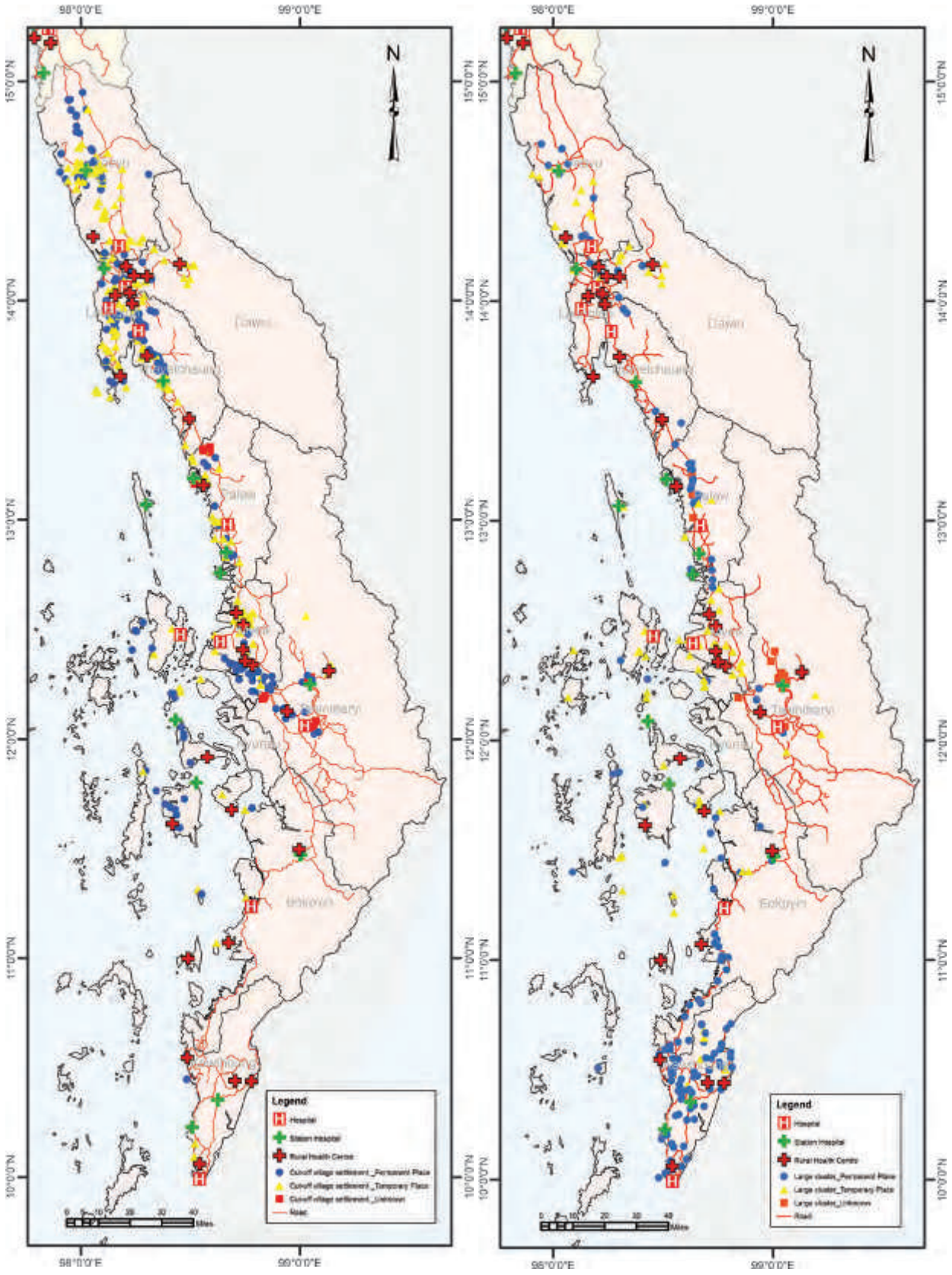
2.2d) Unknown Type of Settlement



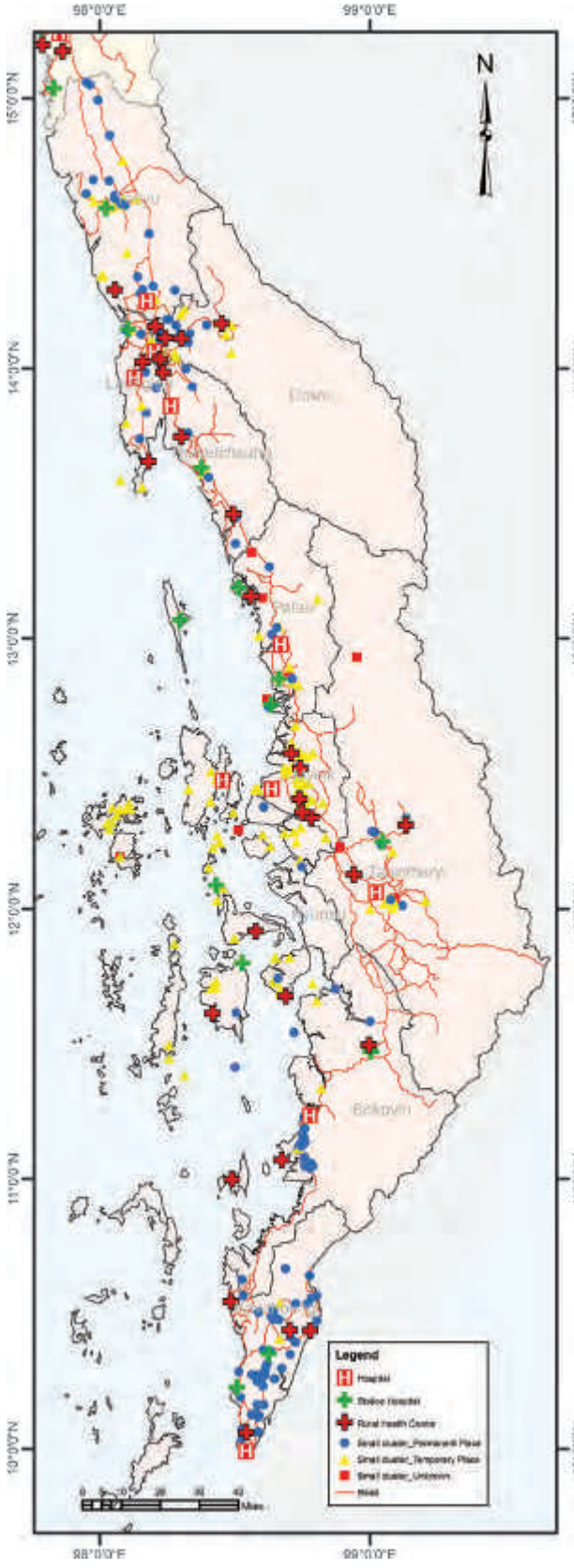
In ***Tanintharyi Region*** (Map 2.3),since most of its areas are dense forests of Tenasserim Mountain Range, the overall mapped settlements were mostly along the coastal areas where plains and most of the road networks are laid.CoV were predominantly in the upper and central parts of the Region from Yebyu down to Tanintharyi Township, although more of the temporary ones were found in the northern part, i.e. Yebyu, Launglon, and Thayetchaung Townships.SC settlements also spread north – south of the Region but less could be found in Launglon, Palaw, Thayetchaung, and Yebyu Townships.The vast majority of the LC were in the most southern part of the Region and most of them were the permanent settlements, shadowing a large volume of large scale plantations across Kawthaung Township and the southern part of Bokpyin Township along the main road connecting Bokpyin and Kawthaung.Both LC and SC in Kawthaung also spread east – westward across the Township and many were found near the border adjacent to Kraburi District in Ranong Province of Thailand where some 20,000 Myanmar migrants, regular and irregular, were estimated to be living/working in addition to the over 1,000 daily border crossers for buying commodities and selling Myanmar products (ARC, 2007 and Jitthai N, 2011).This district is also one of the WHO's monitoring sites for Day-3 positive after ACT and over 10% of Day-3 positive cases have been reported in the past half-decade (WHO, 2010).Unfortunately, trans-national migration was not captured in this mapping exercise.

Map 2.3 Location of Mapped Migrant Settlements in Tanintharyi Region

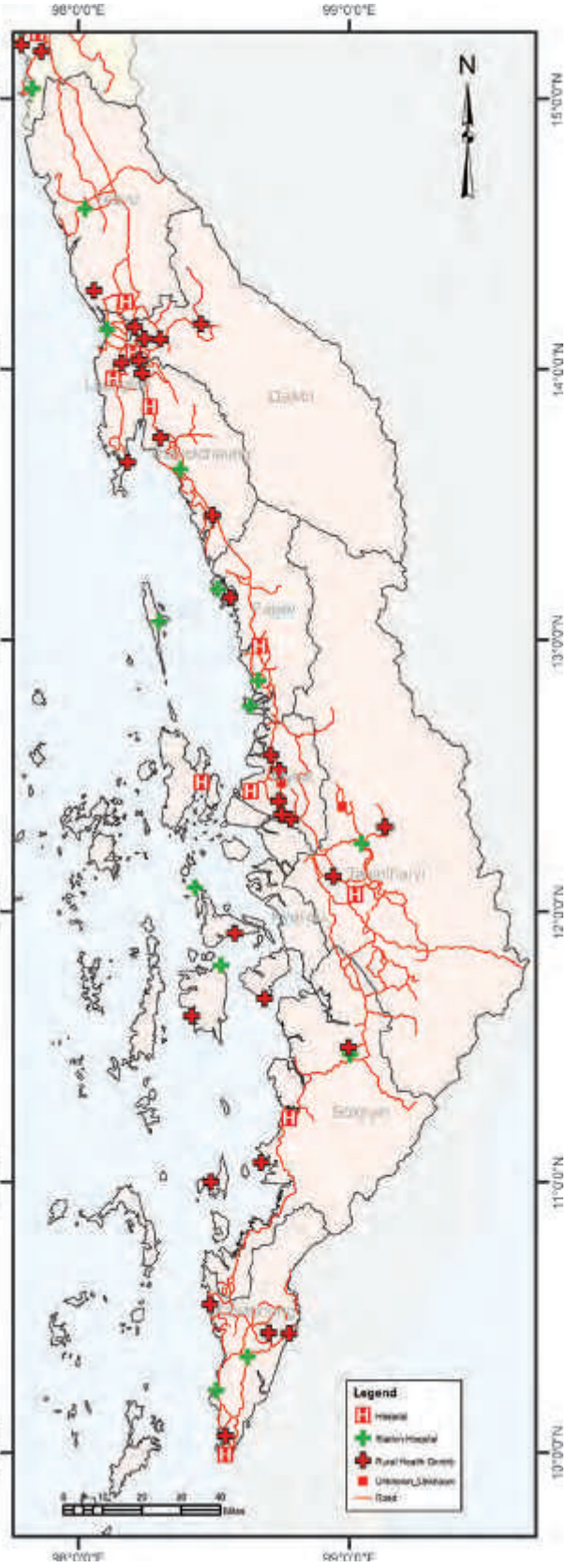
2.3a) Cut-off Village **2.3b) Small Cluster**



2.3c) Large Cluster



2.3d) Unknown Type of Settlement



2. Demographic and Characteristics of the Population

2.1. Population Size

Altogether, 1,125,148 inhabitants were reported to be living and/or working in the 21 targeted townships at the time of this mapping exercise (Annex V).Although Shwegyin Township reported a much larger number of clusters of settlements than other studied townships, its population was not large and only accounted for less than 2% of the total number of estimated population reported from the 21 townships.This is because most (93%) of the locations identified in Shwegyin were CoV(57%) and SC (35%) with small numbers of populations.Each of all of the studied townships outside of Mon State and almost half of the townships in Mon State hosted up to about 5% of the total population reported from the 21 townships.Chaungzon, Kyaikmaraw, Mudon (about 10% each);Paung, Thanbyuzayat (13% each); and Mawlamyine (16%)Townships; all in the central part of Mon State with relatively easy access to the main border crossing points to Thailand (Myawaddy and Hpayarthonesu) and relatively stronger economic, were significantly more populated than the other areas.It is, however, important to note that the mappings in Bilin, Kyaikto, Thaton, and Ye Townships in Mon State only covered the targeted areas of MARC Project; resulting in much smaller numbers of populations in the 4 townships as comparing to the rest of the studied townships.However, the numbers of clusters identified in the 4 townships were similar or more than many other townships since the MARC Project in these areas has been focusing on identifying more SC and CoV with non-presence of malaria volunteers in order to expand the service coverage to more marginalized MMP.Although the geographical coverage of Tanintharyi Region is very large, its dense forest might not be suitable for settlements and the size of population in the identified clusters in the Region tended to be very small considering the size of the area as well as comparing to Mon State.

2.2. Characteristics

As shown in Map 4.1, the proportion of MMP in Shwegyin was very high as comparing to the total estimated number of population in the mapped areas.In Mon State, although the central part of the State hosted more populations than the northern (i.e. Kyaikto and Bilin) and southern (Ye) townships, the proportions of MMP in the northern and southern townships were much larger (Map 4.2).Map 4.3 depicts the larger numbers of population estimated towards the central and the southern parts of the Region while higher proportions of MMP were found more in the northern part of the Region, i.e. Yebyu, Launglon, Dawei, and Thayetchaung Townships.Key characteristics of the population in the studied areas are as summarized below.The detailed population composition breakdown by sex, age, residential status, and township can be found in AnnexV of this report.

2.2.1 Sex

At glance, male-to-female ratio of the population in all studies sites was almost identical (50.3% vs. 49.7% or 1:1.01) and this was observed in most of the 21 townships except inShwegyin (62% vs. 37%), Launglon (59% vs. 41%), Dawei (67% vs. 33%), Thayetchaung (65% vs. 35%) and Yebyu (69% vs. 32%) where the population were predominantly male.These were due to the large proportions of male MMP for Shwegyin, Launglon, Dawei, and Bokpyinwhile gaps of the male-femaleratiosamong the local residents in these areas were very narrow.In Thayetchaung and Yebyu both permanent residents and MMP were predominantly male.

2.2.2 Age

Overall, approximately 11% of the estimated population in mapped clusters in the 21 townships were young children aged below five years.Most of the studied townships reported the proportion of under-fivechildren in the range of about 8% to 12%.The outliers were Shwegyin with the lower proportion of

under-five children (6%) than others; whereas Palaw (14%), Bilin (15%), and Ye (17%) reported much higher proportions of the young children.These were probably because Shwegyin is one of key destinations for labour migration especially in mining and plantation where the environment is not suitable for small children while Palaw, Bilin, and Ye are relatively remote rural areas where having more children is still a norm.

2.2.3 Language Use

The vast majority of the people in the mapped settlements could speak (94%) and read (87%) Myanmar language.Only 1% and 3% of them admitted that they could not communicate in Myanmar verbally and in writing; mostly in Kyunsu, Myeik, and Thayetchaung Townships of Tanintharyi Region, and Mawlamyine and Paung Townships in Mon State.Very small proportions of the mapped communities could communicate also in other languages.These mostly included Kayin (13% speaking, 6% writing; mostly in Thaton, Bilin, and Chaungzon Townships in Mon State and Palaw, Kawthoung, and Tanintharyi Townships in Tanintharyi Region); Mon (7% speaking, 4% writing; across Mon State except in Bilin Township and in Kawthoung Township of Tanintharyi Region); and other languages such as Shan and Kachin (3% speaking, 2% reading; across all studied sites but more in Bokpyin, Dawei, Kawthoung, and Yebyu Townships in Tanintharyi Region and Mawlamyine Township in Mon State).These findings showed the similar trends as their places of origin (see more details in the section on migration volume and pattern below).

2.2.4 Occupation

Overall, approximately 55% of the 3,805 sites mapped reported that their main occupations were in the high risk environment; i.e. in the forest (2%);in the forest-liked settings such as rubber/oil palm plantation and hillside farming/cultivation (40%); and mining areas and hydropower plants (12%).The small proportion of the clusters that worked in the forest reflected the other finding from this mapping that out of the some 1.1 million populations estimated, only 4% were forest dwellers.Slightly more than one-fifths (22%) of the sites reported various types of lower risk agriculture as their main occupations such as paddy field, gardening, and unspecified type of farming.Slightly more than 17% involved in other low risk occupations/environment, e.g. various types of factories, livestock and husbandry, fishery, and traders/shopkeepers.However, the vast majority of them (94%) reported daytime as their common working hours.The night-shift clusters were concentrated in a few townships of Thanbyuzayat (30%), Kyaikmaraw (20%), and Mudon (17%) in Mon State, and Kawthaung (9%) in Tanintharyi Region; mainly because of their larger numbers of rubber plantations.None of the clusters in Shwegyin reported that they worked during the night time since majority of them worked in mining areas and fruit orchards.

In ***Shwegyin*** (Map 3.1a), more than three quarters (81%) of the clusters reported to be involved in high risk environment occupation, i.e. mining and hydropower projects (45%), plantation and hillside farming (33%), and forest-related work (3%).Less than one-fifth (19%) were in the lower risk environment/ occupation, i.e. other types of agriculture (18%) and other non-forest related jobs (1%).

In ***MonState*** (Map 3.1b), distribution of the reported occupations varied but tended to involve more in the occupation sectors with lower risk than those reported in Shwegyin.While slightly more than one-third (36%) of the clusters reported plantation/hillside farming as their main occupation, only 1% of the clusters involved in forest-related work and 4% involved in mining or hydropower projects.These made up some 41% of the clusters involved in occupations in the high risk category.Slightly less than one-third (30%) were mainly involved in other types of farming or agricultural sectors; and one-fifth (20%) reported other types of low risk occupations such as factory work.

The clusters working in plantations/hillside farms were found more in Kyaikmaraw (57% of all clusters in the Township or 27% of all mapped clusters in Mon State), followed by Thaton (49% or 17%), Mudon (45% or 10%), Paung (40% or 13%), Kyaikto (37% or 8%), Thanbyuzayat (32% or 16%), and Ye (31% or 5%).Very few plantation/hillside farming clusters were found in Chaungzon (8%) and Mawlamyine (8%) as Chaungzon

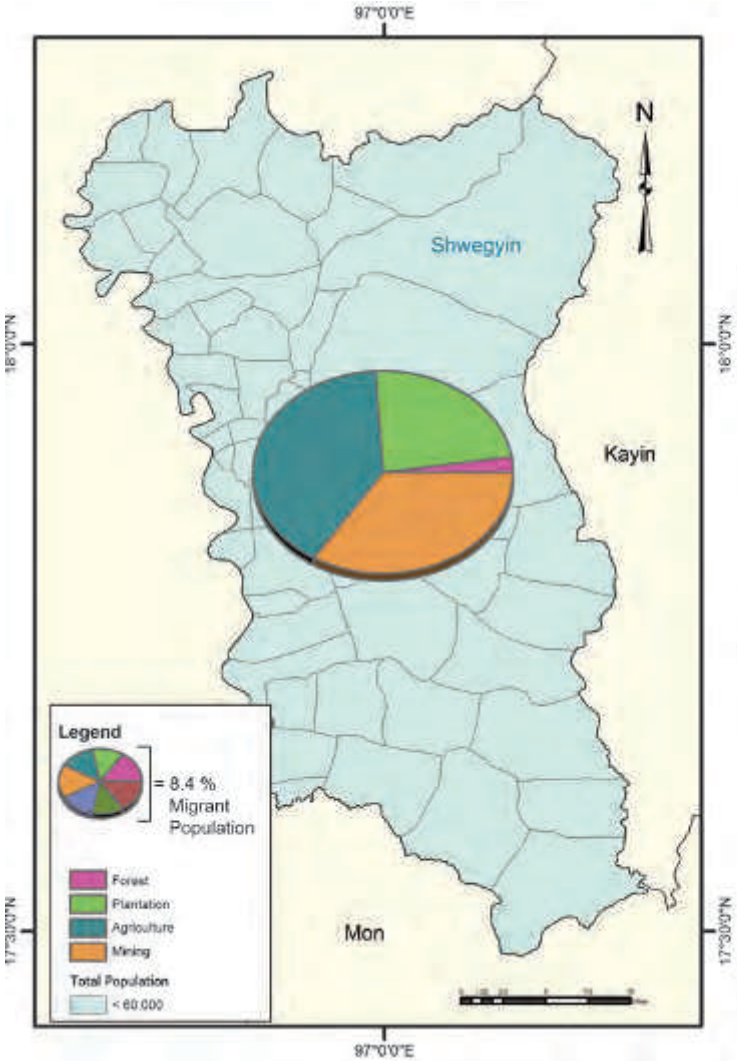
(61%)hosted many more of the other lower risk agricultural clusters and Mawlamyine (61%) was flooded with fishing and related businesses as well as more urbanized businesses e.g. factories, construction, and trading.The mining clusters were found mainly in Bilin Township (15%of all clusters in the Township or 28% of all mapped clusters in Mon State), followed by Paung (8% or 28%), Kyaikmaraw (3% or 15%), and Kyaikto (6% or 13%).

In ***Tanintharyi Region*** (Map 3.1c), almost two-thirds (65%) of the clusters were involved in high risk categories of occupation; 5% forest-related, 56% plantation/hillside farming, and 4% mining/hydropower projects.Approximately 13% of the clusters worked in various types of agriculture and 22% engaged in low or no risk occupations, e.g. factory and construction work.

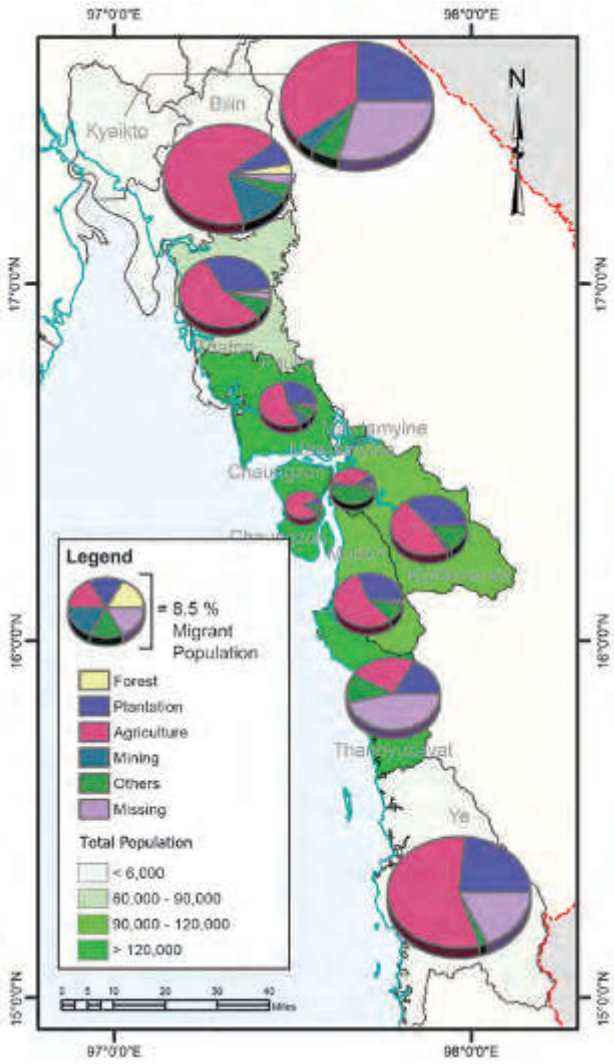
Township-wise,the two most southern townships reported much higher proportions of the clusters involved in forest-related work than others, i.e. Bokpyin and Kawthaung (25% each among 10 townships in the Region or 18% and 9% within respective townships); followed by Thayetchaung and Yebyu(12% each among the 10 townships or 9% and 3% within each township).Myeik and Kawthaung Townships were home to a large number of clusters in plantations/hillside agricultural farms (77% and 75% within relative townships or 14% and 17% for the whole region).More than half of the clusters in Thayetchaung (67%), Bokpyin (58%), Launglon (55%), Palaw (53%), andYebyu (53%) Townships also engaged mainly in the plantation/ hillside farm work.The clusters involved in mining/hydropower projects were mostly found in Tanintharyi, Dawei, and Yebyu Townships (13%, 10% and 7% within respective township respectively); with each accounted for 24%, 22%, and 29% for the whole region, thus, hardly found in other townships.

Map 3. Main Occupations of the Migrant Clusters by State/Region and Township

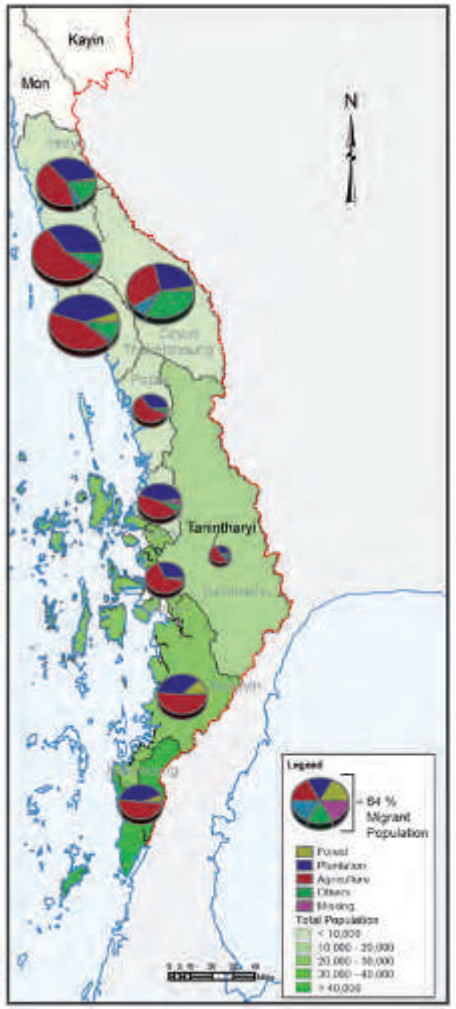
3.1) Shwegyin, Bago (East)



3.2) Mon State



3.3) Tanintharyi Region



2.3 Migration Volume and Pattern

Although the migration flow could not be analysed because of the lack of essential information, overall situation in relation to migration volume and pattern could be analysed and the key findings are as summarized below.More details can be found in Annex VI of this report.

2.3.1 Migration Volume

Of the some 1.1 million population mapped, 13% were reported to be MMP by the MARC definition; i.e. those who moved from their permanent residence regardless of duration and purpose, thus, including life-long migration.The proportion of MMP in the communities could be categorized into three groups: high, medium, and low MMP concentration (Table 2).The high concentration group composed of those with 70% and higher proportions of MMP, including Shwegyin Township (82%) in Bago (East) Region, andYebyu (71%), Dawei (91%), Launglon (95%), and Thayetchaung (98%) Townships in Tanintharyi Region.The medium concentration group hosted between 24% and 48% MMP and were scattered acrosssouth-east Myanmar.These were Palaw (24%), Kyunsu (30%), Kawthoung (37%), Myeik (38%), and Bokpyin (48%) Townships in Tanintharyi Region; and Bilin (24%), Ye (30%), and Kyaikto (34%) Townships in Mon State.Nine out of 21 studied townships could be categorized in the low concentration group with less than 13% MMP, including Tanintharyi Township (9%); and Chaungzon (2%), Mawlamyine (3%), Paung (5%), Mudon (7%), Kyaikmaraw (9%), Thaton (12%), and Thanbyuzayat (13%) Townships in Mon State.

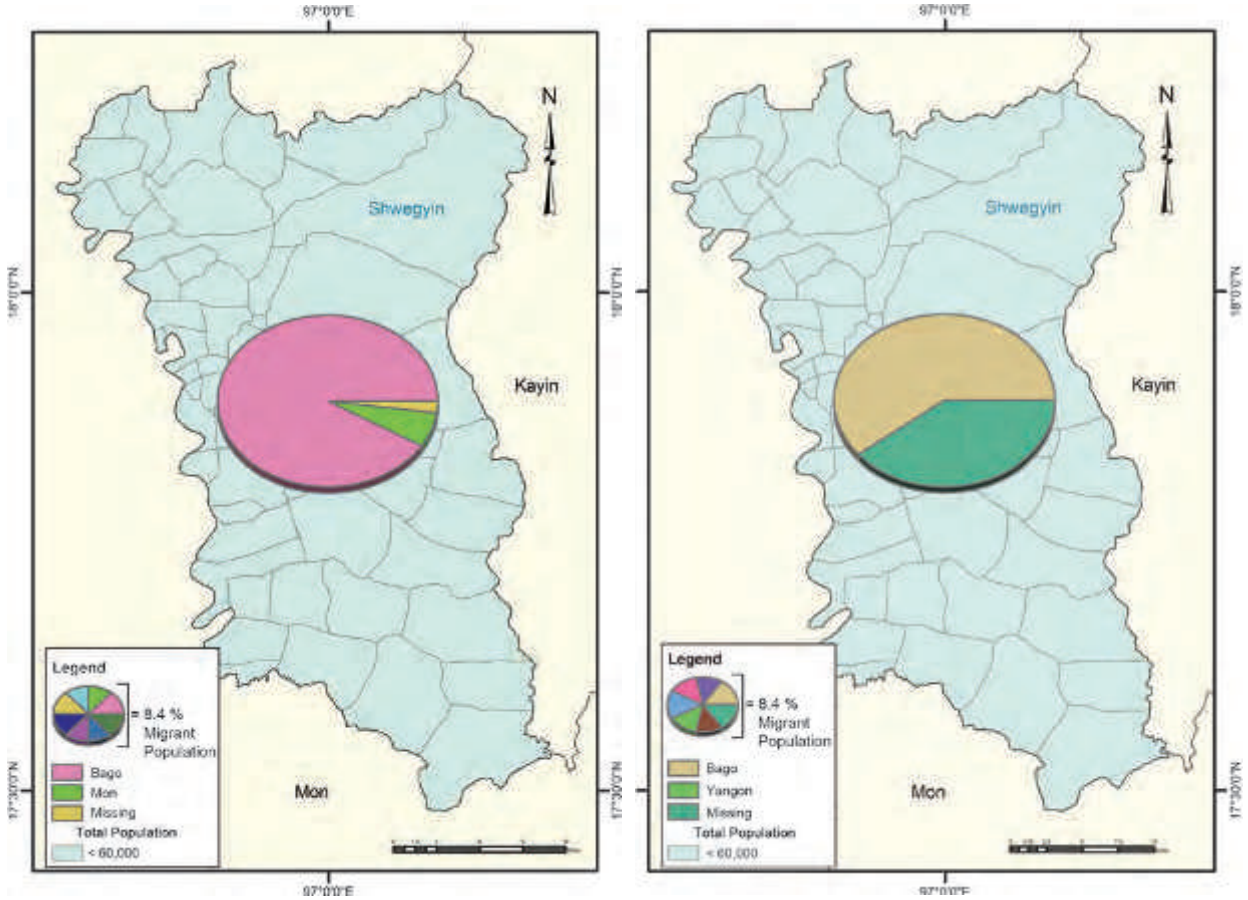
2.3.2 Migration Pattern

Overall, inhabitants of the mapped settlements in the 21 townships were originally from 15 out of 17 States/Regions across the country and only Shan (North) and Shan (East) Regions were not reported as their sources of origin in this mapping.Moreof the inhabitants of the mapped settlements were originally from Bago (East) Region (36%), followed by Mon State (20%), Tanintharyi (13%), Ayeyarwady (12%), Yangon (8%), and Bago (West; 7%) Regions, respectively.A very small proportion (5%) was originally from other states/regions combined (i.e. Mandalay, Magway, Kayin, Sagaing, Rakhine, Chin, Kachin, Shan (South), and Kayah).These were mainly because many of them were local residents of the mapped townships migrating within their residential townships and/or within the state/region.Nevertheless, some key source communities for migration to the studied townships could be observed.

In ***Shwegyin Township*** (Map 4.1), although 82% of the population in the mapped clusters were estimated to be MMP, 75% of the clusters reported Shwegyin as their primary places of origin; reflecting a large volume of internal migration within Shwegyin Township itself.Most of the remaining 24% were originally from the neighbouring townships, including Nyaunglebin (6%) and Waw (6%) also in Bago (East), and Kyaikto Township (5%) in Mon State.However, the clusters tended to be more fluid than other townships as they had been at the sites for only 2.5 (±3.9) years (ranging from one month to 30 years) on average; with 78% of the clusters aged up to 3 years.Majority of them (71%) reported their intention to move in the next 12 months with an average of 2.1 (±3.5) years (ranging from one month to 20 years)for all the clusters identified in Shwegyin.However, only 60% of the clusters disclosed their next migration destinations; of which, 95% planned to move to other sites within Shwegyin Township.

Map 4.1 Migration Volume and Pattern in Shwegyin, Bago (East) Region

4.1a) Place of Origin **4.1b) Next Destination**



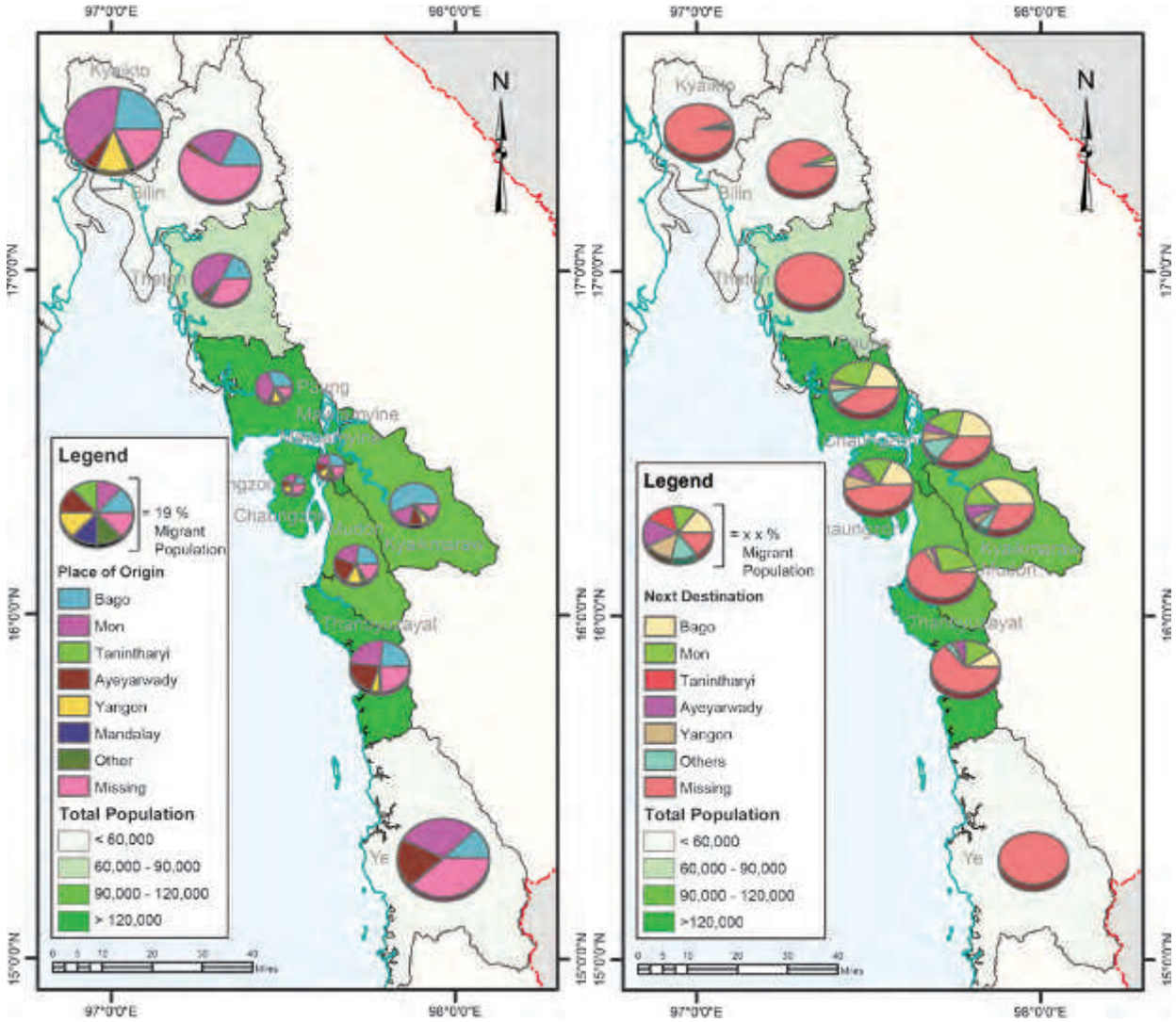
In***MonState***, migration beyond the township or state/region boundaries was relatively dynamic (Map 4.2).Almost all of the 10 townships reported very high volume of in-migration;Kyaikmaraw (98%), Thanbyuzayat (97%), Mawlamyine (96%), Mudon (96%), Chaungzon (94%),Ye (85%), Paung (84%), and Kyaikto (71%).Nevertheless, many townships reported that the largest source communities for in-migration were those within the same townships: Bilin (45%), Thaton (44%), Kyaikto (29%), Paung (16%), and Ye (15%).Besides the intra-township migration, in-migration to Mawlamyine, Mudon, Chaungzon, Paung, and Yetended to be scattered from various townships across the country.Thanbyuzayat, however, gained more in-migration from the nearby townships of Bilin (12%) and Kyaikto (7%), as well as from the distant townships of Myanaung (Ayeyarwady; 7%), Yedashe and Waw (Bago (East); 7% and 6%.Kyaikto hosted moreMMP from neighbouring Bilin Township (16%) and from Thayarwady Township (12%) in Bago (West) Region.In Bilin, the largest group of in-migrants from outside of Bilin was reported to originate from neighbouring Shwegyin Township (29%), although the level of in-migration (55%) was much smaller than other townships.The major source communities for in-migration to Kyaikmaraw Township were Thayarwady (21%) and Letpadan (8%) in Bago (West); and Oktwin (11%), Thanatpin (7%), and Phyuin Bago (East).Many migrations in Thaton took placewithin the township boundary (44%) andthose from outside of Thaton were more from the adjacent township of Paung (13%).Accordingly, it seemed that in-migration in Mon State involved more of the movement within the State boundaries, where Bilin and Kyaikto Townshipsseemed to hold a unique characteristic of being bothkey sending communities forout-migration as well as receiving communities for in-migration.

Overall, the clusters in Mon State had existed for 4.3 (±4.9) years on average (ranging from one month to five years).Similar to Shwegyin, most of the clusters in Mon State had existed for up to 3 years, except those in Thanbyuzayat as majority (62%) of them had existed for over 3 years.On average, they planned to continue to be there for another 3.4 (±3.8) years (ranging from one month to threeyears) but most of the

clusters admitted that they had a plan to move out within the next 1-2 years.The clusters in Kyaikmaraw and Thanbyuzayat tended to report a broader range of time for their next migration that spread across a coming decade.Although 60% of the mapped clusters did not provide information on their plan for future migration, more of the clusters in five of the 10 townships planned to move either the Bago Region or within Mon State, including Kyaikmaraw (38% to Bago Region and 15% within Mon State), Mawlamyine (22% each), Paung (20% and 28%), and Chaungzon (17% each).Other than Bago Region and Mon State, the key next destinations reported by many clusters in Kyaikmaraw Township wereAyeyarwady (8%) and Yangon (4%) Regions.A similar trend as Kyaikmaraw was also found in Thanbyuzayat as more planned to move within Mon State (16%), or to Bago (9%), Ayeyarwady (6%), and Yangon (2%) Regions.More than a quarter (26%) of the clusters in Mudon planned to move within Mon State.Unfortunately, the situation in Bilin, Kyaikto, Thaton, and Ye Townships were unclear due to unavailability of the data.Nevertheless, this analysis revealed that their next destinations were similar to those of their places of origin.

Map 4.2 Migration Volume and Pattern in Mon State

4.2a) Place of Origin **4.2b) Next Destination**



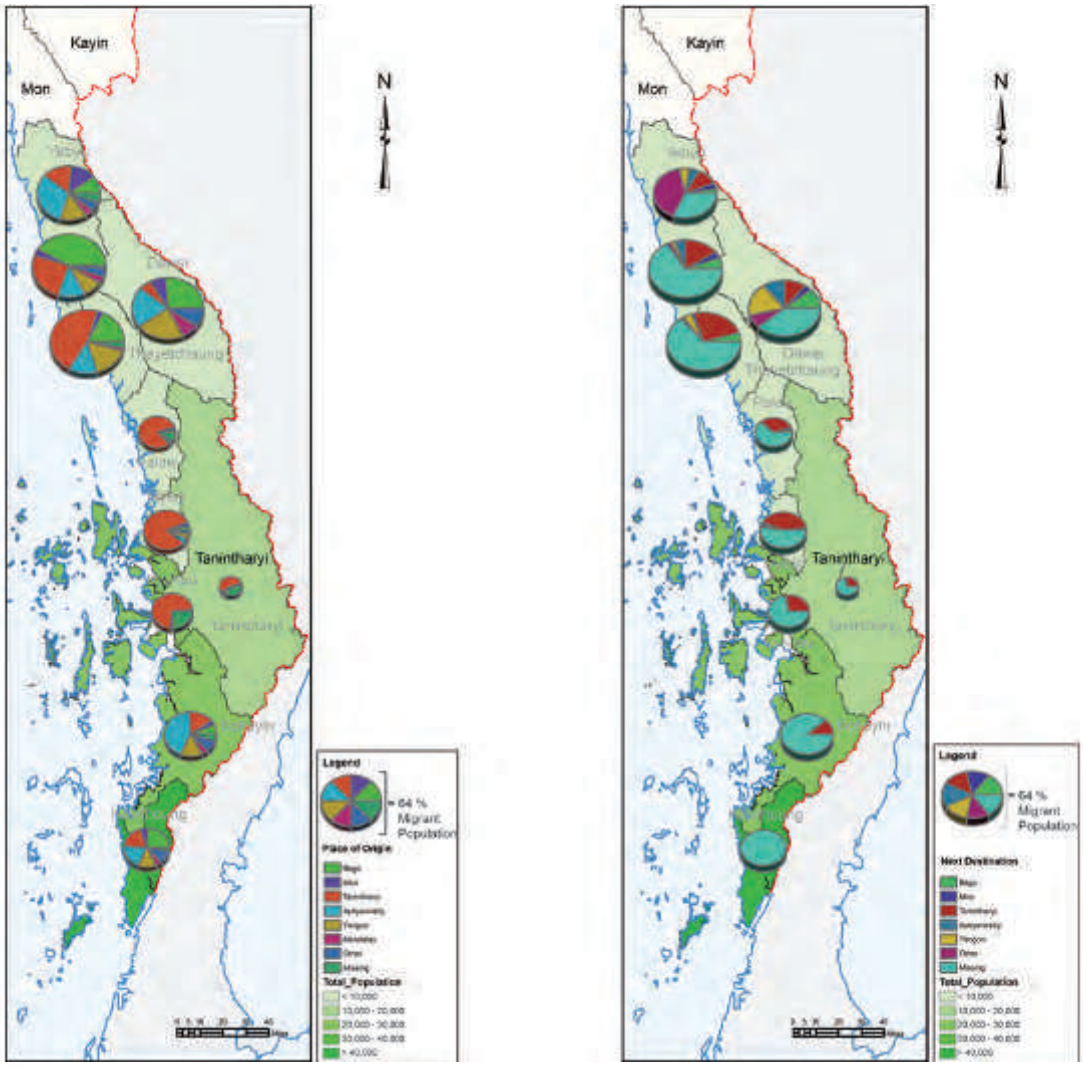
Tanintharyi Region tended to be divided into three parts in term of population migration(Map 4.3).While the northern and southern townshipshosted a large proportion of MMP, those in the central part tended to experienced more of the internal migration.To the north, Dawei (95%), Yebyu (87%), Launglon (86%), and Thayetchaung (80%) Townships hosted a large volume of in-migration; while the most southern townships of Bokpyin (98%) and Kawthaung (96%) also experienced the same.There was no report of major source community for migration into Dawei, Launglon, Bokpyin, and Kawthaung as the MMP clusters

were from almost every township across 15 states/regions.The only outstanding source community for migration into Yebyu was Myanaung Township (17%) in Ayeyarwady Region.In addition to internal migration, Thayetchaung Township tended to gain in-migration more from the neighbouring Palaw Township also in Tanintharyi Region.The central townships of Palaw (88%), Kyunsu (73%), Myeik (71%), and Tanintharyi (59%) reported very large volume of internal migration within respective boundaries.Myeik Township tended to be a major sending area of migrants to the neighbouring townships of Kyunsu (15%), Tanintharyi (16%), and some other townships in Tanintharyi Region.

The age of clusters in Tanintharyi Region also varied widely and tended to be older than those in Mon State and Shwegyin, with an average of 5.6 (±10) years (ranging from one month to 100 years).However, majority of them were established within the past 3 years, except in Kawthaung where almost half (47%) were established in the past five years and in Bokpyin where about 31% were established in the past 3 years, and 29% were established in the past half a decade.On average, the clusters in Tanintharyi Region intended to move in the next 2.9 (±4.1) years (ranging from one month to 40 years).Fewer than half of the clusters reported their plan to move.Of which, most planned to move in the next 1-2 years.Majority of them planned to move within the respective townships but those in Yebyu and Dawei planned to move to a few main regions including Tanintharyi, Ayeyarwady, and Yangon; while the situation in Kawthaung and Bokpyin were unclear as this information was not available.

Map 4.3 Migration Volume and Pattern in Tanintharyi Region

4.3a) Place of Origin **4.3b) Next Destination**



Overall, the mapped clusters in all 21 townships reported a very wide range of their source communities.The major source communities outside of the 21 studied townships cited were Waw(105 clusters; 3%), Thanatpin (74 clusters; 2%), Nyaunglebin (59 clusters; 2%), Oktwin (46 clusters; 2%), and Phyu (41) Townships in Bago (East) Region; Thayarwady Townships (97 clusters; 3%) in Bago (West) Region; and Myanaung (68 clusters; 2%) Township in Ayeyarwady Region.They also reported a very wide range of duration of their presence between one month and 100 years since many of them were permanent settlements; with an average of 4.2 (±6.7) years.It is, however, important to note that the mapping tool asked about the settlements rather than the inhabitants, and therefore, this should not be interpreted merely as the duration of population migration.Likewise, they also reported a wide range of plan to stay, from one month to 40 years, with an average of 2.9 (±3.8) years.

Only 41% of all 3,805 clusters mapped answered the question on their next migration destination and it was unclear whether the rest had no plan to migrate, or had the plan but not sure where to as yet, or simply did not answer the question.For the known destination, half said they intended to move to Bago Region (50%), followed by Mon State (19%), Tanintharyi (14%), Ayeyarwady (7%), Yangon (7%), Mandalay (1%), Magway (1%), and other (less than 1%); with similar order as their places of origin.This could be implied that Bago Region, Mon State, and Tanintharyi Region would continue to gain in-migration in the near future as more of them reported these areas as their next destinations than places of origin.On the other hand, Ayeyarwady Region tended to continue to lose its population if only 7% would take it as the next destination as found from this study.

Although the reported number was not large, there seemed to be many more clusters (18) in Tanintharyi Region that intended to move to Mon State while migration from Tanintharyi Region to Shwegyin, from Mon State to Tanintharyi Region or Shwegyin Township, or from Shwegyin Township to Mon State were reported to be very rare (1-2 clusters each).

3. Accessibility to Public Health and Malaria Services

3.1 Accessibility to Public Health Facilities

Out of the 3,805 clusters identified, 58% of them reported that the nearest public health facility to their locations was the Sub-Rural Health Centre (Sub-RHC); followed by RHC (23%), Station Hospital (SH; 9%), and Township Hospital (TH; 9%).Similar trends were observed in most of the studied townships.However,more of the clusters in Palaw were closer to SH than RHC (16% vs. 8%); and more of the clusters in Dawei (31% vs. 2%), Launglon (15% vs. 8%), Thanbyuzayat (11% vs. 4%), Bilin (8% vs. 2%), and Shwegyin (12% vs. 2%) were closer to TH than SH.This could implythat a number of the clusters in these areas were closer to town than to rural areas.None of the mapped clusters in Kawthaung reported TH as the nearest public health facility, probably because the TH is located in the urban area at the tip of the most southern part of the country.

Since much of the information related to accessibility to public health facilities obtained from the mapping were unrealistic, much of the information had to be excluded from the analysis and only an overall picture could be viewed.Overall, residents in most of the clusters could access the nearest public health facility within 15-30 minutes by car with a cost between MMK500-8,000; probably because majority of the clusters identified were CoV and SC that were located close to the village.However, exceptions were found inChaungzon, Thayetchaung, and Bokpyin where up to one hour with up to MMK 10,000 were required to access the nearest health facility by car.Most of them were also accessible by motorcycle that required similar amount of time and cost as traveling by a car.Many were also accessible by bicycle or on foot within one hour but some required a few hours.Kyunsu, Shwegyin, and Bokpyin Townships were the only areas that a boat was reported as a more common means for transportation and usually took more than 1 or 1.5 hours to access the nearest public health facility and mostly cost between MMK2,000-5,500.

3.2 Availability of Malaria Services

Several types of malaria service providers were reported to be available in all the mapped townships[1].In summary, majority (68%) of the mapped clusters in Shwegyin quoted unprofessional providers who may or may not have been trained on malaria[2] as available malaria service providers, followed by trained malaria service providers[3] (16%).More clusters in Palaw and Thayetchaung reported trained malaria service providers (71% and 89%) and unprofessional providers (57% and 54%).Clusters in Myeik, Launglon, Yebyu, all in Tanintharyi Region, reported similar proportions of malaria service providers, professional providers[4], and unprofessional providers (40%-52%).Bilin and Kyunsu Townships reported more of the professional providers (39% and 45%), and unprofessional providers (54% and 43%), but less of the malaria service providers (24% and 20%).Kawthaung and Thaton Townships tended to have all including unknown types of malaria service providers.Clusters in larger townships including Dawei and Tanintharyi in Tanintharyi Region and Chaungzon, Kyaikmaraw, Mudon, Paung, and Thanbyuzayat in Mon State tended to reported more of the availability of professional providers for malaria services for their clusters (52%-86%).Bokpyin (48%) and Mawlamyine (51%) were the only townships that more of the mapped clusters reported physician as available malaria service provider.On the other hand, Ye is the only township that the vast majority of the mapped clusters (93%) quoted other type of malaria service provider but the detail was unknown.

Although the question was unclear, approximately 28% of the mapped clusters reported that there were "other" national/international non-government organizations (NGO) working on malaria in the mapped areas.This was reported from all except Bilin, Kyaikto, and Ye Townships in Mon State where IOM was the prime provider. This could, perhaps, be interpreted as the organizations other than the mapping implementersalthough most of the targeted townships were mapped by the government staff and IOM is, in fact, not an NGO.The detail breakdown of the NGO providing malaria services in the mapped townships revealed that Population Service International, World Vision Foundation, and Medicin San Frontier were the key NGO service providers in Tanintharyi Region, whereas Population Service International and IOM were the key providers in Mon State.Only Myanmar Health Assistant Association was reported as the NGO working on malaria in the mapped areas in Shwegyin Township.Almost 70% of the clusters in Yebyu Township, Tanintharyi Region could receive malaria services from the oil companies, and only one cluster in Kawthaung could receive the service from the "company" but the type of business was not reported.Unfortunately, as the tool did not specifically intend to explore availability and access to private health facilities and/or drug outlets, this information was not available.

4. Reported Malaria Epidemiology

The 2011 data related to malaria epidemic from all 21 townships were obtained as shown in Map 5.Overall, reported malaria morbidity rates in all the 10 townships of ***Tanintharyi Region*** and in Shwegyin Township in Bago (East) were much higher than in Mon State.Striking morbidity rates were found in Myeik (66.4 per 1,000 population), followed by Kawthaung (58.6) andLaunglon (55.4) Townships; all with high proportions of migrant clusters living/working in plantations or hillside agricultural farms (55% - 77%).The rest of the townships in Tanintharyi reported lower rates between 28.2 and 45.3 malaria cases per 1,000 population.***Shwegyin Township*** reported similar level of malaria morbidity rate (46.5) as in Tanintharyi Region.Among the 10 townships in ***Mon State***, reported malaria morbidity rates were much higher in Thanbyuzayat (18.4), Bilin (17.7), Kyaikto (17.4), and Ye (13.6) Townships but these were still much lower than those of Tanintharyi Region and Shwegyin and the rest of the townships reported only between 2.4 and 7.9 cases per 1,000 population.The higher epidemic townships in Mon State tended to divide into the

[1] *Multiple answers were allowed, thus, the total percentages might exceed 100%.*

[2] *Such as Auxiliary Midwife, Trained Traditional Birth Attendant, Village Chief, Village Practitioner, Community Health Worker, Amy, and Medicine Seller*

[3] *Malaria volunteers from both government and non-government sectors and public health staff*

[4] *Including Physician, Lady Health Visitor, Midwife, and Medical Assistant*

most northern (Kyaikto and Bilin) and the most southern (Thanbyuzayat and Ye) townships with smaller sizes of population but larger proportions of MMP.Nevertheless, it is important to note that the current routine malaria monitoring system reports the cases based on where the cases are detected and does not disaggregate residential status, i.e. local or migrant residents.Therefore, the areas with higher reported malaria morbidity should not be considered merely as a high risk area as such.For instance, during the field visit to Bilin Township in Mon State by the author, a couple of migrant workers arriving from another state/region tested positive for malaria infection.These cases were reported as Bilin cases although the infections obviously occurred outside of Mon State according to the patient interviews (Jitthai N, 2012).However, the imported cases could, perhaps, contribute to sustaining malaria parasite in the studied areas if the patients did not receive appropriate care and treatment.

Overall, more than half of the cases reported in most of the 21 townships wereP.*f*. malaria cases (50%-98%), but tended to be extraordinary high in Bokpyin (98%), Thaton (83%), and Yebyu (80%).These, however, did not necessarily correlate to the percentage of severe cases admitted at the public health facilities as more of the admission rates were reported from Ye (6%), Thaton (4%), Kyaikto (3%), and Chaungzon (2%).Likewise, P.*f*. case ratescould not be used as a projection for mortality as much higher mortality rates were reported from Dawei (8.9 per 100,000 population), Myeik (6.2), and Bokpyin (5.7).As well, this could be due to the current routine health information system as Dawei and Myeik Townships hosted the referral hospitals where the more severe cases are referred to; resulting in higher deaths reported from these areas.Bokpyin is a neighbouring township to the north of Kawthaung where a very high malaria morbidity rate was reported.As the identified settlements were spread across the narrow and long Kawthaung Township, accessing to the hospital in Bokpyin could probably be more convenient for those residing in the northern part of Kawthaung than accessing Kawthaung Township Hospital that is located at the very end tip of the country.However, a further investigation will be required to better explain the actual situation.

Map 5. Malaria Situation in 21 South-eastern Townships of Myanmar

5.1) Morbidity Rate Per 1,000 Population and Percentage of P.*f*. Malaria Cases by Township

5.2) Mortality Rate Per 100,000 Population and Percentage of Severe Cases Admitted by Township

5. Mapping of Malaria Hotspots

Although the 21 studied townships are categorized as Tier I area for MARC Framework, it is important to note that not all sites are created equally in terms of malaria risk.To determine the levels of risk factors, a triangulation of relevant data was conducted as shown in the Table 2 below, although it is to note that this analysis did not include all contributing factors to malaria situation but rather limited to available data at the time of this report writing.

Among the 21 townships, it is obvious that Shwegyin faces a lot more challenges than other townships in almost all aspects; i.e. higher proportions of the population that could be considered higher risk groups for malaria including male, migrant, forest dweller, and those involve in high risk work environment.Morbidity rate in Shwegyin was also relatively high comparing the other townships; reflecting the chance for further transmission if preventive measures were not fully in place.Half of the 10 townships in Tanintharyi Region could also be considered hotspots for malaria with similar situation as Shwegyin; e.g. Thayetchaung, Launglon, Yebyu, Dawei, and Kawthaung Townships.Risk factors in the 10 townships of Mon State identified through this mapping exercise were generally low comparing to Shwegyin and Tanintharyi Region, but Ye, Thanbyuzayat, Kyaikmaraw, Bilin, and Kyaikto Townships could probably be considered hotter spots for malaria concern.

Table 2. Mapping of Malaria Hotspots

State/ Region	Township	% In-migrant Cluster	% Migrant Population	% Male Population *	% Involved in High Risk Work Environment **	% Forest Dweller ***	Morbidity Rate / 1,000 Pop.
Bago (E)	Shwegyin	25.0%	82%	63%	77%	32%	46.5
Mon	Bilin	54.9%	24%	48%	26%	9%	17.7
	Chaungzon	93.6%	2%	49%	11%	0%	4.7
	Kyaikto	71.3%	34%	48%	44%	3%	17.4
	Kyaikmaraw	98.2%	9%	56%	61%	3%	7.5
	Mawlamyine	96.5%	3%	49%	14%	0%	2.4
	Mudon	96.3%	7%	49%	47%	2%	4.8
	Paung	84.2%	5%	50%	50%	0%	7.4
	Thanbyuzayat	97.3%	13%	49%	33%	4%	18.4
	Thaton	56.3%	12%	42%	52%	3%	7.9
	Ye	85.5%	30%	49%	32%	12%	13.6
Tanintharyi	Bokpyin	98.4%	48%	59%	78%	7%	28.2
	Dawei	95.1%	91%	67%	49%	8%	38.0
	Kawthaung	95.7%	37%	54%	84%	4%	58.6
	Kyunsu	27.3%	30%	51%	48%	2%	45.3
	Launglon	85.7%	95%	59%	59%	31%	55.4
	Myeik	29.3%	38%	53%	80%	7%	66.4
	Palaw	11.6%	24%	50%	57%	11%	35.2
	Tanintharyi	41.2%	9%	50%	55%	5%	44.7
	Thayetchaung	80.3%	98%	65%	79%	24%	37.2
	Yebyu	87.1%	71%	69%	63%	6%	29.2

Notes: ** Local residents and migrants combined as the data could not be disaggregated*
*** Forest-related, plantation and hillside farming, mining, hydropower plants, and the like*
**** % among migrant population only according to the mapping tool, not actual demography*

RECOMMENDATIONS

Despite of limitations and challenges, this mapping exercise provided some useful information not only for further development of malaria programmatic responses but also for drawing lessons learned for appropriate design and implementation of future similar studies.Based upon experiences from implementing this study, its key findings, and previous experiences from programmes addressing migrant health needs, the following are recommended.

I. For Future Design and Implementation of Mapping Study

1.1 Study Protocol, Procedures, and Tool

As in any research study, clear objectives and scope, a thorough and detailedprotocol, clear operating procedures, and effective tool(s) are required, and it is crucial that these are understood and standardized among the different contributors.In particular, the protocol and tool should address the following so that the study findings can inform intervention designs.

1.1.1 Defining targeted population appropriately:In this case,the MMP should be defined *in the context of malaria*, e.g. individuals who move to and/or from the endemic/studied areas for a certain period of time and live and/or work at a certain distance from forest and/or forest-like settings.Aetiology of malaria should also be considered when defining the targeted MMP. The meaning of "migrant" versus "mobile population" also requires definition within this context, as these usually represent disparate typologies, risks, and vulnerabilities..

1.1.2 Capturing a full picture of population migration in relation to malaria risk:The study should be able to draw a full picture of migration process and associated risks to malaria at each stage of migration process.This will help determine if the targeted MMP: 1) pre-exposed to malaria transmission in their ***source communities*** (i.e. whether they come from endemic areas); 2) have the risks of exposing themselves to malaria transmission while on the move or in ***transit***, i.e. whether they travel through endemic areas and experience mosquito bites from dusk to dawn; and 3) live/work at the ***destinations*** with high malaria burden.Assessing their means for migration, as well as seasonal migration which is particularly common in Myanmar (IOM, 2012),will also be useful for informing strategic locations and time for malaria interventions.It is also important not to assume that the MMP will always ***return*** to their home towns.While some do return to their source communities, many tend to further migrate to where the opportunities are and this should be taken into consideration when designing interventions targeting MMP.In addition, as international migration is common and south-east Myanmar serves as source, transit, destination, and return communities for population migration between Myanmar and Thailand and beyond, it is also important to capture information on trans-national migration and its associated risks to malaria transmission as well as diagnosis and treatment-seeking behaviour while abroad.

1.1.3 Assessing work environment rather than occupations of the targeted population: A conventional way for obtaining information on the occupation may not be very helpful in the malaria context.For example, a security guard in a factory located far from the forest will not have the same risk as a security guard at a dense rubber plantation or at a gold mine.A farmer near the village settlement will not have the same risk as a farmer engaged in hillside cultivation.

1.1.4 Integrating relevant information related to malaria transmission to the study:Since malaria is also a behaviour-driven disease, factors such as availability and utilization of protective measures among the targeted population are also essential to determine level of risk and vulnerability.As malaria tends to be confined to forest areas, information on forest coverage and vector endemicity should also be taken into account for this type of study.

1.1.5 Integrating qualitative methods to the study:Integrating qualitative methods to the mapping exercise will facilitatericher understanding both migration and malaria situations.While the quantitative method provides information on what is happening in relation to migration and malaria situations, qualitative methods can complementby explaining how the situation has evolved and what should be expected and planned for.

1.2 Management/Monitoring of the Study from Start to Finish

A thorough training should be provided to the data collection team, from the background and objective of the study to interpretation of each question on the study tool as well as how to record the information/ data obtained on the form to avoid confusion.One lead researcher should be identified to be responsible for facilitating and overseeing the entire exercise for a cohesive approach among study implementing partners. This will also support to ensure the quality and consistency of the data collected and provision of close monitoring and supervision of the various data collection teams.The data collected should be reviewed and verified, if needed, prior to data entry.If the GPS device is to be used, the GPS readings should be recorded on the mapping form as well as be saved to the e-file for backup.When possible, data entry variables should be locked and the lists of standardized answers be provided to the data entry operator to avoid typing errors.

1.3 Informant Selection

Expert opinion can be useful in understanding a general picture of the issue of interest; for example, to obtain an initial idea of how/where to identify MMP or to forecast migration volume and flows.However, the “experts” or “key informants” usually lack the first hand information on the situation and cannot represent the MMP.It would be more worthwhile to conduct the study among MMP themselves and learn more about their lives and living and how they live with malaria issues.

2. For Programmatic Response

Based on the limited available data, the following strategies for programmatic responses are recommended for addressing malaria issues among MMP in the 21 townships.Additional guidance for delivering malaria services to MMP can be found in the publication “Guidelines on the Prevention and Control of Malaria for Migrants in Myanmar”,also published under IOM’s “Malaria on the Move” series.

2.1 Identify Higher Risk Groups

MMP can be defined differently and they may or may not be at risk for malaria infection due to several factors.It is important to recognize the fact that migration in itself is not a definitive risk for contracting or spreading malaria, and that not all MMP will affect/be affected by the malaria situation.To maximize the benefit of limited resources for a greater impact, identifying and reaching highest risk groups should be encouraged.This, however, requiresreconsideration on the definition of high risk groups.According to this study, it was clear that the vast majority of the settlements mapped were in easier to access areas while majority of them can access the nearest public health facilities within 15-60 minutes by various means including by bicycle and on foot.

In general, migration volume could be smaller during the rainy season, but for malaria programming, the locations and sectors in which the target population is engaged should also be considered.For example: some mining areas are more active during the rainy season since they need a large amount of water for mining, but the workers could become isolated due to poor road access. In such workplaces, it would be highly justifiable for involvement of well-trained volunteers and stockpiling of RDT and essential drugs; on the other hand, some other types of mining tend to avoid the rainy season for fear of land slide;forest-

goers who collect bamboo shoots visit forests during the first half of the rainy season when malaria transmission is at its peak; and workers involved in the fishing industry regularly change ports according to the lunar cycle,high winds, or for monsoon season. Some fish processing sites are located in malarious areas.

In principle, malaria programming requires a combination of seasonal, location-based, and population-based approaches, and therefore, the areas with a combination of the following criteria should be prioritized:

1. Areas with deep forests and forest-like environment, e.g. dense plantations, mining areas, hydropower plants;
2. Areas where malaria cases, including drug-resistant malaria, are consistently reported;
3. Areas where high volumes of population movement takes place, both into and out of the area; and
4. Areas where levels of malaria knowledge and preventive behaviours of the inhabitants, regardless of their residential status, are low.

Identifying MMP clusters in higher risk settings, however, can be a challenge since many of these settings are difficult to access and might not be known by the local residents.One effective way to identify where transmission takes place and the volume of population at risk is through patient investigation.If the taking of migration and medical history iseffectively explored, this will aid in identifying risk areas and also provide insight to the array of factors affecting the patient's (and/or his/her family's) treatment literacy, treatment administration, and outcome that can be useful for the containment of drug-resistant malaria.The information on indigenous/imported cases (and from where) should be added to routine reporting system for further analysis and planning.

Another, effective measure is to facilitate close communication among multisectoral actors directly involved in or who may come across the four key criteria listed above.A systematic monitoring of evolving risk environment or factors and population migration should be put in place.For example, development projects are usually implemented in forests orforest-like environment (e.g. hydropower plants, natural gas pipeline installation, road and railway construction) and usually require a medium or long-term plan.Therefore, forecasting of migration, environmental changes, and associated malaria risks is achievable and plans and services for malaria control can be put in place prior to arrival of the workers.Entrepreneur societies should be advocated and involved in the entire process of malaria programming from the design to monitoring and evaluation.Mapping of workplaces hiring MMP could well support a more effective implementation design as well as extending its scope and scale to reach additional populations.

2.2 Promote the National Malaria Campaigns and Safe Migration

Migration is a natural phenomenon of humankind, and major internal and trans-national migration will persist into the indefinite future.It was evident from this study that the MMP were from almost all the townships across Myanmar, including many low or non-endemic areas for malaria.With improved infrastructure and telecommunication systems, it might be worthwhile to conduct a national campaign to raise the public awareness on the threat of malaria, and especially drug-resistant malaria.Safe and healthy migration should also be included in the campaign to ensure that the audience gains some basic information on how to migrate safely, e.g. how/where to seek information on the places they are moving to, what they should prepare prior to their departure, and what they should do or where to seek help if needed after their arrival at destinations.

2.3 Conduct Targeted Interventions in Key Source Communities

Limiting malaria programming to destination sites, i.e. the 21 studied townships, might not be effective for malaria control and containment since many MMP could not be reached after their arrival.This study revealed that there were some key source areas, especially in Bago (East), Ayeyarwady, and Yangon Regions.In addition to the national campaign, these regions could be prioritized for targeted malaria interventions.Pre-departure programme could be conducted across these regions both in the communities and at schools to equip them with the knowledge and skills to protect themselves before they enter the workforce in the high risk zone.Since the reasons for migration vary markedly, it is unlikely that addressing the issue of malaria alone will have a strong impact on migrants.Therefore, it is critical that service providers understand the circumstances of their migration and implement malaria activities in the context of the broader "safe migration" concept.Although returned migrants to the non-endemic areas, i.e. Ayeyarwady and Yangon Regions might not pose a concern on spread of malaria due to lack of the parasite vector but both availability and accessibility for early diagnosis and appropriatecase management systemsoutside of the Tier I area (especially in Bago (East), Ayeyarwady, and Yangon Regions)should be urgently strengthened to meet the aim fordrug-resistant malaria containment.

2.4 Get "Back to Basics" on Strategic Information, and Encourage Data Analysis and Maximize Data Use at Field Implementation Level

Strategic information should be centred on the three basic epidemiological elements of time, place, and person.Mapping of high risk times, high risk places, and high risk populations isimportant for public health problem solving, but it also needs to be conducted on a regular basis with well thought thorough tools and plans for data use.Although the 21 townships in south-east Myanmar are categorized as Tier I for containment of drug-resistant malaria, it is very important to be aware that not all the locations are created equally.Even within one township, the situation and risk factors in different village tract and villagesmight not alwaysbe the same.Both mapping and other types of routine reporting systems should be conducted, analysed, and utilized at the local levels for them to be most relevant and effective.It is highly recommended that a routine monitoring and reporting of population movement and relevant factors be conducted at the village level and cover the entire village catchments area rather than only areas that are easier to access(that are likely to be lower risk areas).Some simple but powerful tools such as sketch map showing what/who is where and a simple table or spreadsheet for tally of essential data (e.g. population movement and personal protective measures) could be utilized to capture essential information,preferably seasonally if not monthly.The information that is not going to be used should not be collected to avoid burden among the data manager and planners, but most importantly, the collected data should be analysed and its use should be maximized to fine tune the implementation.Lessons learned from this study should be utilized to modify future "routine" mapping at the village level.Results from the standardized routine mapping can then be pooled to monitor trends at higher levels, from township to national, for specific/interested time periods of the year, preferably biannually and/or when the signs for situation changes took place such as after large-scale natural and/or human-made disasters or changes in employment opportunities or policies at local, national, and international levels that affect population migration.

BIBLIOGRAPHY

Abe T,*et al*.

2009 Risk Factors for Malaria Infection among Ethnic Minorities in Binh Phuoc, Vietnam. *Southeast Asian J Trop Med Public Health*. 40(1).

American Refugee Committee (ARC).

2007 *Strengthening the Control of Infectious Diseases among Burmese Migrants and Local Thai Populations along the Thai-Burmese Border*. A Report Submitted to the United State Agency for International Development (USAID); Cooperative Agreement No. 486-A-00-04-00019-00.

Bosson A.

2007 *Forced Migration/ Internal Displacement in Burma*. Internal Displacement Monitoring Centre and Norwegian Refugee Council.

Delacollette C, *et al*.

2009 Malaria Trends and Challenges in the Greater Mekong Subregion.*Southeast Asian J Trop Med Public Health*. 40(4): 674-691.

Dysoley L, *et al***.**

2008 Changing patterns of forest malaria among the mobile adult male population in Chumkiri District, Cambodia**.** *Acta Trop*. 106(3):207-212.

International Organization for Migration (IOM)

2011 Reproductive and HIV and Sexual Health Activity in Myanmar. Presentation at the Regional Workshop on Migrant Health Program, Bangkok, Thailand, 25-31 July 2011.

2012 Guidelines on the Prevention and Control of Malaria for Migrants in Myanmar.

Jitthai N.

2011 Personal communication with INGO staff implementing malaria activities in Kraburi District, Ranong Province. November.

2012 Personal communication with community leaders and community members in five townships of Mon State. December.

2013 "Migration and Malaria" in Mekong Malaria Monograph III.*Southeast Asian J TropMed Public Health*. Vol. 43 (Supplement 1) 2012.

Lewis D.R, *et al*.

2010 *Forecasting Migration Flows: The Relationships among Economic Development, Demographic Change and Migration in the Greater Mekong Subregion*. International Organization for Migration (IOM). Draft Final Report Submitted to the Asian Development Bank on 1 April 2010.

Ministry of Health (MOH) and World Health Organization (WHO).

2011 *Strategic Framework for Artemisinin ResistanceContainment in Myanmar (MARC) 2011 2015*. Yangon.

Skidmore M and Wilson T.

2007 *Myanmar: The state, community and the environment*. ANU E Press and Asia Pacific Press, the Australian National University. Canberra, Australia.

United Nations Development Programme (UNDP).

2008 *The Human Development Initiative of UNDP, Myanmar: Targeting the Most Vulnerable (Updated version)*. Yangon, Myanmar.

World Health Organization (WHO).

2012a *World Malaria Report 2012*. Global Malaria Programme. Geneva.

2012b *Update on Artemisinin Resistance - April 2012.* Global Malaria Programme. Geneva. Available fromhttp://www.who.int/malaria/publications/atoz/arupdate042012.pdf. (accessed on11 January 2013).

ANNEXES

Annex I. Concept Note

Annex II. Study Tools

Annex III. List of GPS Reading Corrections

Studied Sites	Village Tract/Village	RHC	Sub-center	Location/Work Type	Recorded N	Recorded EO	Shifted N	Shifted EO	Variance N	Variance EO
Bago (East) Region										
Shwegyin	Ahtet Mae Zaung	Than Seik	Yinn Nyein (S)	Rubber Plantation	18.06317	96.06199	18.08559	97.06512	-0.02242	-1.00313
	Chay Taw Yar	Than Seik	Chay Taw Yar	Rubber Plantation	17.96786	96.37516	17.96786	96.89163	0.00000	-0.51647
				Rubber Plantation	17.96786	96.37516	17.96069	96.89163	0.00717	-0.51647
				Rubber Plantation	17.95458	96.73781	17.96622	96.89638	-0.01164	-0.15857
				Rubber Plantation	17.95882	96.81252	17.96900	96.89690	-0.01018	-0.08438
				Rubber Plantation	17.75842	96.81742	17.95627	96.89307	-0.19785	-0.07565
				Rubber Plantation	17.93251	96.84624	17.96742	96.90152	-0.03491	-0.05528
	Done Zayit	Done Zayit	Sone Kone	Rubber Plantation	17.28847	96.89911	17.78342	96.90987	-0.49495	-0.01076
				Wood Cutting	17.85511	96.01930	17.78786	96.91035	0.06725	-0.89105
				Bamboo Cutting	17.83623	96.00894	17.77827	96.89339	0.05796	-0.88445
				Bamboo Cutting	17.85257	96.01837	17.78195	96.89984	0.07062	-0.88147
				Gold Mine	17.82075	96.02381	17.77642	96.90407	0.04433	-0.88026
				Timber	17.14818	96.94502	17.78660	96.90198	-0.63842	0.04304
	Laykay	Laykay	Nayminaung	Agricultural Farm	17.06730	97.36205	17.33948	97.43677	-0.27218	-0.07472
	Nyaung Chae Htuk	Kun Seik	Nyaung Chae Htuk	Rubber Plantation	17.65191	96.34794	17.65191	96.92897	0.00000	-0.58103
	Pa Dae Kaw	Pa Dae Kaw	Pa Dae Kaw	Gold Mine	18.20745	96.29923	18.16800	96.81570	0.03945	-0.51647
				Gold Mine	18.17647	96.34337	18.16212	96.82398	0.01435	-0.48061
				General Work	18.27221	96.80604	18.17910	96.81186	0.09311	-0.00582
	Saw Pae Doe	Than Seik		Gold Mine	18.11382	96.22364	18.14610	96.92303	-0.03228	-0.69939
				Gold Mine	18.11431	96.22853	18.14300	96.92433	-0.02869	-0.69580
				Gold Mine	18.11415	96.29344	18.16436	96.82426	-0.05021	-0.53082
				Gold Mine	18.11514	96.32378	18.16177	96.81514	-0.04663	-0.49136
				Trading	19.07719	96.83914	18.14467	96.92163	0.93252	-0.08249
				Rubber Plantation	17.06217	96.85967	18.14532	96.92782	-1.08315	-0.06815
				Gold Mine	18.09554	98.91242	18.14217	96.93620	-0.04663	1.97622
	Thayet Chaung	Than Seik		Rubber Plantation	17.07225	96.87270	18.00835	96.89781	-0.93610	-0.02511
	Za Lote Gyi	Kun Seik	Za Lote Gyi	Rubber Plantation	17.63350	97.93604	17.62991	96.91027	0.00359	1.02577
				Wood Cutting	17.61815	97.95644	17.61456	96.93067	0.00359	1.02577
Mon State										
Bilin	Mepali	Natgyi	Natgyi	Agricultural Farm	17.56058	97.24515	17.56147	97.25760	-0.00089	-0.01245
	Yetkanthema	Winka	Paingdalay	Agricultural Farm	17.14674	97.03884	17.18944	97.05396	-0.04270	-0.01512
	Kanni	Sittaung	Kanni	Agricultural Farm	17.28021	96.53424	17.51788	96.97019	-0.23767	-0.43595
	Kyaukkalat	Sittaung	Kyaukkalat	Agricultural Farm	17.29627	96.53025	17.53394	96.96620	-0.23767	-0.43595
		Kyaukkalat		Brick Making	17.49575	97.88285	17.49254	96.89868	0.00321	0.98417
	Kyuntaw	Kyuchaung	Kwatbain	Rubber Plantation	17.24899	96.56293	17.48666	96.99888	-0.23767	-0.43595
	Mayanchaung	Sittaung	Mokepalin	Rock Mine	17.25723	96.55005	17.49490	96.98600	-0.23767	-0.43595
				Agricultural Farm	17.15703	96.55387	17.51550	96.89790	-0.35847	-0.34403
	Mayankone	Sittaung	Motepalin	Rubber Plantation	17.25230	96.54991	17.48997	96.98586	-0.23767	-0.43595

Kyaikto	Pyinkatoekone	Sittaung	Ingabo	Rubber Plantation	17.26529	96.53976	17.50296	96.97571	-0.23767	-0.43595
				Rock Mine	17.24895	96.56292	17.48662	96.99887	-0.23767	-0.43595
				Agricultural Farm	17.25332	96.56644	17.49099	97.00239	-0.23767	-0.43595
	Seinkalal		Shwepyihein	Rock Mine	17.89125	96.96920	17.58029	96.98843	0.31096	-0.01923
	Sittaung	Sittaung	Sittaung	Fishing	17.26721	96.52652	17.50488	96.96247	-0.23767	-0.43595
	Sutpanu	Kyaikhto	Sutpanu	Fishing	17.24185	96.53976	17.47952	96.97571	-0.23767	-0.43595
	Tharyarkone			Rubber Plantation	17.53211	96.29614	17.49272	97.04723	0.03939	-0.75109
	Theinzayat	Theinzayat	Theinzayat	Rubber Plantation	17.30263	96.53285	17.54030	96.96880	-0.23767	-0.43595
			Zeepyaung	Rock Mine	17.31681	96.54652	17.55448	96.98247	-0.23767	-0.43595
	Zeepyaung	Yinpyintaw	Zeepyaung	Rubber Plantation	17.30992	96.55984	17.54759	96.99579	-0.23767	-0.43595
				Rubber Plantation	17.32288	96.56770	17.56055	97.00365	-0.23767	-0.43595
				Agricultural Farm	17.31491	96.75745	17.50399	96.99512	-0.18908	-0.23767
		Theinzayat	Zeepyaung(5)	Rubber Plantation	17.32283	96.56773	17.56050	97.00368	-0.23767	-0.43595
				Rubber Plantation	17.32283	96.56773	17.56050	97.00368	-0.23767	-0.43595
Kyaikmaraw	Chaung Nakhwa	Chaung Nakhwa		General Work	16.16434	97.46451	16.16339	98.03288	0.00095	-0.56837
	Hla Kazing	Chaung Nakhwa	Hla Kazing	Rubber Plantation	16.16447	47.91039	16.16400	97.91000	0.00047	-49.99961
				Rubber Plantation	16.86000	97.90844	16.16217	97.88001	0.69783	0.02843
	Htaw Pa Lawt	Chaung Nakhwa	Hla Kazing	Rubber Plantation	16.14417	97.33176	16.14988	98.02199	-0.00571	-0.69023
				Rubber Plantation	16.15152	97.38999	16.15152	98.03548	0.00000	-0.64549
	Kawt Pa Laing	Tarana	Dhamma Tha	General Work	16.52369	97.89759	16.50190	97.84190	0.02179	0.05569
	Kawt Sein	Ka Toe	Kawt Sein	Agricultural Farm	16.55678	97.61392	16.55246	97.63550	0.00432	-0.02158
				Agricultural Farm	16.54630	97.62661	16.54126	97.63237	0.00504	-0.00576
	Kyauk Kwe	Chaung Nakhwa	Paw Law	Rubber Plantation	16.17879	97.32807	16.16165	98.05448	0.01714	-0.72641
	La Mu Kho	Phar Thein	Ma Yin Kone	Rubber Plantation	16.28000	97.56000	16.29047	97.93796	-0.01047	-0.37796
				Rubber Plantation	16.17000	97.56000	16.28412	97.90961	-0.11412	-0.34961
	Meal Tayoe	Chaung Nakhwa	Hla Kazing	Brick Making	16.17595	97.33358	16.15881	98.05999	0.01714	-0.72641
			Chaung Nakhwa	Brick Making	16.17484	97.34464	16.15770	98.07105	0.01714	-0.72641
			Hla Kazing	Rubber Plantation	16.17405	97.34619	16.15691	98.07260	0.01714	-0.72641
				Rubber Plantation	16.18148	97.33770	16.40312	97.77061	-0.22164	-0.43291
	Mi Ka Thit	Phar Thein	Ma Yin Kone	Agricultural Farm	16.18081	97.57598	16.29125	97.96822	-0.11044	-0.39224
				Agricultural Farm	16.17000	97.58000	16.28044	97.97224	-0.11044	-0.39224
				Rubber Plantation	16.20000	97.59000	16.31044	97.98224	-0.11044	-0.39224
				Rubber Plantation	16.18000	97.59000	16.29044	97.98224	-0.11044	-0.39224
				Rubber Plantation	16.19000	97.59000	16.30044	97.98224	-0.11044	-0.39224
				Agricultural Farm	16.29000	97.59000	16.30238	97.96606	-0.01238	-0.37606
				Rubber Plantation	16.20000	97.60000	16.27807	97.96178	-0.07807	-0.36178
				Rubber Plantation	16.48000	97.59000	16.37908	97.93464	0.10092	-0.34464
	Myaingtharyar	Myaingtharyar	Myaingtharyar Dathanta	Power Purified Water	16.62172	97.46018	16.47423	97.64652	0.14749	-0.18634
	Oo Lay	Peinae Kone	Oo Lay	Rubber Plantation	16.29200	97.32892	16.42719	97.67642	-0.13519	-0.34750
				Rubber Plantation	16.29550	97.33502	16.43351	97.68126	-0.13801	-0.34624
	Tarana	Tarana	Tarana	General Work	16.18824	97.76767	16.18129	97.80584	0.00695	-0.03817
		Tharyaraye	hwe Mying Thiri Ea	Carpenter	16.46665	97.52002	16.45442	97.63370	0.01223	-0.11368

Mudon	Gone Nyin Tan	Kamar Wet	Gone Nyin Tan	Brick Making	16.08994	97.44274	16.16004	97.71120	-0.07010	-0.26846
				Rubber Plantation	16.09274	97.44599	16.16284	97.71445	-0.07010	-0.26846
				Gardening	16.08793	97.44688	16.15803	97.71534	-0.07010	-0.26846
				Gardening	16.08973	97.45562	16.16302	97.71850	-0.07329	-0.26288
	Hmein Ga Nein	Kawt Kha Pon	Naing Pyaing	Agricultural Farm	16.30798	97.90651	16.32740	97.69516	-0.01942	0.21135
	Kamar Wet	Kamar Wet	Thein Kone	Rubber Plantation	16.08424	97.45203	16.15231	97.74033	-0.06807	-0.28830
				Rubber Plantation	16.07772	97.46793	16.14787	97.74061	-0.07015	-0.27268
			Main	Brick Making	17.13241	97.72220	16.15100	97.74400	0.98141	-0.02180
	Kawt Pa Ran	KawPaYan	KawPaYan	Agricultural Farm	16.24432	97.78071	16.23954	97.67396	0.00478	0.10675
	Kyone Phoike	TaKunTine	Wet Te	Gardening	16.73098	97.73889	16.25692	97.65380	0.47406	0.08509
	Phaldo	KaLawtThawt	Phaldo		16.10801	97.10801	16.11409	97.61853	-0.00608	-0.51052
	Taw Kuu	TaKunTine	Taw Kuu	Rubber Plantation	16.51730	97.75355	16.20734	97.67454	0.30996	0.07901
	Thein Kone	Kamar Wet	Thein Kone	Rubber Plantation	16.08693	97.44062	16.13313	97.73696	-0.04620	-0.29634
				Rubber Plantation	16.07767	97.44705	16.12387	97.74339	-0.04620	-0.29634
	Win Kamot	Kamar Wet	Gone Nyin Tan	Construction	16.09225	97.44775	16.13845	97.74409	-0.04620	-0.29634
Paung	Darein	Aa Hlatt	Darein	Monestry	16.42804	97.61709	16.56988	97.37900	-0.14184	0.23809
	Kamarbi	Htankyi	Htanlay	Agricultural Farm	16.12566	97.38233	16.63731	97.38740	-0.51165	-0.00507
	Kyonka	Netkyichaung	Kyonka	Stone Mine	16.61078	47.50477	16.61100	97.50500	-0.00022	-50.00023
	Yinn Nyein		Yinn Nyein (S)	Agricultural Farm	16.77417	97.87263	16.66610	97.48425	0.10807	0.38838
Thaton	Autkyin	Theinseik	Kyaikkaw	Agricultural Farm	17.02767	97.16840	17.06664	97.31844	-0.03897	-0.15004
	Danukatei	Kateigyi	Kateilay	Agricultural Farm	17.03398	97.13940	17.07977	97.25436	-0.04579	-0.11496
	Kateilay	Kateilay	Kateigyi	Agricultural Farm	17.03268	97.13812	17.05411	97.22483	-0.02143	-0.08671
	Kawtbain	Kyarpan	Daybrain	Brick Making	16.53047	97.21457	16.80698	97.35134	-0.27651	-0.13677
	Kyaikkaw	Kyaikkaw		Agricultural Farm	17.02359	97.16016	17.06841	97.29656	-0.04482	-0.13640
	Kyauktan	Kyarpan	Daybrain	Agricultural Farm	17.47260	97.23314	16.82741	97.37585	0.64519	-0.14271
			Kyonepar	Rubber Plantation	17.40660	97.07103	16.86845	97.39511	0.53815	-0.32408
		Kyarpan		Rubber Plantation	16.57543	97.25464	16.85194	97.39141	-0.27651	-0.13677
	Nankhekwetthit	Nankhekwetthit	Nankhekwetthit	General Work	16.55168	97.21200	16.82819	97.34877	-0.27651	-0.13677
	Naungkalar		Shanywar	Rubber Plantation	17.99652	97.36488	16.97923	97.33744	1.01729	0.02744
	Theinseik	Theinseik		Agricultural Farm	17.02849	97.16684	17.06649	97.31980	-0.03800	-0.15296
			Theinseik	Rubber Plantation	17.65708	97.23207	17.07136	97.31532	0.58572	-0.08325
				Rubber Plantation	17.53804	97.94622	17.07125	97.31293	0.46679	0.63329
	Winpa	Winpa		Agricultural Farm	17.86490	97.34044	17.07997	97.33747	0.78493	0.00297
	Wiyaw	Peinhnetaw	Wiyaw	Rubber Plantation	17.07416	97.66777	17.05370	97.29950	0.02046	0.36827
Thanbyuzayat	Damazaddy	Kyaikhami	Kyaikhami-2		16.02996	97.56228	16.02996	97.57677	0.00000	-0.01449
	Han Thar Wadi		Aung Mingalar	Military Camp	15.96138	97.93833	15.96983	97.73789	-0.00845	0.20044
	Hnit Kine	Kyaikhami	Hnit Kine	Rubber Plantation	16.03355	97.35286	16.05408	97.61971	-0.02053	-0.26685
					16.03387	97.35509	16.05681	97.61228	-0.02294	-0.25719
				Market	16.03391	97.36036	16.05202	97.61513	-0.01811	-0.25477
					16.03275	97.36190	16.05811	97.61064	-0.02536	-0.24874
	Htinn Shuu	Htinn Shuu	Lay Yin Kwin	Water Work	15.73786	97.90958	15.74148	97.76227	-0.00362	0.14731

Thanbyuzayat	Kwan That	Kyaikhami	Kwan That	Rubber Plantation	16.01446	97.38308	16.03378	97.66321	-0.01932	-0.28013
				Rubber Plantation	16.04432	97.33580	16.03949	97.65698	0.00483	-0.32118
				Hotel	16.02134	97.37483	16.04066	97.65496	-0.01932	-0.28013
					16.02063	97.38092	16.03995	97.66105	-0.01932	-0.28013
				Rubber Plantation	16.02064	97.38094	16.03996	97.66107	-0.01932	-0.28013
	Wae Win Ka Yar	Wae Kha Mi	Wae Win Ka Yar	Rubber Plantation	15.86534	97.87825	15.87379	97.81425	-0.00845	0.06400
	WarKhaYu	Kyon Ka Datt	WarKhaYu	Brick Making	15.48995	97.70941	15.97776	97.69734	-0.48781	0.01207
Ye	Andin	Kyaungywa	Kyaungywa	Agricultural Farm	15.19127	97.58464	15.27008	97.97526	-0.07881	-0.39062
	Aungtharyar	Hnitkayin	Lainmawchan	Rubber Plantation	15.61512	97.33737	15.61064	97.80594	0.00448	-0.46857
	Butarkone	Hnitkayin	Hnitkayin	Rubber Plantation	15.34166	97.47443	15.56440	97.77358	-0.22274	-0.29915
	Hnitkayin	Hnitkayin	Hnitkayin	Rubber Plantation	15.16547	97.56427	15.24428	97.95489	-0.07881	-0.39062
				Agricultural Farm	15.32523	97.45232	15.55150	97.77027	-0.22627	-0.31795
	Kwinshae	Kyaungywa	Kyaukmichaung	Rubber Plantation	15.16315	97.16077	15.32762	97.98313	-0.16447	-0.82236
				Rubber Plantation	15.15415	97.54107	15.23296	97.93169	-0.07881	-0.39062
	Kyaukmichaung	Kyaungywa	Kyaukmichaung	Agricultural Farm	15.17090	97.55394	15.24971	97.94456	-0.07881	-0.39062
				Rubber Plantation	15.76251	97.55594	15.28721	97.92362	0.47530	-0.36768
	Kyaungywa	Kyaungywa	Kyaungywa	Agricultural Farm	15.19118	97.59063	15.26999	97.98125	-0.07881	-0.39062
	Kyuntaw	Tumyaung	Tumyaung	Agricultural Farm	15.15182	97.55179	15.23063	97.94241	-0.07881	-0.39062
	Payarkone	Hnitkayin	lainmawchan	Agricultural Farm	15.36299	97.48132	15.56223	97.76871	-0.19924	-0.28739
				Rubber Plantation	15.36171	97.48537	15.56624	97.76806	-0.20453	-0.28269
Tanintharyi Region										
Bokgyin	Pokung Youre 2	Karathuriya		Oil Palm Plantation	10.64226	98.65106	10.63247	98.61582	0.00979	0.03524
Dawei	Maung Mae Shaung	Maung Mae Shaung		Rubber Plantation	14.21555	98.24973	14.18135	98.25590	0.03420	-0.00617
			Kam Kone	Rubber Plantation	14.20243	98.25197	14.18057	98.25309	0.02186	-0.00112
	Oak Tha Yan			General Work	14.07962	99.18699	14.06473	98.19330	0.01489	0.99369
				Construction	14.08019	99.19060	14.06530	98.19691	0.01489	0.99369
	Pakaryi	Pakaryi	Harmyingyi	Rubber Plantation	14.23559	38.33396	14.23600	98.33400	-0.00041	-60.00004
				Rubber Plantation	14.29112	98.35434	14.18348	98.29996	0.10764	0.05438
Myeik	Inngamaw	Inngamaw	Painnetaung	Rubber Plantation	12.25345	98.12032	12.41436	98.76394	-0.16091	-0.64362
					12.26185	98.41107	12.41624	98.74235	-0.15439	-0.33128
				Rubber Plantation	12.26241	98.41147	12.41680	98.74275	-0.15439	-0.33128
				Rubber Plantation	12.25047	98.41313	12.40486	98.74441	-0.15439	-0.33128
				Construction	12.27545	98.41316	12.42984	98.74444	-0.15439	-0.33128
				Rubber Plantation	12.24207	98.41334	12.39646	98.74462	-0.15439	-0.33128
				Rubber Plantation	12.23594	98.41352	12.39033	98.74480	-0.15439	-0.33128
				Rubber Plantation	12.25432	98.41386	12.40871	98.74514	-0.15439	-0.33128
				Rubber Plantation	12.25306	98.41423	12.40745	98.74551	-0.15439	-0.33128
				Palm Oil Plantation	12.26169	98.41425	12.41608	98.74553	-0.15439	-0.33128
				Rubber Plantation	12.24262	98.41463	12.39701	98.74591	-0.15439	-0.33128
				Rubber Plantation	12.27203	98.41569	12.42642	98.74697	-0.15439	-0.33128
				Rubber Plantation	12.27174	98.41591	12.42613	98.74719	-0.15439	-0.33128

Myeik	Inngamaw	Inngamaw	Painnetaung	Rubber Plantation	12.25262	98.41592	12.40701	98.74720	-0.15439	-0.33128
				Rubber Plantation	12.23397	98.42010	12.38836	98.75138	-0.15439	-0.33128
				Rubber Plantation	12.25324	98.42044	12.40763	98.75172	-0.15439	-0.33128
				Rubber Plantation	12.23436	98.42064	12.38875	98.75192	-0.15439	-0.33128
				Rubber Plantation	12.26332	98.42106	12.41771	98.75234	-0.15439	-0.33128
				Rubber Plantation	12.23494	98.42177	12.38933	98.75305	-0.15439	-0.33128
				Rubber Plantation	12.24004	98.42183	12.39443	98.75311	-0.15439	-0.33128
				Rubber Plantation	12.24476	98.42189	12.39915	98.75317	-0.15439	-0.33128
				Rubber Plantation	12.24468	98.42251	12.39907	98.75379	-0.15439	-0.33128
				Rubber Plantation	12.24349	98.42293	12.39788	98.75421	-0.15439	-0.33128
				Rubber Plantation	12.24336	98.42313	12.39775	98.75441	-0.15439	-0.33128
				Rubber Plantation	12.24454	98.42363	12.39893	98.75491	-0.15439	-0.33128
				Rubber Plantation	12.24493	98.42363	12.39932	98.75491	-0.15439	-0.33128
				Rubber Plantation	12.24547	98.42403	12.39986	98.75531	-0.15439	-0.33128
				Rubber Plantation	12.24153	98.42422	12.39592	98.75550	-0.15439	-0.33128
				Rubber Plantation	12.23553	98.48095	12.40073	98.78650	-0.16520	-0.30555
	Kyaukphyar	Thabutt	Kyaukphyar	Port	12.51774	96.69043	12.52229	98.70970	-0.00455	-2.01927
	Mazaw	Khonemaw		Rubber Plantation	12.33550	89.85198	12.35651	98.85794	-0.02101	-9.00596
	Sannawit	Inngamaw			No data	No data	12.47072	98.74866	-12.47072	-98.74866
			Painnetaung	Rubber Plantation	12.27185	98.41241	12.46628	98.73355	-0.19443	-0.32114
	Thabutt	Thabutt	Payetaung	Rubber Plantation	12.31531	98.72950	12.52416	98.75365	-0.20885	-0.02415
	Thamoke	Thamoke	Thamoke	Rubber Plantation	12.59928	98.11830	12.59228	98.75493	0.00700	-0.63663
Palaw	Hta Min Ma Sar	Pa Lauk	Hta Min Ma Sar	Rubber Plantation	12.12991	98.63469	13.14534	98.80753	-1.01543	-0.17284
	Kyauk Kar	Pala	Kyauk Kar	Fishing	12.78995	98.51771	12.77749	98.62532	0.01246	-0.10761
	To	Pala	To	Fishing	12.81943	98.60481	12.86361	98.69883	-0.04418	-0.09402
	Za Yat Seik	Pala	Za Yat Seik		98.68562	12.82457	12.82580	98.73500	85.85982	-85.91043
Tanintharyi	Nyaung Bin Kwin	Nyaung Bin Kwin	Tha Bot Leik	Rubber Scrape	12.20450	19.19403	12.20500	99.19400	-0.00050	-79.99997
				Mine	12.02807	19.22034	12.02800	99.22000	0.00007	-79.99966
Thayetchaung	Ka Zi	Nyaung Zinn	Pein Taw		No data*	No data*	13.90841	98.26392	-13.90841	-98.26392
	Pyin Phyu Thar	Pyin Phyu Gyi	Sone Sin	Rubber Plantation	18.78195	98.84198	13.73867	98.27555	5.04328	0.56643
				Rubber Plantation	13.78816	98.88821	13.74533	98.28275	0.04283	0.60546
Yebyu	Eain Da Yar Zar	Kanpauk	Eain Da Yar Zar	Palm Oil Plantation	14.70475	98.98522	14.65776	98.06966	0.04699	0.91556
	Gant Gaw Taung	Kanpauk		Rubber Plantation	14.59379	98.47790	14.58015	98.06711	0.01364	0.41079
	Zar Di	Kanpauk	Zar Di	Rubber Plantation	14.55668	99.00104	14.52485	98.02485	0.03183	0.97619

* GPS reading could not be performed due to the heavy rain

Annex IV. List of Mapped Settlements by Type, Pattern, and Township

State/Region	Township	Cut-off Village			Large Cluster		
		Permanent	Temporary	Unknown	Permanent	Temporary	Unknown
Bago (East)	Shwegyin	97 (11.7%)	377 (45.6%)	0 (0.0%)	22 (2.7%)	38 (4.6%)	0 (0.0%)
Total Bago (East) Region		**97 (11.7%)**	**377 (45.6%)**	**0 (0.0%)**	**22 (2.7%)**	**38 (4.6%)**	**0 (0.0%)**
Mon	Bilin	10 (7.9%)	9 (7.1%)	0 (0.0%)	7 (5.5%)	6 (4.7%)	6 (4.7%)
	Chaungzon	20 (18.3%)	47 (43.1%)	0 (0.0%)	1 (0.9%)	2 (1.8%)	1 (0.9%)
	Kyaikto	70 (47.6%)	9 (6.1%)	1 (0.7%)	5 (3.4%)	7 (4.8%)	2 (1.4%)
	Kyaikmaraw	25 (7.6%)	152 (46.3%)	0 (0.0%)	18 (5.5%)	28 (8.5%)	2 (0.6%)
	Mawlamyine	7 (4.8%)	51 (35.2%)	16 (11.0%)	8 (5.5%)	12 (8.3%)	9 (6.2%)
	Mudon	9 (5.5%)	36 (22.1%)	1 (0.6%)	11 (6.7%)	38 (23.3%)	1 (0.6%)
	Paung	26 (11.3%)	71 (30.9%)	12 (5.2%)	2 (0.9%)	8 (3.5%)	2 (0.9%)
	Thanbyuzayat	12 (3.5%)	91 (26.8%)	0 (0.0%)	44 (12.9%)	73 (21.5%)	0 (0.0%)
	Thaton	39 (15.7%)	15 (6.0%)	1 (0.4%)	13 (5.2%)	7 (2.8%)	0 (0.0%)
	Ye	8 (7.3%)	11 (10.0%)	1 (0.9%)	13 (11.8%)	4 (3.6%)	0 (0.0%)
Total Mon State		**226 (11.6%)**	**492 (25.3%)**	**32 (1.6%)**	**122 (6.3%)**	**185 (9.5%)**	**23 (1.2%)**
Tanintharyi	Bokpyin	2 (3.1%)	5 (7.7%)	0 (0.0%)	25 (38.5%)	6 (9.2%)	0 (0.0%)
	Dawei	10 (11.4%)	32 (16.4%)	0 (0.0%)	3 (3.4%)	10 (11.4%)	0 (0.0%)
	Kawthaung	2 (1.6%)	3 (2.4%)	0 (0.0%)	66 (52.0%)	6 (4.7%)	0 (0.0%)
	Kyunsu	44 (29.9%)	11 (7.5%)	0 (0.0%)	8 (5.4%)	24 (16.3%)	0 (0.0%)
	Launglon	39 (41.1%)	40 (42.1%)	0 (0.0%)	1 (1.1%)	2 (2.1%)	0 (0.0%)
	Myeik	6 (5.8%)	28 (27.2%)	0 (0.0%)	0 (0.0%)	18 (17.5%)	0 (0.0%)
	Palaw	9 (11.4%)	19 (14.1%)	7 (8.9%)	19 (24.1%)	4 (5.1%)	4 (5.1%)
	Tanintharyi	11 (14.3%)	5 (6.5%)	12 (15.6%)	6 (7.8%)	3 (3.9%)	13 (16.9%)
	Thayetchaung	28 (40.0%)	28 (40.0%)	0 (0.0%)	6 (8.6%)	0 (0.0%)	0 (0.0%)
	Yebyu	36 (19.9%)	79 (43.6%)	0 (0.0%)	10 (5.5%)	21 (11.6%)	0 (0.0%)
Total Tanintharyi Region		**187 (18.1%)**	**250 (24.2%)**	**19 (1.8%)**	**144 (14.0%)**	**94 (9.1%)**	**17 (1.6%)**

State/Region	Township	Small Cluster			Unknown Type/Village*			Total
		Permanent	Temporary	Unknown	Permanent	Temporary	Unknown	
Bago (East)	Shwegyin	121 (14.6%)	169 (20.5%)	1 (0.1%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	826 (100.0%)
Total Bago (East) Region		**121 (14.6%)**	**169 (20.5%)**	**1 (0.1%)**	**0 (0.0%)**	**1 (0.1%)**	**0 (0.0%)**	**826 (100.0%)**
Mon	Bilin	13 (10.2%)	22 (17.3%)	0 (0.0%)	0 (0.0%)	2 (1.6%)	52 (40.9%)	127 (100.0%)
	Chaungzon	1 (0.9%)	8 (7.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	29 (26.6%)	109 (100.0%)
	Kyaikto	25 (17.0%)	13 (8.8%)	0 (0.0%)	1 (0.7%)	1 (0.7%)	13 (8.8%)	147 (100.0%)
	Kyaikmaraw	11 (3.4%)	65 (19.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	27 (8.2%)	328 (100.0%)
	Mawlamyine	1 (0.7%)	28 (19.3%)	3 (2.1%)	0 (0.0%)	0 (0.0%)	10 (6.9%)	145 (100.0%)
	Mudon	9 (5.5%)	40 (24.5%)	1 (0.6%)	0 (0.0%)	0 (0.0%)	17 (10.4%)	163 (100.0%)
	Paung	4 (1.7%)	73 (31.7%)	8 (3.5%)	3 (1.3%)	4 (1.7%)	17 (7.4%)	230 (100.0%)
	Thanbyuzayat	3 (0.9%)	76 (22.4%)	0 (0.0%)	15 (4.4%)	0 (0.0%)	26 (7.6%)	340 (100.0%)
	Thaton	47 (19.0%)	42 (16.9%)	2 (0.8%)	19 (7.7%)	30 (12.1%)	33 (13.3%)	248 (100.0%)
	Ye	17 (15.5%)	23 (20.9%)	0 (0.0%)	12 (10.9%)	21 (19.1%)	0 (0.0%)	110 (100.0%)
Total Mon State		**131 (6.7%)**	**390 (20.0%)**	**14 (0.7%)**	**50 (2.7%)**	**58 (3.0%)**	**224 (11.5%)**	**1,947 (100.0%)**
Tanintharyi	Bokpyin	23 (35.4%)	4 (6.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	65 (100.0%)
	Dawei	15 (17.0%)	18 (20.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	88 (100.0%)
	Kawthaung	48 (37.8%)	2 (1.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	127 (100.0%)
	Kyunsu	4 (2.7%)	54 (36.7%)	2 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	147 (100.0%)
	Launglon	8 (8.4%)	5 (5.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	95 (100.0%)
	Myeik	0 (0.0%)	50 (48.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.0%)	103 (100.0%)
	Palaw	5 (6.3%)	8 (10.1%)	4 (5.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	79 (100.0%)
	Tanintharyi	6 (7.8%)	16 (20.8%)	4 (5.2%)	0 (0.0%)	0 (0.0%)	1 (1.3%)	77 (100.0%)
	Thayetchaung	6 (8.6%)	2 (2.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	70 (100.0%)
	Yebyu	19 (10.5%)	16 (8.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	181 (100.0%)
Total Tanintharyi Region		**134 (13.0%)**	**175 (17.0%)**	**10 (1.0%)**	**0 (0.0%)**	**0 (0.0%)**	**2 (0.2%)**	**1,032 (100.0%)**

Annex V. Estimated Population by Residential Status, Sex, Age, and Township

All Sites	Permanent Resident (Village)						Mobile & Migrant Population (Village/Clusters)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	51,176	*10.6*	53,240	*10.8*	**104,416**	*10.68*	8846	*10.61*	9182	*14.30*	**18028**	*12.21*	60,022	*10.6*	62,422	*11.2*	**122,444**	*10.9*
>5 years	431,705	*89.4*	441,420	*89.2*	**873,125**	*89.32*	74536	*89.39*	55043	*85.70*	**129579**	*87.79*	506,241	*89.4*	496,463	*88.8*	**1,002,704**	*89.1*
Total	**482,881**	***100.0***	**494,660**	***100.0***	**977,541**	***100.00***	**83382**	***100.00***	**64225**	***100.00***	**147607**	***100.00***	**566,263**	***100.0***	**558,885**	***100.0***	**1,125,148**	***100.0***
	Male	***49.4***	**Female**	***50.6***			**Male**	***56.49***	**Female**	***43.51***			**Male**	***50.3***	**Female**	***49.7***	**% Migrants**	**13.1%**

Bago (East)

Shwegyin	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	191	*9.8*	170	*10.6*	**361**	*10.1*	424	*4.1*	443	*7.8*	**867**	*5.5*	615	*5.0*	613	*8.4*	**1,228**	*6.3*
>5 years	1,763	*90.2*	1,434	*89.4*	**3,197**	*89.9*	9,808	*95.9*	5,224	*92.2*	**15,032**	*94.5*	11,571	*95.0*	6,658	*91.6*	**18,229**	*93.7*
Total	**1,954**	***100.0***	**1,604**	***100.0***	**3,558**	***100.0***	**10,232**	***100.0***	**5,667**	***100.0***	**15,899**	***100.0***	**12,186**	***100.0***	**7,271**	***100.0***	**19,457**	***100.0***
	Male	***54.9***	**Female**	***45.1***			**Male**	***64.4***	**Female**	***35.6***			**Male**	***62.6***	**Female**	***37.4***	**% Migrants**	**81.7%**

Mon State

Bilin	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	1,572	*14.7*	1,660	*14.2*	**3,232**	*14.4*	563	*16.4*	563	*15.9*	**1,126**	*16.2*	2,135	*15.2*	2,223	*14.6*	**4,358**	*14.9*
>5 years	9,087	*85.3*	10,050	*85.8*	**19,137**	*85.6*	2,868	*83.6*	2,970	*84.1*	**5,838**	*83.8*	11,955	*84.8*	13,020	*85.4*	**24,975**	*85.1*
Total	**10,659**	***100.0***	**11,710**	***100.0***	**22,369**	***100.0***	**3,431**	***100.0***	**3,533**	***100.0***	**6,964**	***100.0***	**14,090**	***100.0***	**15,243**	***100.0***	**29,333**	***100.0***
	Male	***47.7***	**Female**	***52.3***			**Male**	***49.3***	**Female**	***50.7***			**Male**	***48.0***	**Female**	***52.0***	**% Migrants**	**23.7%**

Chaungzon	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	5,525	*8.9*	5,705	*8.9*	**11,230**	*8.9*	132	*11.6*	122	*9.6*	**254**	*10.6*	5,657	*8.9*	5,827	*8.9*	**11,484**	*8.9*
>5 years	56,792	*91.1*	58,343	*91.1*	**115,135**	*91.1*	1,002	*88.4*	1,149	*90.4*	**2,151**	*89.4*	57,794	*91.1*	59,492	*91.1*	**117,286**	*91.1*
Total	**62,317**	***100.0***	**64,048**	***100.0***	**126,365**	***100.0***	**1,134**	***100.0***	**1,271**	***100.0***	**2,405**	***100.0***	**63,451**	***100.0***	**65,319**	***100.0***	**128,770**	***100.0***
	Male	***49.3***	**Female**	***50.7***			**Male**	***47.2***	**Female**	***52.85***			**Male**	***49.3***	**Female**	***50.7***	**% Migrants**	**1.9%**

Kyaikmaraw	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	5,114	*9.3*	4,585	*10.7*	**9,699**	*9.9*	646	*13.6*	653	*15.1*	**1,299**	*14.3*	5,760	*9.7*	5,238	*11.1*	**10,998**	*10.3*
>5 years	49,638	*90.7*	38,309	*89.3*	**87,947**	*90.1*	4,090	*86.4*	3,668	*84.9*	**7,758**	*85.7*	53,728	*90.3*	41,977	*88.9*	**95,705**	*89.7*
Total	**54,752**	***100.0***	**42,894**	***100.0***	**97,646**	***100.0***	**4,736**	***100.0***	**4,321**	***100.0***	**9,057**	***100.0***	**59,488**	***100.0***	**47,215**	***100.0***	**106,703**	***100.0***
	Male	***56.1***	**Female**	***43.9***			**Male**	***52.3***	**Female**	***47.7***			**Male**	***55.8***	**Female**	***44.2***	**% Migrants**	**8.5%**

Kyaikto	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	444	*9.2*	626	*11.2*	**1,070**	*10.3*	394	*14.3*	403	*15.9*	**797**	*15.0*	838	*11.1*	1,029	*12.7*	**1,867**	*11.9*
>5 years	4,362	*90.8*	4,949	*88.8*	**9,311**	*89.7*	2,361	*85.7*	2,139	*84.1*	**4,500**	*85.0*	6,723	*88.9*	7,088	*87.3*	**13,811**	*88.1*
Total	**4,806**	***100.0***	**5,575**	***100.0***	**10,381**	***100.0***	**2,755**	***100.0***	**2,542**	***100.0***	**5,297**	***100.0***	**7,561**	***100.0***	**8,117**	***100.0***	**15,678**	***100.0***
	Male	***46.3***	**Female**	***53.7***			**Male**	***52.0***	**Female**	***48.0***			**Male**	***48.2***	**Female**	***51.8***	**% Migrants**	**33.8%**

Mawlamyine	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	7,401	*8.7*	7,880	*8.7*	**15,281**	*8.7*	285	*9.2*	345	*15.5*	**630**	*11.8*	7,686	*8.7*	8,225	*8.8*	**15,911**	*8.8*
>5 years	77,360	*91.3*	82,854	*91.3*	**160,214**	*91.3*	2,821	*90.8*	1,878	*84.5*	**4,699**	*88.2*	80,181	*91.3*	84,732	*91.2*	**164,913**	*91.2*
Total	**84,761**	***100.0***	**90,734**	***100.0***	175,495	***100.0***	**3,106**	***100.0***	**2,223**	***100.0***	**5,329**	***100.0***	**87,867**	***100.0***	**92,957**	***100.0***	180,824	***100.0***
	Male	*48.3*	Female	*51.7*			Male	*58.3*	Female	*41.7*			Male	*48.6*	Female	*51.4*	% Migrants	2.9%

Mudon	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	5,230	*9.8*	5,418	*9.9*	**10,648**	*9.8*	444	*11.3*	489	*11.8*	**933**	*11.5*	5,674	*9.9*	5,907	*10.0*	**11,581**	*10.0*
>5 years	47,956	*90.2*	49,536	*90.1*	**97,492**	*90.2*	3,500	*88.7*	3,667	*88.2*	**7,167**	*88.5*	51,456	*90.1*	53,203	*90.0*	**104,659**	*90.0*
Total	**53,186**	***100.0***	**54,954**	***100.0***	108,140	***100.0***	**3,944**	***100.0***	**4,156**	***100.0***	**8,100**	***100.0***	**57,130**	***100.0***	**59,110**	***100.0***	116,240	***100.0***
	Male	*49.2*	Female	*50.8*			Male	*48.7*	Female	*51.3*			Male	*49.1*	Female	*50.9*	% Migrants	7.0%

Paung	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	7,971	*11.4*	8,373	*11.9*	**16,344**	*11.7*	279	*6.9*	298	*10.3*	**577**	*8.3*	8,250	*11.2*	8,671	*11.9*	**16,921**	*11.5*
>5 years	61,716	*88.6*	61,816	*88.1*	**123,532**	*88.3*	3,782	*93.1*	2,594	*89.7*	**6,376**	*91.7*	65,498	*88.8*	64,410	*88.1*	**129,908**	*88.5*
Total	**69,687**	***100.0***	**70,189**	***100.0***	139,876	***100.0***	**4,061**	***100.0***	**2,892**	***100.0***	**6,953**	***100.0***	**73,748**	***100.0***	**73,081**	***100.0***	146,829	***100.0***
	Male	*49.8*	Female	*50.2*			Male	*58.4*	Female	*41.6*			Male	*50.2*	Female	*49.8*	% Migrants	4.7%

Thanbyuzayat	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	7,369	*11.8*	7,551	*11.7*	**14,920**	*11.7*	1,444	*15.8*	1,621	*17.7*	**3,065**	*16.8*	8,813	*12.3*	9,172	*12.4*	**17,985**	*12.4*
>5 years	55,325	*88.2*	57,050	*88.3*	**112,375**	*88.3*	7,672	*84.2*	7,554	*82.3*	**15,226**	*83.2*	62,997	*87.7*	64,604	*87.6*	**127,601**	*87.6*
Total	**62,694**	***100.0***	**64,601**	***100.0***	127,295	***100.0***	**9,116**	***100.0***	**9,175**	***100.0***	**18,291**	***100.0***	**71,810**	***100.0***	**73,776**	***100.0***	145,586	***100.0***
	Male	*49.3*	Female	*50.7*			Male	*49.8*	Female	*50.2*			Male	*49.3*	Female	*50.7*	% Migrants	12.6%

Thaton	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	3,965	*16.6*	4,613	*13.6*	**8,578**	*14.8*	536	*13.3*	580	*14.7*	**1,116**	*14.0*	4,501	*16.2*	5,193	*13.7*	**9,694**	*14.7*
>5 years	19,884	*83.4*	29,412	*86.4*	**49,296**	*85.2*	3,483	*86.7*	3,361	*85.3*	**6,844**	*86.0*	23,367	*83.8*	32,773	*86.3*	**56,140**	*85.3*
Total	**23,849**	***100.0***	**34,025**	***100.0***	57,874	***100.0***	**4,019**	***100.0***	**3,941**	***100.0***	**7,960**	***100.0***	**27,868**	***100.0***	**37,966**	***100.0***	65,834	***100.0***
	Male	*41.2*	Female	*58.8*			Male	*50.5*	Female	*49.5*			Male	*42.3*	Female	*57.7*	% Migrants	12.1%

Ye	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	1,194	*16.1*	1,336	*16.6*	**2,530**	*16.3*	613	*18.8*	606	*18.6*	**1,219**	*18.6*	1,807	*16.9*	1,942	*17.1*	**3,749**	*17.0*
>5 years	6,240	*83.9*	6,732	*83.4*	**12,972**	*83.7*	2,674	*81.4*	2,655	*81.4*	**5,329**	*81.4*	8,914	*83.1*	9,387	*82.9*	**18,301**	*83.0*
Total	**7,434**	***100.0***	**8,068**	***100.0***	15,502	***100.0***	**3,287**	***100.0***	**3,261**	***100.0***	**6,548**	***100.0***	**10,721**	***100.0***	**11,329**	***100.0***	22,050	***100.0***
	Male	*48.0*	Female	*52.0*			Male	*50.2*	Female	*49.8*			Male	*48.6*	Female	*51.4*	% Migrants	29.7%

Tanintharyi Region

Permanent and Migrant/Mobile

Bokpyin	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	715	*13.6*	772	*14.1*	1,487	*13.8*	342	*4.9*	393	*12.9*	735	*7.4*	1,057	*8.7*	1,165	*13.6*	2,222	*10.7*
>5 years	4,548	*86.4*	4,718	*85.9*	9,266	*86.2*	6,576	*95.1*	2,659	*87.1*	9,235	*92.6*	11,124	*91.3*	7,377	*86.4*	18,501	*89.3*
Total	5,263	*100.0*	5,490	*100.0*	10,753	*100.0*	6,918	*100.0*	3,052	*100.0*	9,970	*100.0*	12,181	*100.0*	8,542	*100.0*	20,723	*100.0*
	Male	*48.9*	Female	*51.1*			Male	*69.4*	Female	*30.6*			Male	*58.8*	Female	*41.2*	% Migrants	48.1%

Dawei	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	15	*8.2*	11	*8.5*	26	*8.3*	118	*5.7*	133	*13.4*	251	*8.2*	133	*5.9*	144	*12.9*	277	*8.2*
>5 years	168	*91.8*	118	*91.5*	286	*91.7*	1,947	*94.3*	857	*86.6*	2,804	*91.8*	2,115	*94.1*	975	*87.1*	3,090	*91.8*
Total	183	*100.0*	129	*100.0*	312	*100.0*	2,065	*100.0*	990	*100.0*	3,055	*100.0*	2,248	*100.0*	1,119	*100.0*	3,367	*100.0*
	Male	*58.7*	Female	*41.3*			Male	*67.6*	Female	*32.4*			Male	*66.8*	Female	*33.2*	% Migrants	90.7%

Kawthaung	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	1,414	*8.94*	1,440	*9.2*	2,854	*9.1*	1,358	*12.5*	1,228	*16.7*	2,586	*14.2*	2,772	*10.4*	2,668	*11.6*	5,440	*11.0*
>5 years	14,400	*91.06*	14,165	*90.8*	28,565	*90.9*	9,518	*87.5*	6,120	*83.3*	15,638	*85.8*	23,918	*89.6*	20,285	*88.4*	44,203	*89.0*
Total	15,814	*100.00*	15,605	*100.0*	31,419	*100.0*	10,876	*100.0*	7,348	*100.0*	18,224	*100.0*	26,690	*100.0*	22,953	*100.0*	49,643	*100.0*
	Male	*50.33*	Female	*49.7*			Male	*59.7*	Female	*40.3*			Male	*53.8*	Female	*46.2*	% Migrants	36.7%

Kyunsu	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	1,188	*11.8*	1,080	*11.0*	2268	*11.4*	515	*11.7*	558	*14.0*	1,073	*12.8*	1,703	*11.8*	1,638	*11.9*	3,341	*11.8*
>5 years	8,855	*88.2*	8,730	*89.0*	17585	*88.6*	3,905	*88.3*	3,414	*86.0*	7,319	*87.2*	12,760	*88.2*	12,144	*88.1*	24,904	*88.2*
Total	10,043	*100.0*	9,810	*100.0*	19853	*100.0*	4,420	*100.0*	3,972	*100.0*	8,392	*100.0*	14,463	*100.0*	13,782	*100.0*	28,245	*100.0*
	Male	*50.6*	Female	*49.4*			Male	*52.7*	Female	*47.3*			Male	*51.2*	Female	*48.8*	% Migrants	29.7%

Myeik	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	326	*11*	338	*11.6*	664	*11.3*	199	*9.7*	183	*12.4*	382	*10.8*	525	*10.5*	521	*11.8*	1,046	*11.1*
>5 years	2,632	*89*	2,587	*88.4*	5,219	*88.7*	1,855	*90.3*	1,293	*87.6*	3,148	*89.2*	4,487	*89.5*	3,880	*88.2*	8,367	*88.9*
Total	2,958	*100*	2,925	*100.0*	5,883	*100.0*	2,054	*100.0*	1,476	*100.0*	3,530	*100.0*	5,012	*100.0*	4,401	*100.0*	9,413	*100.0*
	Male	*50*	Female	*49.7*			Male	*58.2*	Female	*41.8*			Male	*53.2*	Female	*46.8*	% Migrants	37.5%

Launglon	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	5	*17.9*	9	*20.9*	14	*19.7*	93	*10.5*	56	*9.6*	149	*10.2*	98	*10.7*	65	*10.4*	163	*10.6*
>5 years	23	*82.1*	34	*79.1*	57	*80.3*	792	*89.5*	526	*90.4*	1,318	*89.8*	815	*89.3*	560	*89.6*	1,375	*89.4*
Total	28	*100.0*	43	*100.0*	71	*100.0*	885	*100.0*	582	*100.0*	1,467	*100.0*	913	*100.0*	625	*100.0*	1,538	*100.0*
	Male	*39.4*	Female	*60.6*			Male	*60.3*	Female	*39.7*			Male	*59.4*	Female	*40.6*	% Migrants	95.4%

Palaw	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	556	*15.4*	622	*15.9*	1,178	*15.6*	106	*7.9*	127	*12.1*	233	*9.7*	662	*13.4*	749	*15.1*	1,411	*14.2*
>5 years	3,058	*84.6*	3,294	*84.1*	6,352	*84.4*	1,233	*92.1*	926	*87.9*	2,159	*90.3*	4,291	*86.6*	4,220	*84.9*	8,511	*85.8*
Total	3,614	*100.0*	3,916	*100.0*	7,530	*100.0*	1,339	*100.0*	1,053	*100.0*	2,392	*100.0*	4,953	*100.0*	4,969	*100.0*	9,922	*100.0*
	Male	*48.0*	Female	*52.0*			Male	*56.0*	Female	*44.0*			Male	*49.9*	Female	*50.1*	% Migrants	24.1%

Tanintharyi	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	922	*12.3*	988	*12.7*	**1,910**	*12.5*	100	*12.0*	111	*16.3*	**211**	*13.9*	1,022	*12.3*	1,099	*13.0*	**2,121**	*12.6*
>5 years	6,552	*87.7*	6,795	*87.3*	**13,347**	*87.5*	734	*88.0*	568	*83.7*	**1,302**	*86.1*	7,286	*87.7*	7,363	*87.0*	**14,649**	*87.4*
Total	**7,474**	***100.0***	**7,783**	***100.0***	15,257	***100.0***	**834**	***100.0***	**679**	***100.0***	1,513	***100.0***	**8,308**	***100.0***	**8,462**	***100.0***	**16,770**	***100.0***
	Male	***49.0***	**Female**	***51.0***			**Male**	***55.1***	**Female**	***44.9***			**Male**	***49.5***	**Female**	***50.5***	**% Migrants**	9.0%

Thayetchaung	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	2	*6.5*	3	*23.1*	**5**	*11.4*	77	*7.0*	81	*13.8*	**158**	*9.4*	79	*7.0*	84	*14.0*	**163**	*9.4*
>5 years	29	*93.5*	10	*76.9*	**39**	*88.6*	1,018	*93.0*	506	*86.2*	**1,524**	*90.6*	1,047	*93.0*	516	*86.0*	**1,563**	*90.6*
Total	**31**	***100.0***	**13**	***100.0***	44	***100.0***	**1,095**	***100.0***	**587**	***100.0***	1,682	***100.0***	**1,126**	***100.0***	**600**	***100.0***	1,726	***100.0***
	Male	***70.5***	**Female**	***29.5***			**Male**	***65.1***	**Female**	***34.9***			**Male**	***65.2***	**Female**	***34.8***	**% Migrants**	97.5%

Yebyu	Permanent (Village)						Migrant/Mobile (Village/Cluster/Cut off Village settlement)						Total					
	Male	*Percent*	Female	*Percent*	Total	*Percent*	Male	*Percent*	Feamle	*Percent*	Total	*Percent*	Male	*Percent*	Female	*Percent*	Total	Percent
<5 years	57	*4.1*	60	*11.0*	**117**	*6.1*	178	*5.8*	189	*12.6*	**367**	*8.0*	235.0	*5.3*	249	*12.2*	**484**	*7.4*
>5 years	1,317	*95.9*	484	*89.0*	**1,801**	*93.9*	2,897	*94.2*	1,315	*87.4*	**4,212**	*92.0*	4,214.0	*94.7*	1,799	*87.8*	**6,013**	*92.6*
Total	**1,374**	***100.0***	**544**	***100.0***	1,918	***100.0***	**3,075**	***100.0***	**1,504**	***100.0***	4,579	***100.0***	**4,449.0**	***100.0***	**2,048**	***100.0***	**6,497**	***100.0***
	Male	***71.6***	**Female**	***28.4***			**Male**	***67.2***	**Female**	***32.8***			**Male**	***68.5***	**Female**	***31.5***	**% Migrants**	70.5%

Annex VI. Source Communities of Migrant Clusters

From\To Bago (East) Region	Myeik (%)	Kyunsu (%)	Tanintharyi (%)	Palaw (%)	Thayet-chaung (%)	Launglon (%)	Yebyu (%)	Kawthaung (%)	Bokpyin (%)	Dawei (%)	Chaungzon (%)	Kyaikmaraw (%)	Mawlam-yine (%)
Shwegyin	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.5%)	0 (0.0%)	0 (0.0%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.4%)	0 (0.0%)
Waw	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (1.8%)	0 (0.0%)	1 (1.6)	1 (1.2%)	3 (3.8%)	4 (1.4%)	4 (3.5%)
Htantapin	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (4.8%)	1 (0.6%)	1 (0.9%)	0 (0.0%)	2 (2.4%)	7 (9.0%)	19 (6.8%)	13 (11.4%)
Nyaunglaybin	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.2%)	0 (0.0%)	0 (0.0%)	1 (0.9%)
Oktwin	0 (0.0%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	3 (4.5%)	4 (4.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (2.4%)	0 (0.0%)	30 (10.7%)	4 (3.5%)
Phyu	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.4%)	1 (1.5%)	1 (1.2%)	1 (0.6%)	4 (3.4%)	0 (0.0%)	7 (8.5%)	3 (3.8%)	13 (4.6%)	3 (2.6%)
Kawa	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	0 (0.0%)	0 (0.0%)	1 (1.2%)	4 (5.1%)	2 (0.7%)	6 (5.3%)
Bago	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	2 (1.7%)	0 (0.0%)	1 (1.2%)	1 (1.3%)	6 (2.1%)	3 (2.6%)
Yedashe	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (1.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
All Other Townships	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (6.1%)	3 (3.6%)	2 (1.2%)	3 (2.6%)	3 (4.8%)	1 (1.2%)	0 (0.0%)	6 (2.1%)	5 (4.4%)
Mon State													
Bilin	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.2%)	2 (1.2%)	1 (0.9%)	0 (0.0%)	2 (2.4%)	3 (3.8%)	8 (2.8%)	3 (2.6%)
Kyaikto	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (2.4%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	4 (5.1%)	6 (2.1%)	4 (3.5%)
Thaton	0 (0.0%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	1 (1.5%)	0 (0.0%)	1 (0.6%)	2 (1.7%)	0 (0.0%)	1 (1.2%)	0 (0.0%)	4 (1.4%)	1 (0.9%)
Paung	0 (0.0%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	0 (0.0%)	0 (0.0%)	2 (2.4%)	9 (11.5%)	2 (0.7%)	7 (6.1%)
Chaungzon	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.2%)	5 (6.4%)	6 (2.1%)	0 (0.0%)
Mudon	0 (0.0%)	2 (2.3%)	0 (0.0%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (2.5%)	2 (1.8%)
Thanbyuzayat	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.5%)	1 (1.2%)	7 (4.1%)	1 (0.9%)	0 (0.0%)	1 (1.2%)	2 (2.6%)	2 (0.7%)	0 (0.0%)
Mawlamyine	1 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (1.8%)	3 (2.6%)	2 (3.2%)	0 (0.0%)	1 (1.3%)	9 (3.2%)	4 (3.5%)
Ye	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	7 (4.1%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Kyaikmaraw	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.3%)	5 (1.8%)	4 (3.5%)
Tanintharyi Region													
Myeik	58 (70.7%)	13 (14.8%)	8 (15.7%)	0 (0.0%)	5 (7.6%)	1 (1.2%)	0 (0.0%)	5 (4.3%)	4 (6.5%)	1 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Palaw	7 (8.5%)	2 (2.3%)	1 (2.0%)	61 (88.4%)	8 (12.1%)	2 (2.4%)	0 (0.0%)	6 (5.2%)	3 (4.8%)	0 (0.0%)	2 (2.6%)	0 (0.0%)	0 (0.0%)
Kyunsu	2 (2.4%)	64 (72.7%)	0 (0.0%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (3.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Tanintharyi	2 (2.4%)	3 (3.4%)	30 (58.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Dawei	0 (0.0%)	0 (0.0%)	2 (3.9%)	0 (0.0%)	2 (3.0%)	5 (6.0%)	4 (2.4%)	6 (5.2%)	1 (1.6)	4 (4.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Yebyu	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (3.6%)	22 (12.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.9%)
Launglon	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (3.0%)	12 (14.3%)	4 (2.4%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Thayetchaung	1 (1.2%)	0 (0.0%)	0 (0.0%)	2 (2.9%)	13 (19.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Kawthaung	2 (2.4%)	1 (1.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	5 (4.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Bokpyin	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.6)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

From\To Bago (East) Region	Mudon (%)	Paung (%)	Thanbyu-zayat (%)	Bilin (%)	Kyaikto (%)	Thaton (%)	Ye (%)	Shwegyin (%)	Total Sending Community(%)	% In-Migrant	Township
Shwegyin	0 (0.0%)	0 (0.0%)	1 (0.4%)	5 (29.4%)	6 (5.6%)	5 (3.3%)	0 (0.0%)	08 (75.0%)	638 (20.5%)	25.0%	Shwekyin
Waw	10 (7.4%)	12 (6.1%)	16 (6.2%)	0 (0.0%)	4 (3.7%)	0 (0.0%)	1 (1.6%)	46 (5.7%)	105 (3.4%)	N/A	Waw
Htantapin	6 (4.4%)	4 (2.0%)	12 (4.7%)	0 (0.0%)	2 (1.9%)	2 (1.4%)	1 (1.6%)	0 (0.0%)	74 (2.4%)	N/A	Htantapin
Nyaunglaybin	1 (0.7%)	6 (3.1%)	0 (0.0%)	4 (7.8%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	45 (5.5%)	59 (1.9%)	N/A	Nyaunglaybin
Oktwin	0 (0.0%)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.6%)	0 (0.0%)	46 (1.5%)	N/A	Oktwin
Phyu	0 (0.0%)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	5 (0.6%)	41 (1.3%)	N/A	Phyu
Kawa	5 (3.7%)	11 (5.6%)	7 (2.7%)	0 (0.0%)	2 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	39 (1.3%)	N/A	Kawa
Bago	0 (0.0%)	12 (6.1%)	3 (1.2%)	0 (0.0%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	1 (0.1%)	32 (1.0%)	N/A	Bago
Yedashe	0 (0.0%)	0 (0.0%)	18 (7.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	21 (0.7%)	N/A	Yedashe
All Other Townships	3 (2.2%)	4 (2.0%)	3 (1.2%)	0 (0.0%)	0 (0.0%)	8 (5.3%)	0 (0.0%)	25 (3.1%)	70 (2.2%)	N/A	All Other Townships
Mon State											
Bilin	15 (11.0%)	5 (2.6%)	30 (11.6%)	3 (45.1%)	17 (15.7%)	8 (5.3%)	9 (14.5%)	1 (0.1%)	132 (4.2%)	54.9%	Bilin
Kyaikto	6 (4.4%)	7 (3.6%)	19 (7.4%)	0 (0.0%)	31 (28.7%)	2 (1.4%)	0 (16.1%)	38 (4.7%)	128 (4.1%)	71.3%	Kyaikto
Thaton	6 (4.4%)	13 (6.6%)	6 (2.3%)	1 (2.0%)	2 (1.9%)	66 (43.7%)	0 (0.0%)	7 (0.9%)	112 (3.6%)	56.3%	Thaton
Paung	1 (0.7%)	31 (15.8%)	6 (2.3%)	0 (0.0%)	0 (0.0%)	20 (13.2%)	0 (0.0%)	1 (0.1%)	81 (2.6%)	84.2%	Paung
Chaungzon	0 (0.0%)	7 (3.6%)	3 (1.2%)	0 (0.0%)	1 (0.9%)	2 (1.4%)	1 (1.6%)	0 (0.0%)	43 (1.4%)	93.6%	Chaungzon
Mudon	5 (3.7%)	9 (4.6%)	9 (3.5%)	1 (2.0%)	2 (1.9%)	3 (2.0%)	2 (3.2%)	0 (0.0%)	36 (1.2%)	96.3%	Mudon
Thanbyuzayat	1 (0.7%)	3 (1.5%)	7 (2.7%)	1 (2.0%)	4 (3.7%)	1 (0.7%)	3 (4.8%)	1 (0.1%)	33 (1.1%)	97.3%	Thanbyuzayat
Mawlamyine	2 (1.5%)	6 (3.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	1 (0.1%)	27 (0.9%)	96.5%	Mawlamyine
Ye	0 (0.0%)	0 (0.0%)	1 (0.4%)	1 (2.0%)	0 (0.0%)	0 (0.0%)	9 (14.5%)	0 (0.0%)	20 (0.6%)	85.5%	Ye
Kyaikmaraw	1 (0.7%)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	12 (0.4%)	98.2%	Kyaikmaraw
Tanintharyi Region											
Myeik	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	95 (3.0%)	29.3%	Myeik
Palaw	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	92 (3.0%)	11.6%	Palaw
Kyunsu	0 (0.0%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	70 (2.2%)	27.3%	Kyunsu
Tanintharyi	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	35 (1.1%)	41.2%	Tanintharyi
Dawei	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	26 (0.8%)	95.1%	Dawei
Yebyu	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	24 (0.8%)	87.1%	Ye Phyu
Launglon	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	19 (0.6%)	85.7%	Launglon
Thayetchaung	0 (0.0%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	17 (0.5%)	80.3%	Thayetchaung
Kawthaung	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	8 (0.3%)	95.7%	Kawthoung
Bokpyin	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.1%)	98.4%	Bokepyin

From\To	Myeik (%)	Kyunsu (%)	Tanintharyi (%)	Palaw (%)	Thayet-chaung (%)	Launglon (%)	Yebyu (%)	Kawthaung (%)	Bokpyin (%)	Dawei (%)	Chaungzon (%)	Kyaikmaraw (%)	Mawlam-yine (%)
Ayeyarwady Region													
Myanaung	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (4.5%)	0 (0.0%)	28 (16.5%)	3 (2.6%)	1 (1.6)	6 (7.3%)	0 (0.0%)	3 (1.1%)	0 (0.0%)
Ingapu	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	5 (2.9%)	1 (0.9%)	1 (1.6)	0 (0.0%)	0 (0.0%)	3 (1.1%)	1 (0.9%)
Yegyi	0 (0.0%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (3.4%)	1 (1.6)	1 (1.2%)	0 (0.0%)	8 (2.8%)	0 (0.0%)
All Other Townships	1 (1.2%)	1 (1.1%)	1 (2.0%)	1 (1.4%)	8 (12.1%)	14 (16.7%)	19 (11.2%)	20 (17.2%)	23 (37.1%)	9 (11.0%)	13 (16.7%)	19 (6.8%)	16 (14.0%)
Bago (West) Region													
Tharyarwaddy	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	2 (1.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	60 (21.4%)	0 (0.0%)
Letpatan	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	22 (7.8%)	1 (0.9%)
All Other Townships	2 (2.4%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	2 (3.0%)	15 (17.9%)	6 (3.5%)	7 (6.0%)	0 (0.0%)	3 (3.7%)	0 (0.0%)	9 (3.2%)	2 (1.8%)
Yangon Region													
Kyauktan	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.2%)	0 (0.0%)	0 (0.0%)	1 (1.2%)	5 (6.4%)	1 (0.4%)	2 (1.8%)
Thongwa	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.7%)	0 (0.0%)
Other 37 Townships	1 (1.2%)	0 (0.0%)	2 (3.9%)	0 (0.0%)	9 (13.6%)	10 (11.9%)	23 (13.%)	16 (13.8%)	10 (16.1%)	21 (25.6%)	12 (15.4%)	12 (4.3%)	10 (8.8%)
Magway (18 Townships)	3 (3.7%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	0 (0.0%)	2 (2.4%)	4 (2.4%)	7 (6.0%)	3 (4.8%)	5 (6.1%)	0 (0.0%)	7 (2.5%)	10 (8.8%)
Mandalay (22 Township	1 (1.2%)	1 (1.1%)	0 (0.0%)	0 (0.0%)	1 (1.5%)	3 (3.6%)	6 (3.5%)	6 (5.2%)	3 (4.8%)	6 (7.3%)	0 (0.0%)	3 (1.1%)	4 (3.5%)
Kayin (5 Townships)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.3%)	1 (0.4%)	2 (1.8%)
Sagaing (5 Townships	1 (1.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.5%)	0 (0.0%)	3 (1.8%)	4 (3.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.4%)	0 (0.0%)
Rakhine (8 Townships)	0 (0.0%)	1 (1.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (2.4%)	3 (1.8%)	2 (1.7%)	1 (1.6)	1 (1.2%)	0 (0.0%)	0 (0.0%)	1 (0.9%)
Chin, Kachin, Kayah, Shan	0 (0.0%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.6%)	0 (0.0%)	2 (3.2%)	0 (0.0%)	2 (2.6%)	0 (0.0%)	0 (0.0%)
Total	**80 (100%)**	**88 (100%)**	**51 (100%)**	**69 (100%)**	**66 (100%)**	**84 (100%)**	**170 (100%)**	**116 (100%)**	**62 (100%)**	**82 (100%)**	**78 (100%)**	**281 (100%)**	**114 (100%)**

From\To	Mudon (%)	Paung (%)	Thanbyu-zayat (%)	Bilin (%)	Kyaikto (%)	Thaton (%)	Ye (%)	Shwegyin (%)	Total Sending Community(%)	% In-Migrant	Township
Ayeyarwady Region											
Myanaung	4 (2.9%)	0 (0.0%)	19 (7.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.6%)	0 (0.0%)	68 (2.2%)	N/A	Myanaung
Ingapu	15 (11.0%)	0 (0.0%)	7 (2.7%)	0 (0.0%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	34 (1.1%)	N/A	Ingapu
Yegyi	0 (0.0%)	0 (0.0%)	2 (0.8%)	1 (2.0%)	0 (0.0%)	2 (1.4%)	0 (0.0%)	0 (0.0%)	20 (0.6%)	N/A	Yegyi
All Other Townships	13 (9.6%)	7 (3.6%)	41 (15.9%)	1 (2.0%)	5 (4.6%)	2 (1.4%)	5 (24.2%)	12 (1.5%)	241 (7.7%)	N/A	All Other Townships
Bago (West) Region											
Tharyarwaddy	3 (2.2%)	5 (2.6%)	2 (0.8%)	0 (0.0%)	13 (12.0%)	2 (1.4%)	3 (4.8%)	6 (0.7%)	97 (3.1%)	N/A	Tharyarwaddy
Letpatan	6 (4.4%)	0 (0.0%)	3 (1.2%)	0 (0.0%)	1 (0.9%)	0 (0.0%)	1 (1.6%)	0 (0.0%)	36 (1.2%)	N/A	Letpatan
All Other Townships	3 (2.2%)	8 (4.1%)	9 (3.5%)	0 (0.0%)	1 (0.9%)	2 (1.4%)	0 (0.0%)	0 (0.0%)	70 (2.2%)	N/A	All Other Townships
Yangon Region											
Kyauktan	1 (0.7%)	2 (1.0%)	10 (3.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	24 (.8%)	N/A	Kyauktan
Thongwa	11 (8.1%)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	15 (0.5%)	N/A	Thongwa
Other 37 Townships	11 (8.1%)	25 (12.8%)	9 (3.5%)	0 (0.0%)	10 (9.3%)	10 (6.6%)	1 (1.6%)	11 (1.4%)	203 (6.5%)	N/A	Other 37 Townships
Magway (18 Townships)	3 (2.2%)	4 (2.0%)	4 (1.6%)	0 (0.0%)	0 (0.0%)	6 (4.0%)	2 (3.2%)	0 (0.0%)	61 (2.0%)	N/A	18 Townships
Mandalay (22 Township	0 (0.0%)	5 (2.6%)	1 (0.4%)	1 (2.0%)	1 (0.9%)	3 (2.0%)	0 (0.0%)	2 (0.2%)	47 (1.5%)	N/A	22 Townships
Kayin (5 Townships)	0 (0.0%)	2 (1.0%)	4 (1.6%)	1 (2.0%)	1 (0.9%)	4 (2.6%)	1 (1.6%)	1 (0.1%)	18 (0.6%)	N/A	5 Townships
Sagaing (5 Townships	2 (1.5%)	2 (1.0%)	2 (0.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.6%)	0 (0.0%)	17 (0.5%)	N/A	5 Townships
Rakhine (8 Townships)	2 (1.5%)	1 (0.5%)	0 (0.0%)	0 (0.0%)	2 (1.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	16 (0.5%)	N/A	8 Townships
Chin, Kachin, Kayah, Shan	0 (0.0%)	3 (1.5%)	0 (0.0%)	1 (2.0%)	0 (0.0%)	1 (0.7%)	0 (0.0%)	0 (0.0%)	12 (0.4%)	N/A	5 Townships
Total	**136 (100%)**	**196 (100%)**	**58 (100%)**	**51 (100%)**	**108 (100%)**	**131 (100%)**	**62 (100%)**	**311 (100%)**	**3,116 (100%)**	**N/A**	**Total**

Healthy migrants in healthy communities

IOM International Organization for Migration
ရွှေ့ပြောင်းသွားလာ နေထိုင်ဖြင်းဆိုင်ရာ နိုင်ငံတကာအဖွဲ့အစည်း

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