

EC/FAO CO-OPERATIVE PROGRAMME



Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar

GCP/INT/952/EC-MYA (8)



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Yangon, January 2007

ACKNOWLEDGMENTS

The mission team wishes to thank all who contributed for the success of the mission in Myanmar and to value the collaboration and assistance received from a large number of governmental, non-governmental and UN agencies, especially the Ministry of Agriculture and Irrigation. Further, a special appreciation should be expressed to Myanmar farmers, particularly female household heads and villagers, for their open and genuine information during the field assessments.

The mission also wishes to express its gratitude to the European Commission – both its Headquarters and Delegation in Thailand – for funding the project. Very special acknowledgments are due to the FAO Regional Office for Asia and the Pacific and the Japan-funded FAO/Asia FIVIMS Trust Fund Project GCP/RAS/170/JPN for their extended technical support and guidance on the implementation of the project and to the United Nations (UN) Office on Drugs and Crime and the UN World Food Programme for their generous provision of technical and logistics assistance in the field.



UNITED NATIONS
Office on Drugs and Crime



The findings and recommendations included in this report solely reflect the opinions of the Food Security Analysis Expert/Mission Team Leader and the Vulnerability Information Expert and not necessarily of other members of the team or the organizations that provided financial and technical assistance.

TABLE OF CONTENTS

EXECUTIVE SUMMARY AND MAIN RECOMMENDATIONS.....	I
SUMMARY OF FINDINGS	III
SUMMARY OF RECOMMENDATIONS.....	XV
1 – INTRODUCTION	1
2 – EXISTING DATA INVENTORY AND ASSESSMENT	5
2A – INCOME AND EXPENDITURE DATA.....	6
2B – NUTRITIONAL OUTCOMES AND VITAL STATISTICS	21
2C – HYGIENE AND FACILITIES.....	29
2D – EDUCATION	37
2E – ESTIMATION OF LANDLESS.....	44
2F – IDENTIFICATION OF SURPLUS/DEFICIT AREAS	52
3 – FOOD INSECURITY AND VULNERABILITY	58
4 – CASE STUDIES	78
4A – INTRODUCTION.....	80
4B – KOKANG (SPECIAL REGION1).....	93
4C – WA (SPECIAL REGION 2).....	102
5 – CASE STUDY.....	118
6 – MAIN FINDINGS, CONCLUSIONS AND RECCOMMENDATIONS	136
ANNEXES.....	158
ANNEX 1 – TERMS OF REFERENCE.....	159
ANNEX 2 – OVERALL ITINERARY	175
ANNEX 3 – DETAILED ITINERARY AND MAIN ACTIVITIES.....	177
ANNEX 4 – VISITED VILLAGES.....	179
ANNEX 5 – LIST OF PERSONS MET AND INSTITUTIONS VISITED	180
ANNEX 6 – MEMBER OF NATIONAL TECHNICAL TEAM	185
ANNEX 7 – INFORMAL MEETING WITH THE FIVIMS NATIONAL TECHNICAL TEAM	186
ANNEX 8 – DATA REQUESTED AND RECEIVED FROM SLRD.....	189
ANNEX 9 – FIVIMS MISSION - VILLAGE CHECKLIST	190
ANNEX 10 – FIVIMS MISSION - AGRICULTURE CHECKLIST	193
ANNEX 11 – FIVIMS MISSION - HOUSEHOLD CHECKLIST	196
ANNEX 12 – FIVIMS MISSION - MEASUREMENT SHEET	201
ANNEX 13 – NUTRIENT REQUIREMENT TABLE MOH.....	203

ANNEX 14 – WFP COMMUNITY QUESTIONNAIRE	205
ANNEX 15 – WFP HOUSEHOLD QUESTIONNAIRE	208
ANNEX 16 – CONVERSION FACTORS	214
ANNEX 17 – LIVESTOCK UNIT, CONVERSION FACTORS	215
ANNEX 18 – ROUTINE HEALTH ACTIVITIES DATA FLOW	216
ANNEX 19 – PLANT DICTIONARY	218
ANNEX 20 – MYANMAR CENSUS FOR AGRICULTURE 2003	220
ANNEX 21 – GEO CODE USED	225
ANNEX 22 – EXCEPTS FROM WFP NUTRITIONAL SURVEY 2005	228
ANNEX 23 – LIST OF DATA SOURCES QUOTED AND/OR UTILISED BY THE MISSION	236
ENDNOTES	241

Executive Summary and Main Recommendations

The urgent need of collecting and collating vulnerability and food insecurity indicators as a priority action for defining an effective development and humanitarian assistance in Myanmar has compelled the Delegation of the European Commission (EC) in Thailand and the FAO Regional Office for Asia and the Pacific (RAP) to joint their efforts for financing and implementing a Baby Project GCP/INT/952/EC-MYA(8) that is aimed at preparing a report on the state of food insecurity and vulnerability in Myanmar.

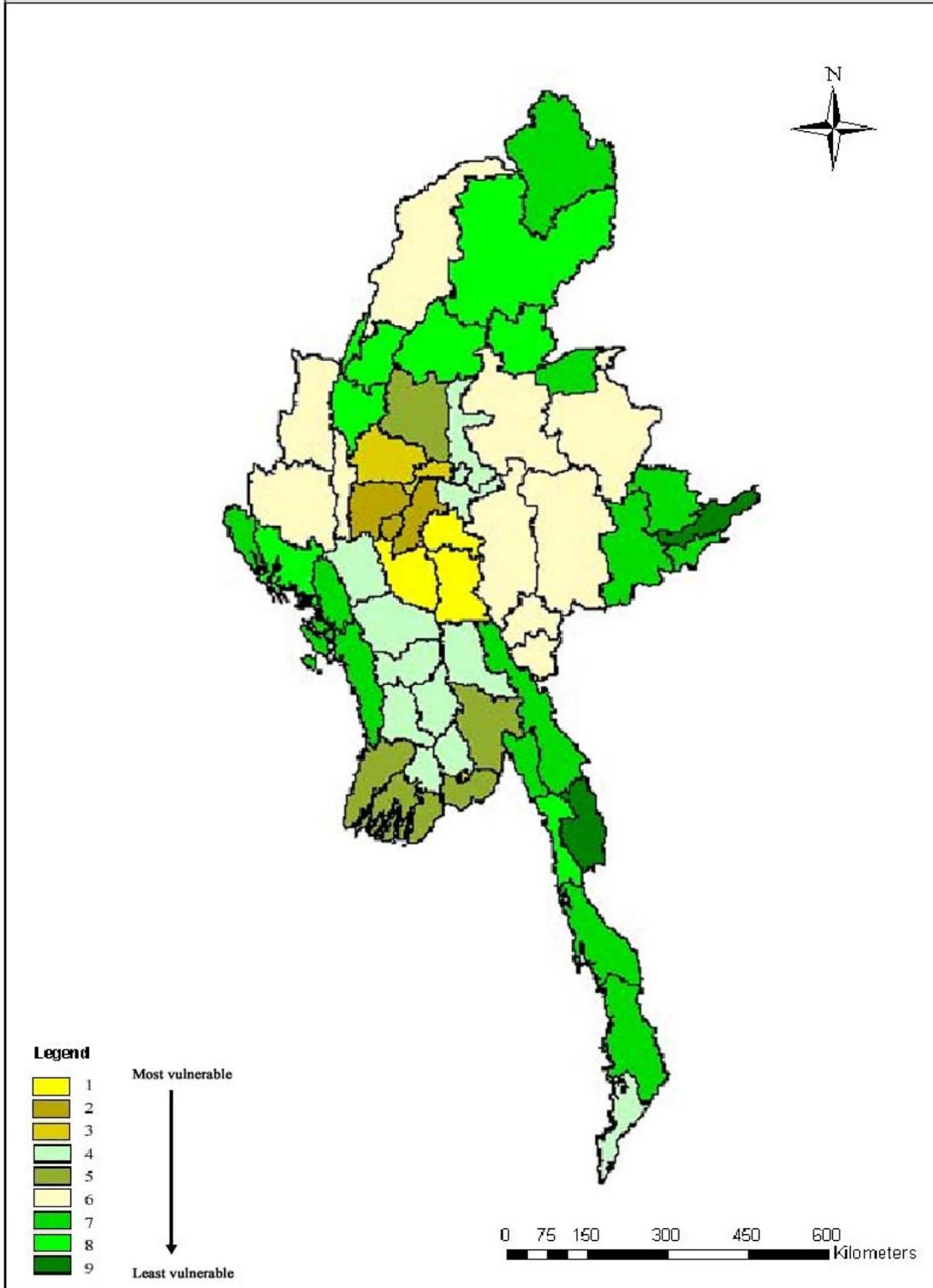
To achieve this goal, a mission was carried out in Myanmar by international consultants – a Food Security Analysis Expert/Mission Team Leader and a Vulnerability Information Expert – and a national Nutrition Expert 2006 with technical backstopping from RAP. The mission arrived in Yangon on 24th August 2006 and left Myanmar on 7th November.

As required by the terms of reference (TOR) for the mission that recognized serious lack of reliable, timely and quality information on the food insecure and vulnerable, Chapter 2 provides a preliminary inventory and quality assessment of the existing data and information in Myanmar. Special emphasis was given on the identification of gaps and inconsistencies that users should pay due attention to when the information is intended to be used for “effective” development and humanitarian assistance in Myanmar.

Chapter 3 addresses the first ever vulnerability profile produced at district level, while the report contains the outcomes of a few case studies on poor, food insecure and vulnerable areas: Special Region 1 (*Kokang*) and Special Region 2 (*Wa*) examined in Chapters 4, and *Dry Zone* in the central part of Myanmar illustrated in Chapter 5.

Finally, detailed descriptions of the findings and related recommendations are included in Chapter 6.

Rural vulnerability/ food insecurity classification of Myanmar



Summary of findings

The mission verified that the current status of data or proxy data that could provide insight into food availability, access, stability and utilization is extremely scarce, of poor quality, and sometimes contradictory in Myanmar.

Most official data are available only at the first or second administrative level and thus can provide only a very feeble basis for targeting vulnerable and food insecure populations at a geographically appropriate level.

But even at these levels the very low data quality can be easily identified. In particular, when trying to use time-series data, the poor data reliability frequently hamper making any conclusion. Comparisons of same or similar data, collected by different institutions, sometimes result in extremely contradictory results. The main reasons for this low data quality are several: underreporting, limitations of data collection and supervision, poor data transmission and compilation, even mistakes printed in official data without “*errata corrige*”. For these reasons, Chapter 2 extensively addresses the data quality and reliability issues.

Even when data are available at the second administrative level, their access is frequently hindered by political fears. Only if authorized, civil servants are allowed to provide even very simple and not sensitive information. Some key vulnerability indicators are non-accessible due to being seen as highly politically sensitive.

In the meantime, the access to the extremely important data sets of the Central Statistical Organization (CSO)’s Household Income and Expenditure Surveys that provide information both at more geographically desegregated levels and more related to vulnerability and food insecurity issues, has been totally denied by the Myanmar Government. The refusal seriously hampered better results that could otherwise be produced by the mission and brought about serious concerns about any future activity in Myanmar that wishes to make use of the CSO data sets.

The lessons learned from the above constraints provide an important implication for the future: possible official restrictions of accessing data sources related to food security should be attentively evaluated before any new action or similar missions are implemented in Myanmar. They would impose an extremely serious limitation on improving the knowledge of the causes and characteristics of the vulnerable and poor in Myanmar.

However, the Mission also obtained very strong collaboration and assistance from the Ministry of Agriculture and Irrigation (MOAI) and in particular, from the Settlement and Land Record Department (SLRD) of the MOAI. Only due to the above collaboration the first ever rural vulnerability and food insecurity classification of Myanmar districts has been produced by the mission as described in Chapter 3.

Although the mission outcomes are strongly and adversely affected by the aforementioned environment, these outcomes can be summarized as follows.

1.

A careful analysis of the most recent CSO data shows a deteriorating pattern of the composition of diet of the Myanmar people. According to CSO consumption data in Myanmar population, during the period of 1997-2001 (last available information) the food intake has deteriorated in terms of both quantity and quality. In addition, the rural-urban disaggregated analysis has shown that not only the intake of food in urban areas is lower and poorer than that of the rural areas but also the gap between the food intake of urban and rural has widened during the observed period. However, this observation is not in agreement with the current opinions. Apparently, the trend is continuing and there is an urgent need of (re)thinking about food insecurity in Myanmar, placing more emphasis on the urban side. The observations made by the Delegation of the European Commission (EC) in Thailand, about the worsening food security in the outskirts of urban centres seems to be fully confirmed with these observations. Prioritization of the outskirts of the cities of Mandalay and Yangon as areas for interventions in the EC “2006 NGOs Food Security Programme in Burma Myanmar” (EuropeAid/124282/L/ACT/MM) seems a move in the right direction. However, it should include a wider policy interventions supporting an overall food security status in Myanmar.

2.

Another very controversial and politically sensitive issue in Myanmar is the existence of a large amount of landless in rural areas. Using information from the recent Agricultural Census 2003, the mission concludes that the rural households “not having access to land” (a proxy indicator for landless) still represent a considerable amount of rural population (between 35% and 53%).

Although no comparison has been possible with previous information, it is evident that the Myanmar Government is still facing extremely serious problems in terms of access to land. Mission's concerns are also legitimised by an evident two way trend. The small farm holdings are becoming even smaller in size while the number of holdings in this category is increasing. Also the large farm holdings are becoming even bigger in size while the number of holdings is decreasing.

3.

A detailed identification of Surplus/ Deficit at District level, using the overall MoAI methodology under the considered four main cereals (not simply rice) has confirmed the trends in Dry Zone opposed to the trends in Southern/ Delta region. The mission was concerned about Dry Zone (already a strong deficit area) due to the fact that the Net Primary Production would significantly decrease during the next two decades (according to FAO unpublished forecasts).

4.

The rural vulnerability/ food insecurity classification carried out for the Districts of Myanmar by this mission also suggests a particular focus on Dry Zone. The above classification and the related map (see next page) and the large database behind them (although limited to agriculture holdings) certainly constitute an important starting point for further analysis and also provide preliminary indicators for project formulation.

The classification derived from cluster analysis has clearly divided the rural Myanmar into nine typologies characterized by very specific patterns, with important implications for decision makers. The yellow and brown patterns define the most vulnerable areas, while the different green patterns define less vulnerable districts.

However, with the available evidences, Dry Zone of Myanmar emerges as the most vulnerable and food insecure rural area within the country.

5.

According to the most recent information, a half of the population in the Union of Myanmar is still without "a good source of water". The problem seems particularly serious in rural areas, where 60% of households have lack of access to "good sources of water".

This problem, combined with overall poor hygiene conditions represents a significant

component of the poor nutritional outcomes observed in the country. In other words, the already scarce and low quality food intakes are further impoverished by poor assimilations due to a poor hygienic environment. These facts call for wider approaches to food security in Myanmar.

6.

Most of the mission's sectoral outcomes contained in chapter 2 offer an overview of the ongoing low progress in many sectors related to development; in particular during the recent years. The adult literacy rate has increased very slowly and certainly not facilitated and would not facilitate strengthening of awareness on food security.

7.

According to TOR, a few case studies on poor, food insecure and vulnerable areas had to be carried out by the mission through field assessments. It was suggested to cover Special Region 1 (*Kokang*), Special Region 2 (*Wa*), and Special Region 4 (*Shan/Akha*) in northern and eastern Shan States.

The justifications for these Special Regions were provided by the concerns that the various efforts to eradicate opium had caused many households in the regions to chronic poverty and had negatively affected their food security. A better understanding of the key factors leading the vulnerable populations to poverty and food insecurity, their coping mechanisms and capacity was expected to contribute to improved targeting and policy and programme development and implementation, and effective and timely interventions by the Government and other national and international stakeholders concerned.

The mission encountered many difficulties in getting the permission from Myanmar Government for carrying out the already agreed field assessments. We were informally requested through the FAO Office to drastically reduce our stay in Shan border areas. Further, the mission was informally informed that the permission could only be granted by the Government of Myanmar under the condition that the mission also visits Central Plain Dry Zone of Myanmar under the justification of recurrent droughts and the resultant overall food insecurity.

As a consequence, the mission accepted for a compulsory reduction of its stay in border areas from 20 to 10 days (with serious consequences both on the itinerary and the number of villages expected to be visited) and quick field assessment was carried out in Central Dry Zone of Myanmar.

Adversely affected by political and weather constraints, the mission could visit only few villages and could interview only few households. As far as possible, the households had been targeted according to a preliminary screening, based on nutritional outcomes quickly collected in the villages. In the villages, both overall village profiles and agricultural patterns profiles were collected.

8. Kokang, Special Region 1

In spite of the above limitations, there are evidences that the Special Region 1 (Kokang) significantly recovered only in the last few years following the poppy eradication ban in 2002. However, this recovery presents many risk factors that should be taken into consideration for future actions.

The observed cropping systems and related crop calendars seem well conceived in relation to both the local agro-ecological conditions and the possibility of cultivation in the two growing seasons.

However, the “rice dependency syndrome” seems an attitude so deep-rooted in local people that when food insecurity is evident, several supported actions to assist the farmers in differentiating their crop-mix face “palatal” constraints. Only new cash crops are well accepted because the income from these crops allows them to purchase rice.

For instance, a large differentiation of crops has been observed including tea and sugarcane. Informal interviews indicated that the differentiation is mainly a recent phenomenon and it is an increasing trend. This new trend has been partially induced by the Chinese market demand, as Chinese merchants provide new seeds, make purchase contracts and offer guarantee prices. The impacts of the introduced projects are also partially responsible for this trend. The presence of Chinese influence is important not simply as a demand component only but also as an opportunity for transferring sustainable practices.

Land availability is the main limiting factor for food availability, leading to a less frequent use of fallow practices than it has been practiced in the past. In the visited villages, fallowing is practiced each 5-6 years. In the mean time, “slash and burn cultivations” still continue to be the current answer to basic food needs.

In the visited villages, the self-sufficiency lasts approximately for 5-6 months only.

However, few worse-off households identified through anthropometric criteria were validated by local key informants. They declared that the food from their own production was sufficient only for 3-4 months. Post harvesting losses are relevant it reaching 20% of their produce according to some farmers.

Without claiming any statistical evidences (too few measurements have been made due to time constraints) but supported by extensive visits of village dwellings, the mission found that the nutritional status of the children and their mothers is within the normal range. However, infant mortality rate is a rather serious concern and the reasons could be related to poor hygiene conditions. However, the lack of awareness on nutritional concepts represents a serious local bottleneck, hampering the use or the proper use of available food resources, particularly with reference to micronutrient components.

Finally, lack of safe water and proper hygiene practices are other limiting factors. Access to and use of safe water is a most concerned aspect among others. Water is mainly collected from the nearby villages from frequently unprotected tanks filled by natural sources. However, during the dry period, water is brought only from the streams and rivers that are far away from hilly areas. At home water is stored in uncovered containers and boiled water is not often used for drinking and cooking.

9. Wa Special Region 2

In Wa Special Region 2 also, the mission had to deal with the time constraints. In addition, the originally proposed itinerary which was already shortened by the Myanmar Government before leaving Yangon, was further curtailed by the denial of permission by the Mon Maw Local Authority to visit villages included in the list already approved both by the Wa Central Authority and the Government. It is a fact that the mission was allowed to carry out an attentive appraisal in the central-southern part of the Wa region only and mission was obliged to skip the northern part.

The mission could verify that expected negative impact of the recent (end 2005) poppy ban on population livelihoods are certainly serious, but not as dramatic as had been foreseen.

The mission had seen large opportunities for taking advantages from the winter season. The importance of winter crops is not simply related to their nutritional contribution but to their role in protecting the slopes from erosion and landslides from an environmental point of view.

Different local characteristics, including the presence of peculiar microclimates, varying altitudes and type of soils, play an important role in this region and offer a mosaic of solutions to be further investigated.

However, these opportunities are seldom exploited. Particularly, intercropping and crop rotations are very rarely practiced. Emphasis on paddy production and paddy development are fading with the other important food security cropping strategies.

Farmers appreciate wheat but they complain about the fact that the seed distributions had been not continuous and particularly, they are not aware on the suitable processing methods for wheat. In summary, an overall lack of technical assistance is denounced. During the lean period, households are obliged to mix rice and wheat in a very unfair “hotchpotch”.

The mission has found a large variety of vegetables that could be successfully planted and could significantly increase the quality of food intake of household. These crops can also offer opportunities for selling the excess production. This could be particularly interesting for those villages that are not much affected by transport problems. However, the farmers frequently claim lack of technical advices, seeds availability and micro-credits for starting some kind of horticultural businesses.

In general, the farmers expressed the opinion that the access to marginal lands is not a problem. However, the problem is the lack of resources for improving the cropping conditions (in particular: terracing). Further, the farmers frequently complained not having benefited, of newly claimed lands (paddy land). In some cases, they denounced that they had been obliged to leave their plots, under land tenure incertitude at the benefit of rubber plantations: *“Most of upland where we grow paddy has been taken for rubber. They should be stopped!”* said an angry farmer, adding: *“The situation worsened; now we need to find a job in rubber plantation”*.

“Slash and burn” is still a very frequent practice. Apparently, every three years, the farmers (when the plots are far away from the villages) move to another place speeding the deforestation process. On the contrary, the farmers declared to practice a fallow period of only every 10-12 years with a relevant impoverishment of soils.

Post harvesting losses represent a very serious matter. The farmers’ evaluation ranged between 15% and 40%, especially in upland rice production.

The villages, at least those visited by the mission, have been found dependent on different types of food assistance. Although part of this assistance is provided as Food for Education introducing development goals, there is a risk of thwarting the various attempts to assist in diversifying the cropping systems introduced by UN agencies and NGOs. In the majority of the visited villages, the key informants declared that the *“village life was better than three years ago”*. This leads to an assumption that some kind of food assistance dependency syndrome exists in the region limiting the attempts to find and test solutions to agricultural sustainability.

The risk of “addiction to food assistance” is conflicting with the evidence that actual possibilities of increasing food availability exist. There are strong evidences that a better attention to winter season crops (both wheat and legumes) could improve a lot for the food availability and this includes both the quantity and the quality of food intake

The conversion to rubber offers a good example on the tangled play between different components of food security issues and policies in the region. The new rubber plantations, sometimes consisting in a true remodelling the hilly landscape, must be considered as an interesting alternative to poppy cultivation. Rubber as a cash crop is intended to partially compensate for income losses due to poppy eradication policy.

However, due to the characteristics of rubber tree (the trees become productive only after seven years) this alternative cropping strategies can be adopted by better-off farmers. The poor people cannot wait so long. For them, in a short time, there is only a marginal advantage to offer themselves as casual labourers to find tomorrows survival.

Without claiming any statistical evidence (too few measurements had been done due to time constraints) the mission found an overall nutritional status in Wa is worse than that of in Kokang villages. Several children have been found moderately undernourished.

This relatively higher undernutrition (when compared with Kokang areas) seems mainly related to either an improper use of available water (that is not protected when brought at home, never boiled, etc.) or a real lack of an easy access to water (particularly during the summer period). According to verbal information collected in some villages, fishing ponds are used as a source for drinking water. These

unhealthy situations are further worsened by lack of latrines.

10. General comments for Shan State special Regions 1 and 2

As long as the economy of the Special Regions was a “poppy governed economy” the farmers’ attitude to sell opium and buy rice was rather understandable. However, in the new situation and due to the impossibility of increasing the rice production significantly, the only available possibility is to diversify the cropping systems.

The diversification of the cropping systems can be carried out according to different goals (not necessarily as a total alternative). These goals include the improvement of food security through a better and diversified diet composition and the identification of particular cash crops to be sold for the purchase of staple foods.

Travelling through Kokang, watching and interpreting the agricultural landscapes and interviewing the farmers, it was evident that crop diversification for achieving both goals has been attempted.

At present, the alternative as cash crops seems working, but is strongly dependent from the Chinese market and the vagaries of the Chinese traders. The farmers (tea planters) in a visited Kokang village confirmed that *“last year tea cultivation was good, but prices were too low. This year, due to “organic tea” popularity in China, Chinese merchant offer higher prices for organic tea”*. Apparently, sugarcane production also is totally governed by Chinese demand. Further, most of the maize production is bought by Chinese merchants.

Travelling through Kokang and Wa Special Regions, one gets the impression that this area is a remote rural outskirts of Yunnan. The primary evidence is that only Yuan is used and Kyat is not recognized.

The second alternative, i.e. to diversify the cropping systems for improving food security through modifications of the intakes, is rather important but is facing difficulties too.

11. Dry Zone

The mission was requested by the Myanmar Government to conduct village appraisals by crossing through the most drought-prone areas in Dry Zone, once the field appraisal in the Shan border areas is concluded.

The main concerns of this area are related to the fact that the Net Primary Production (NPP) will significantly decrease in these areas during the next decades according to a recent estimation of FAO.

Dry Zone is prone to more serious problems when the following man-made components are taken into consideration: (a) already densely populated, (b) most of the land has been already converted to agriculture and (c) its intensive use has already provoked a strong degradation, worsened by soil erosion and gullies.

The visited Districts are characterised by a very high frequency of small holdings. Most of them are not sufficient for household survival and request income integrations through seasonal migration mechanisms. Normally the men, including male youth, seasonally go looking for work (generally as casual labour) in the nearer big cities (mainly Mandalay) or Yangon City. Recently, many new job opportunities are offered by the on-building new Union Capital City (Nay Pyi Taw). This is apparently due to the Government's commitment to quickly move there and this urgency leads to offer better daily remuneration.

In the meantime, there are considerable evidences that the area has been affected (between 1993 and 2003, last two Agricultural Censuses) by the same polarization of agricultural holdings that has characterized the overall rural areas of Myanmar.

How much this current peculiarity is due to dispossession processes (happened in the past) could not be possible to be investigated by the mission. However, the mission could informally gather opinions that an increasing indebtedness of small farmers could have contributed to the current patterns. There are evidences that the small holders are frequently compelled to informally "sell" a part of their land in repayment of the debts to rich farmers (moneylender).

According to official legal procedures these transactions are not allowed. However, in reality, these exist and are frequently covered by the arrangement that officially the land still belongs to the debtor but unofficially to the creditor. The debtors work on their "sold" land as workers under the creditors.

In any case, all the interviewed households (not simply the farm holders) excluding very few living in a close proximity to urban areas declared to be indebted. Although sometimes they obtain loans from relatives or neighbours, they are compulsorily obliged to depend from moneylenders (frequently shopkeepers) who apply monthly

interest rates between 15 and 20%.

At least in few villages where interviews were carried out, the mission found that the number of rural households without land was worryingly high. This fact is further confirmed by several local surveys recently carried out mainly by NGOs.

Most of the villages do not have access to electricity and this is particularly obvious in the Magway area. In many observed cases, medium-voltage lines cross the villages or are just outside the villages: A key informant, Kan Ywa Lay said *“The electricity line is near, but we can’t afford to buy a step down transformer”* for converting the medium-voltage into an appropriate level for homes. Even if electricity facilities are available farmers frequently said that *“the installation fees and the monthly fees are not affordable”*.

In the past, most of the visited villages had benefited from investments on water. However, for many reasons, the access to water has worsened during the last years. Not surprisingly, the list of the reasons is always the same: lack of pump maintenance, increasing salinity, clogged or dried well, etc..

“Dry African” conditions have been found even at the end of the rainy season (when the mission visited the area) particularly in Pokokku Township. Women had to collect water digging the sand of river beds. Even when water is available, the lack of safe water is still persisting problem due to non-hygienic techniques of collecting water. In the past, some villages have benefited by the installation of compound or private latrines. However, the current condition could be defined as a “dis-improvement”.

Probably the poor attention to water and sanitation problems is one of the main reasons of poor nutritional outcomes. Due to time and logistical constraints, the mission could not carry out any proper assessments as it was done in Shan Special Regions. However, very limited nutritional assessment was conducted with only very few children and mothers. Accordingly, a statistical interpretation of the results is not possible. However, it may be significant to note that severely underweight children were found in Magway township These children mainly belong to households headed by females.

Over the years, the local inhabitants have developed most appropriate cropping systems. To reduce the risk of total crop failures due to uncertain and erratic rainfall

and to maintain soil fertility as far as possible, mixed cropping, intercropping, and relay-planting cropping systems are practiced. Cereals are always combined with legumes.

The sequence and the mixture of crops also seem to be related to important components of the farming activities such as weed control, spreading the labour requirements throughout the growing season, reducing the total labour required particularly when labour intensive crops are planted.

Travelling through the area, an extraordinary variety of mixed crops and cropping techniques were observed, confirming that the cropping systems are the results of an “atavistic”, very clever coping strategy with local conditions to a large extent.

As far as cash crops – mainly groundnut, sesame and to a lesser extent green gram – are concerned, the farmers’ decision is often related to market opportunities. However, during the last years, the Terms of Trade (TOT) between pulses and rice (to be bought in the market) has worsened. Indeed, at national level the prices of pulses and oil-seeds have increased less than the price of low quality rice.

The emphasis on some crops, which are considered essential at national level within the framework of country’s development towards self-sufficiency, continues to penalise Dry Zone. On the contrary, there is a need for paying more attention to local crops, not simply because they are most suitable for its environment but because they could provide or already provided an extremely important potential source of income.

Summary of recommendations

To facilitate the Government carrying out future vulnerability and food insecurity analysis, data access must be liberalized. Civil servants should work in a more relaxed environment with respect to sharing and exchange of data.

Future national activities request a radical revision of official data and figures. Convening technical meeting for reaching agreements between data producers and users is important in order to avoid the problem of contradictory data.

If the Government intends to implement a comprehensive vulnerability, food insecurity and poverty mapping system a free access to Household Income and Expenditure Survey (HIES) data is compulsory. The same recommendation should be extended to the need for accessing more recent Integrated Household Living Condition Assessment (HILCA) data,

The above recommendation is particularly strategic as more emphasis should be placed on urban environments and only the above data sources can provide significant insights to the situations.

In data collection and analysis, an emphasis should be given to topics which are particularly significant in any food security or related analysis. For instance, access to safe water, availability of sanitary excreta, literacy rate, retention rates are some very useful indicators (as they are poorly documented and contradictory).

Identification and estimation of the number of landless, including the reasons for landlessness, are crucial for food security issues. In this regard, specific ad-hoc surveys are recommended.

The MoAI criteria for defining surplus/deficit areas should be improved.

National Institutions dealing with vulnerability and food insecurity should be aware that a State/ Division level analysis is too coarse. It requires a more desegregated data collection system if they intend to obtain more useful results.

Extensive use of last Agricultural Census is recommended for investigating vulnerability and food insecurity in rural areas although the census is limited to agricultural holdings. The distribution of large amount of unpublished data extracted

at District level from the Agricultural Census 2003 by MoAI/SRLD to a large group of potential users is strongly recommended.

Dry Zone should be attentively analyzed and monitored as it was identified as the most vulnerable area of the country. A Dry Zone Early Warning System should be established.

Specific recommendations for Shan State Special Regions 1 and 2

Kokang – Special Region 1

A more systematic monitoring system on nutritional consequences of the poppy eradication ban should be established. A starting point could be represented by the WFP questionnaires used on September 2006.

Environmental consequences of current “slash and burn” cultivation practices should be evaluated in view of the sustainable development. Assistance should be provided for small irrigation systems as a partial alternative.

The already existing, large diversification of crops must be encouraged locally, avoiding its strong dependency from initiatives of Chinese merchants’. However, the technical role of Chinese merchants should be strengthened as it frequently introduces sustainable practices.

Production of maize should be strengthened. Farmers should be aware of its nutritional values. Taboos on nutritional outcomes must be eliminated. The same recommendation should be formulated as far as it is concerned with buckwheat. Adequate solutions should be found to promote home gardening (distribution of seeds, pilot plots, and nutritional education). Farmers should receive training on making organic fertilizer (Compost, Indigenous Microorganism, etc....).

The “rice dependency syndrome” or high dependency on rice should be curtailed assisting the farmers in diversifying their cultivations.

Reasons behind the reported high infant mortality should be identified and adequate intervention measures should be introduced.

It is an urgent need to develop an overall awareness programme on nutritional concepts in order to eliminate the serious local bottlenecks that hamper a proper use

of available food resources.

Adequate policies for the use of save water and proper hygiene practices should be developed, including the promotion of awareness of their fundamental role in improving overall food security levels.

Attention should be given to bird flu risk, as local conditions are favourable to its propagation.

As insisently requested by farmers, adequate solution must be found for the problem of access to health facilities.

Wa – Special Region 2

As already recommended for Kokang Special Region 1, a more systematic monitoring system on nutritional consequences of the poppy eradication ban should be established. A starting point could be represented by the WFP questionnaires used on September 2006.

As there are considerable opportunities for taking advantage of the winter season, there is a need of an urgent and attentive inventory of the local agro-ecological conditions in order to assist any current/ future poppy-substitution policy.

Intercropping and crop-mix should be encouraged with adequate assistance and horticultural businesses should be promoted where ever possible.

Deforestation caused by intensive “slash and burn” cultivations should be controlled improving cropping conditions in already deforested areas. In the meantime, more frequent fallowing should be assisted near the villages to avoid soil overexploitation.

Claims that most of the benefits derived from newly reclaimed area of paddy went to better-off should be attentively verified. Policy on new rubber plantations and in general, claims about “illegal” land transfers should be investigated to guaranty social justice.

Production of maize should be strengthened. Farmers should be aware of its nutritional value and palatal constraints must be removed. In the mean time, adequate solutions should be found to promote home gardening (distribution of seeds, pilot plots, and nutritional education).

There is a tendency that households benefiting from food aid/ food distribution are implicitly encouraged not to look for sustainable cropping strategies. This should be avoided. The risk of an “addiction to food assistance” should be controlled with adequate targeting and encouraging winter crops (both wheat and legumes).

(Re)introducing wheat in Wa areas should be assisted by not only simply providing seeds to the farmers but also offering technical knowledge and assistance to process the crop.

Propagation of legumes should be assisted mainly by providing better quality seeds. This should not be left with the initiatives of private Chinese merchants. There is often a high risk of crop failure due to different agro-ecological conditions in the area.

An emerging risk of being dependent on Chinese markets and their vagaries must be thoughtfully assessed before defining any new crop policy. However, a suitable trans-border strategy is fundamental for the development of these remote areas.

The production of “organic tea” should be encouraged due to international demand. However, the farmers should clearly understand the meaning of “organic” and receive training on making organic fertilizers (Compost, Indigenous Microorganism, etc....).

New food access policy should concentrate more on qualitative than quantitative aspects of diet composition.

Tubers and fruit as well as home gardening produce should be encouraged as a component of the daily diet through establishing pilot plots.

The persisting problem of undernutrition of children should be addressed by a comprehensive policy that should solve the problem of the improper use of existing water and lack of latrines.

Intensive prevention policies for Malaria as well as birth control programmes must be introduced as requested by many farmers.

Micro-credit policies for assisting swine management will be appreciated very much.

Specific recommendations for Dry Zone

Due to many concerns about an expected reduction in Net Primary Production in Dry Zone, an Early Warning System should be established.

There is an urgent need for monitoring local conditions of the environment and understanding to what extent the deterioration of the situation is due to man-made contributions.

A clear understanding of income generation opportunities available in the area should be investigated before recommending any proposal to increase the polarization of agricultural holdings.

Identification and estimation of quantity of landless including the reasons are crucial for food security issues. For this, ad hoc surveys in Dry Zone are strongly recommended. Mechanisms causing indebtedness and their relationships with formal or informal transfer of land ownership must be carefully investigated. In addition, the role of seasonal migration should be studied before formulating any rural food security and development policies.

The TOT between rice and local crops should also be investigated to identify major components hampering the development of an area that has high potential to produce well appreciated pulses.

In the past, the area has benefited from water and sanitation assistance. However, its outcomes are pitifully abandoned and obsolescent local situations. There is an urgent need for designing and implementing locally defined recovery projects. The above interventions are strongly recommended because a poor water and sanitation environment is a key contributing factor for undernourishment of children in the area.

The provision of step-down transformers could be an important action for improving overall local conditions.

As crop mix and cropping techniques found in the area are the result of “atavistic”, well experimented coping strategies with respect to existing environmental conditions. Therefore, the local knowledge should be enhanced and crops based on land suitability and capability should be used. Further, emphasis on paddy production and paddy development discourage the improvement of sustainable local cropping

systems. A comprehensive agriculture development strategies need to be formulated for this area.

1 – INTRODUCTION

The urgent need of collecting and collating vulnerability and food insecurity indicators as a priority action in order to define an effective development and humanitarian assistance in Myanmar has convinced the Delegation of the European Commission (EC) in Thailand and the FAO Regional Office for Asia and the Pacific (RAP) to joint their efforts for financing and implementing the Baby Project "Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar" (GCP/INT/952/EC-MYA(8), with the aim of providing a comprehensive report of the state of food insecurity and vulnerability in Myanmar.

Due to a serious lack in the country of reliable, timely and quality information on the food insecure and vulnerable, the Baby Project was focused on a preliminary inventory and a quality assessment of the existing data and information.

For these reasons, as specified in TOR, the "identification of information users' needs and the gaps in the existing information and information systems and database"¹ had a pertinent role between the envisaged outputs.

The Baby Project was expected to produce a baseline food insecurity and vulnerability indicators data set (if possible in time-series) and to provide profiles of poor, food insecure and vulnerable populations illustrating their geographic locations and detailing the extent and causes of their poverty, food insecurity and vulnerability.

It was expected that the outcomes could enable Government and other national and international concerned stakeholders to take a coordinated cross-sector approach, and to identify specific target areas and populations in need of assistance.

As an additional task, the Baby Project was expected to carry out a case study on the poor, food insecure and vulnerable in northern and eastern Shan states, especially *Kokang* Special Region 1, *Wa* Special Region 2, and *Shan/Akha* Special Region 4.

The justification was due to the concerns that the various efforts to eradicate opium had led many households in the regions towards chronic poverty and had negatively affected their food security. A better understanding of the key factors leading the vulnerable populations towards poverty and food insecurity as well as their coping mechanisms and capacity was expected to contribute to improved targeting,

programmes and policy development and to effective and timely interventions by the Government and other national and international stakeholders concerned.

The mission arrived in Yangon on 24th August 2006 after a short briefing in Bangkok and left Myanmar on 7th November 2006, stopping in Bangkok for a short debriefing. The mission team consisted of:

- Prof. Paolo Santacroce, Food Security Analysis Expert (Mission Leader)
- Dr Ranjith Premalal De Silva, Vulnerability Information Expert
- Dr Aye Aye Taw, National Consultant (Nutritionist)

The mission visited Governmental offices in Nay Pyi Taw (the new on-building Myanmar capital city) on 27th - 29th August² and on 18th - 21st September 2006. Further, the mission carried out Shan State Special Regions 1, 2 and 4 field assessments between 9th October and 19th October 2006³.

In response to the recommendation of high-level officials in the Ministry of Agriculture and Irrigation, the mission also undertook a rapid field assessment in Dry Zone between 19th and 23rd October 2006⁴.

In spite of the fact that in the mission TOR, it had already been specified that “*data providing insight into food availability, access, stability and utilisation (were) scarce, of poor quality, and sometimes contradictory*” the mission found the situation is worse than expected.

The mission could verify that most official data were available only at the first or second administrative levels and thus could provide only a very feeble basis for geographical targeting. However, even at these too much aggregated levels the low data quality, particularly using a time series and/or a comparative approach, came out dramatically. For these reasons, Chapter 2 was made to deal with this problem extensively.

Further, the access to restricted datasets (in particular the CSO Household and Expenditure Survey 2001) was denied by the Government, confirming the concerns already expressed in TOR: “*some key vulnerability indicators are non-accessible due to being seen as highly politically sensitive. Thus, a clear picture of poverty, food security and vulnerability, especially at the subnational level, has not been known well*”. However, due to the fact that the Myanmar Government had agreed about the

mission TOR, the mission was expecting a full collaboration from concerned institutions. It is noted that in spite of a) several meeting held in Nay Pyi Taw with the CSO and b) the personal intervention of Mr Tang Zhengping, Myanmar FAO Representative who tirelessly dealt with the Myanmar Government in order to get a permission allowing the mission to access CSO data, the mission found the CSO doors for data were closed.

In contrast, the mission received an extraordinary positive collaboration from the Ministry of Agriculture and Irrigation and in particular from the Settlement and Land Record Department (SLRD). In response to the mission's specific requests for data, SRLD provided an "ad hoc" Agricultural Census 2003 which has been used by the mission to produce a preliminary vulnerability classification at District level.

The mission received the full collaboration from UNODC (both in Yangon and in the field) as well from WFP (particularly, in the field). Without the logistical support and overall assistance provided by UNODC and WFP the mission could not have properly performed its activities in the field.

The report is organised in six chapters.

Chapter 1 provides the introduction to the report.

Chapter 2 makes reference to TOR envisaged outcomes 1, 2 and partially 3. It deals mainly with available data at State/ Division level and approaches vulnerability and food insecurity issues on a thematic dimension. Inside the thematic sub-chapters, the user will find both an evaluation of data reliability and an assessment of data quality for different sectors although with limited profiles, when it was possible and allowed. In few cases, (see sub-chapters 2E and 2F) the availability of agricultural data at District level has allowed a more disaggregated approach. The outcomes of these above sub-chapters (2E and 2F) represent a consistent basement allowing designing and producing the "Food Insecurity and Vulnerability District classification", described in Chapter 3.

Chapter 3 makes reference to TOR envisaged outcome 4 (and partially 3) and includes an assessment of food insecurity and vulnerability at district level.

The outcomes of the mission field assessment are provided in two separate chapters – Chapter 4 and 5 – under the overall title "Case Studies".

Chapter 4 deals with Special Regions in northern and eastern Shan (sub-chapter 4B: Kokang, sub-chapter 4C: Wa). As explained in the introduction of the sub-chapter 4A, the mission could not get the permission to carry out the expected assessment in Special Region 4 and consequently this region is not included in this report.

Chapter 5 makes reference to Dry Zone, as per the request of the Ministry of Agriculture and irrigation of the Myanmar Government.

Main Findings, conclusions and recommendations are included in Chapter 6 with a long list of annexes providing associated information.

The databases compiled by the mission (as listed in annexes) have been re-organised in two digital sets: State/Division level and District level. The district level data derived from the Myanmar Agricultural Census 2003 (herein after referred as MAC 2003) have been also re-aggregated at State/Divisions level for allowing the user an easier comparison and/ or data processing with other indicators available only at State/Division level.

The mission recommends that the large amount of unpublished data extracted at District level from the MAC 2003 and information disaggregated by gender and holding sizes (two very significant dimensions for any vulnerability and food security analysis) be distributed to a wider group of potential users in collaboration with MoAI/ SRLD.

2 – EXISTING DATA INVENTORY AND ASSESSMENT

2A – INCOME AND EXPENDITURE DATA

Consumption patterns

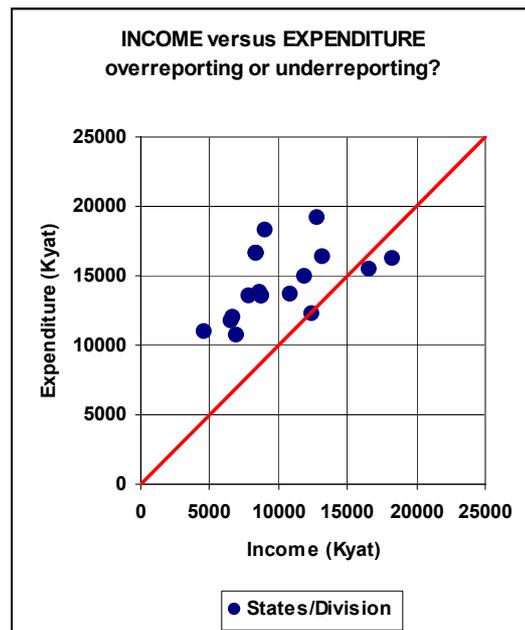
The utilisation of the Household Income and Expenditure Surveys (herein after referred as HIES) offers a powerful tool for analysing food insecurity and vulnerability patterns. Most of the above surveys are statistically significant only at national levels, however they can provide an in depth description of the observed population due to a high number of households surveyed. Since these surveys are carried out more or less regularly in each country, these offer a very appreciable advantage in the possibility of detecting changes at the levels and patterns of household consumption and expenditure.

In Myanmar, the first and foremost nation-wide household expenditure survey was conducted in 1989 and followed by a second one in 1997. Household expenditure data had been collected for several items, classified into two major groups: Food and beverages, Non-food. Food had been classified into 16 sub-groups and non-food items had been categorised into 17 sub-groups. Of 322 townships, 236 had been covered, and 45 townships had been surveyed. In both cases emphasis had been placed more on consumption patterns than the income.

A third Survey had been conducted in 2001. The HIES 2001 covered 75 townships in 14 states and divisions and as in the previous survey (1997). HHs' expenditure had been classified into the same two major groups: Food and beverages, Non-food. Food includes 16 sub-groups and non-food 17 sub-groups. Accordingly, a comparison between 1997 and 2001 is possible.

Up to now (2007) only very few outcomes (not the most relevant) have been released. Few tables have been published in the last three issues of the CSO Statistical Yearbook and in the recent CSO/MoAI, Myanmar Agricultural Statistics (1992-93 to 2004-05)⁵.

The two most recent HIES (1997 and 2001) could be defined as “Household



Expenditure Survey”. It is understood that the Income estimations published for 1997 show an obvious under-estimation of the income.

Income and Expenditure figure (State/ Division averages), as collected by HIES 1997 are plotted in the chart here aside; providing a visual confirmation of the overall concerns about data reliability. The red line separates two triangles where the per capita Expenditures are higher than the per capita Incomes and vice-versa.

The CSO, being aware of the above situation provided the following justification: *“This may be either due to the underreporting of the household income by the respondents and over reporting of the household expenditure by the respondents or not reporting the extra income. It may even be due to actual overspending of the household”*⁶

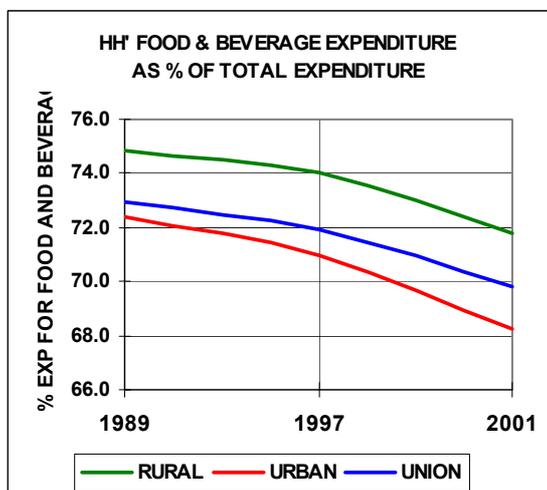
The CSO had not published the income figures in the 2001 Survey probably because of being conscious of the reliability of the data collected⁷. It seems significant that the CSO re-phrased its intentions, writing: *“The survey [2001] is intended to study the level and patterns of expenditure of households in urban and rural areas and derive base weights for computing consumer price index”*⁸.

Accordingly, the analysis on the income side was not attempted. However, by using the expenditure side data, it seems still possible to compare the outcomes of the three surveys (1989, 1997 and 2001) in order to identify some overall trends and characteristics (see table here aside). As everywhere in this report the growth rates are expressed as compound annual growth rates (CAGR).

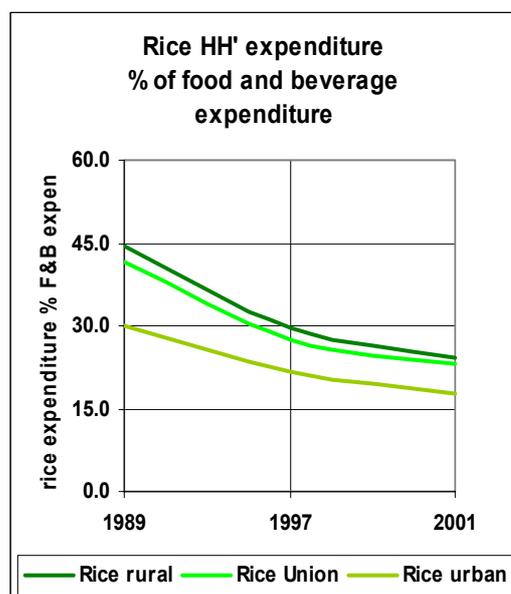
The percentage of expenditures for food and beverages (computed over the total expenditures and using current prices from the respective HIESs.) shows a slight decrease between 1989 and 2001, and yet the figures are very high even in 2001.

The apparent slight decrease is more obvious during the more recent observed period (1997-2001) Please see chart here aside.

The rate of the above decrease is more significant in urban areas than in rural



areas: -0.25% versus -0.14% and -0.97% versus -0.77% (for the period 1989-97 and 1997-2001, respectively).



Such overall changes are more evident when analysing the staple food (rice) expenditure. It is understood that the expenditures for rice (when expressed as a percentage of total expenditure for food and beverage) have drastically decreased. However, corresponding changes of growth rates between rural and urban areas have not been observed.

However, even in 2001, the rice expenditure component is higher in rural areas in comparison to urban areas (24.31 versus 17.84), and particularly, there have been no changes of the above ratio between 1997 and 2001⁹.

The above gap between rural and urban areas in term of expenditure is further confirmed and it becomes more meaningful when the meat and fish intake components (related to access to higher quality food, particularly in term of proteins) are analysed separately.

In general, particularly during the more recent observed period (1997-2001), a significant increase of percentages of expenditure for “high protein food” (meat and fish) was observed (see table aside).

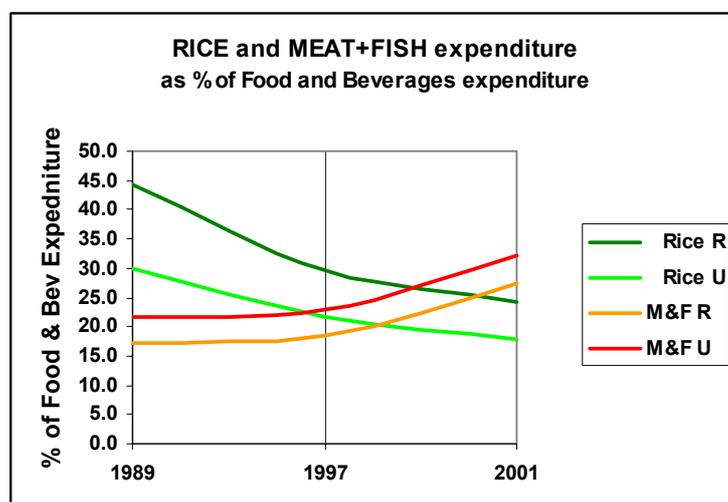
Further, the distance between rural and urban areas does not show any significant changes.

Meat and fish expenditure components are lower in rural areas (when compared with urban) and does not show a substantial change during the last observed period.

EXPENDITURE FOR RICE and MEAT+FISH					
AS % OF FOOD AND BEVERAGE EXPENDITURE					
			1989	1997	2001
RURAL	Rice R	%	44.35	29.61	24.31
		Growth rate		-4.92	-4.81
URBAN	Rice U	%	29.91	21.64	17.84
		Growth rate		-3.96	-4.71
RURAL	M&F R	%	17.33	18.60	27.40
		Growth rate		0.89	10.17
URBAN	M&F U	%	21.60	22.99	32.32
		Growth rate		0.78	8.89

sources: HIES 1989, 1997 and 2001

According to the data, the consumption patterns are rather static during the period 1997-2001 with a persisting higher component of rice expenditure in the rural areas and with higher expenditure for meat and fish in the urban environment (see chart here below).



However, these trends can be evaluated as positive or negative only in relation to price trends and according to the actual physical intakes of food. In order to move from an approach based on expenditure to consumption, it is observed that the overall proportion of expenditure

for food and beverages has not significantly changed between 1997 and 2001.

Are the rural and urban populations eating more or less the same, and are quality of their food better or worse now (2001) compared to the past (1989/1997)?

It is evident that the outcomes of an expenditure analysis cannot provide an answer to such sensitive question in term of food security. An urgent need of analysing the CSO information as detailed above not simply in terms of Kyats (expenditures) but in physical quantities (consumptions) emerges.

In the subsequent pages, a detailed analysis of the changing patterns in term of physical quantities is provided. The analysis is limited to the period 1997-2001, as detailed information for previous periods are not available and also that the data is most recent available.

The outcomes of the analyses and the conclusions drawn by the mission are rather shocking.

As shown in the preceding paragraphs, the country shows a trend towards a lower rice and food expenditure from the overall expenditure. This can be considered as a trend characterising (in general) a positive step towards better living standards. However,

in contrast, the analyses involving the CSO data, when expressed as consumed quantities seem to indicate a rather different situation, as described in the subsequent paragraphs.

According to CSO consumption data, the union of Myanmar, at least during the period 1997-2001, shows a decline in their intake both in terms of quantity and quality. In addition, a rural-urban desegregated analysis shows that not only the urban intakes are in general lower and worseoff than the rural but also the urban-rural gap has worsened during 1997 to 2001 making urban population more vulnerable. If this trend has continued up to now, as testified by key informants when they made reference, particularly to price of rice, there is an urgent need of (re)thinking about food insecurity in Myanmar, placing more emphasis on the urban side¹⁰. This indication provides additional justification to the EC proposal for focusing on the outskirts of the Burmese big cities¹¹.

In order to analyse the consumption patterns and to identify their trends, the mission according to Asia FIVIMS approach has converted the physical quantities of different food item intakes into nutritional figures (Calories and Proteins) according to the content of each food item.

The physical quantities have been gathered from urban and rural “monthly per capita consumption of selected commodities by State and Division” 1997 and 2001¹² by the CSO. The commodities such as Rice, Pulses, Meat, Fish and Crustacea (fresh), Fish Products, Oils and Fats and Potato have been used.

In order to convert the physical quantities into Kcal and grams of Proteins, the figures contained in Directorate of Health Services, The Nutritive Value of Burmese Foods, Rangoon (1967) have been used.

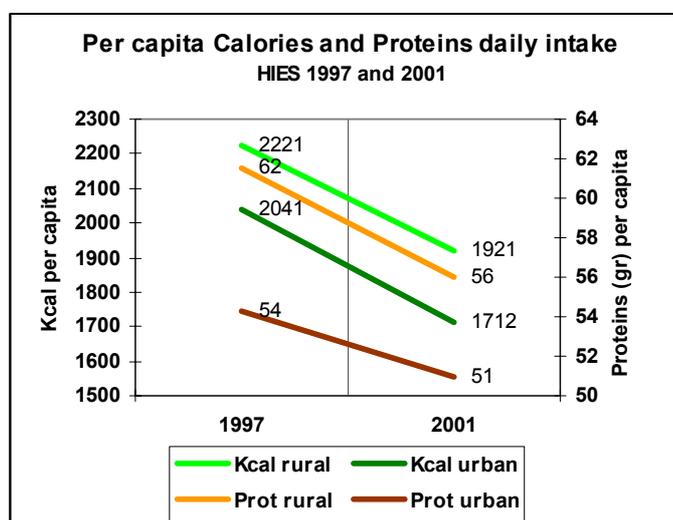
It is noted that for cereals, the CSO has unfortunately published figures only for rice, some adjusted coefficients have been applied for States/ Divisions where other cereals are significantly grown (maize and wheat, in particular). The above coefficients have been defined taking into account the relevance of each crop (in terms of average sown acreages during 1996-2002).

The mission has estimated that, according to the CSO collected quantities, **the overall monthly per capita intake (consumption) in both rural and urban areas in term of calories and protein intakes have been reduced between 1997 and 2001.**

The chart below shows the overall national trends of daily intake per capita of calories and proteins. How this overall pattern differs from the State/Division urban and rural ones will be described in the subsequent pages, emphasising the lessons that could be learnt for food insecurity analysis.

As an overall synthesis:

1. In general, the **rural areas** (both in 1997 and 2001) are characterised by a higher intake (both of calories and proteins) than the urban areas.
2. Between 1997 and 2001, the **diet became**



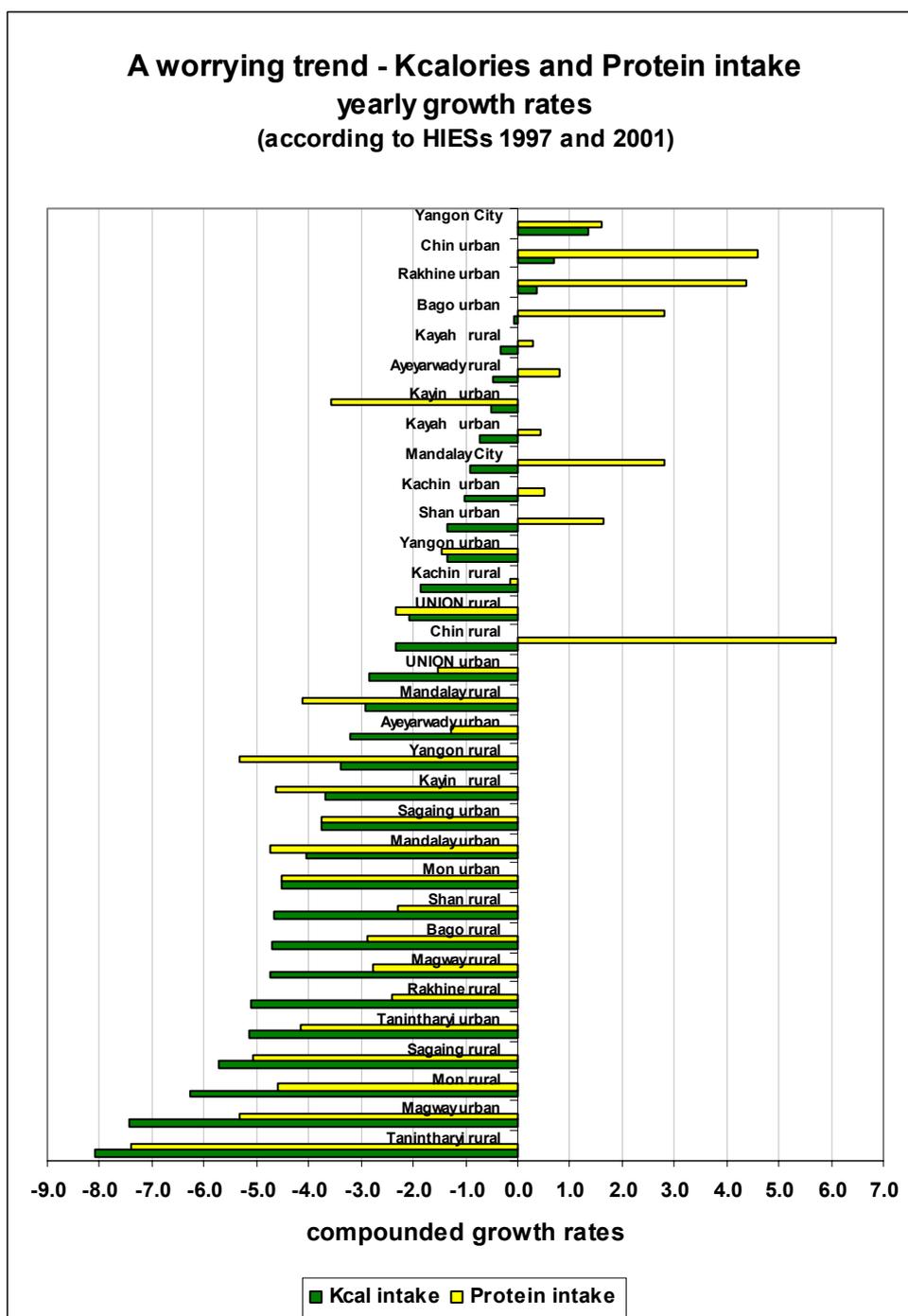
more and more poor, both in term of quantities and qualities.

This happened both in rural and urban areas.

3. In the **urban areas**, the intake of calories (2041 Kcal/capita/day in 1997) - already lower than in the rural areas (2221 Kcal) - was affected by an annual higher decrease (-2.84% versus a rural -2.09%). The protein intake (54) – although lower in the urban areas than in the rural areas (54 versus 62 gr/capita/day) has shown a decrease annually with a smaller pace (-1.54% versus a rural -2.32%).
4. However, within these overall trends, a more detailed analysis at sub-national level (State/ Division) shows that the **most worsening trends have characterised in the border rural areas of the country and as well as the urban areas in the central part of the country.**
5. The **two cities (Yangon and Mandalay)** show different starting points and trends:
 - a. Mandalay City, with 2105 Kcal/capita/day and 60gr of Proteins (in 1997) is emerging as the “primate city” due to both higher quantities and improved quality of its diet. In particular, the intake of proteins has shown an increase of 2.80% annually.
 - b. While Yangon City, already characterised in 1997 by only 1766 Kcal/capita/day and 51gr of Proteins (both lower than the National urban averages (1921 and 54, respectively)) slightly improved its conditions and still remained far below than the Mandalay levels.

The Calorie and Protein Intake trends are plotted for urban and rural components separately and individually for each State/ Division in the next page.

The States/ Divisions are plotted according to descending figures of annual growth rate of intake in Kcal/capita/day. However, few rates are not possible to be explained, for instance the Chin state growth rate of protein intake in urban areas.

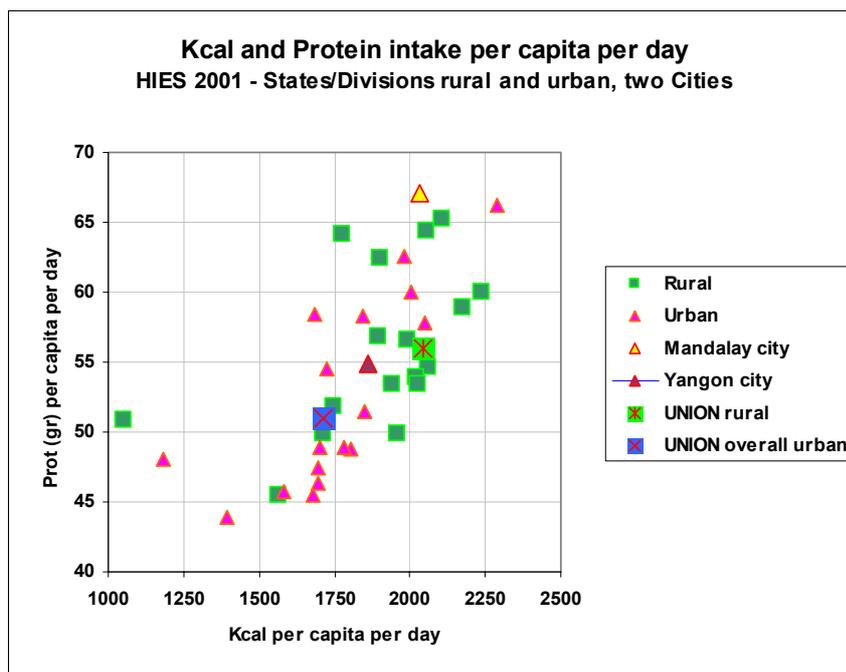
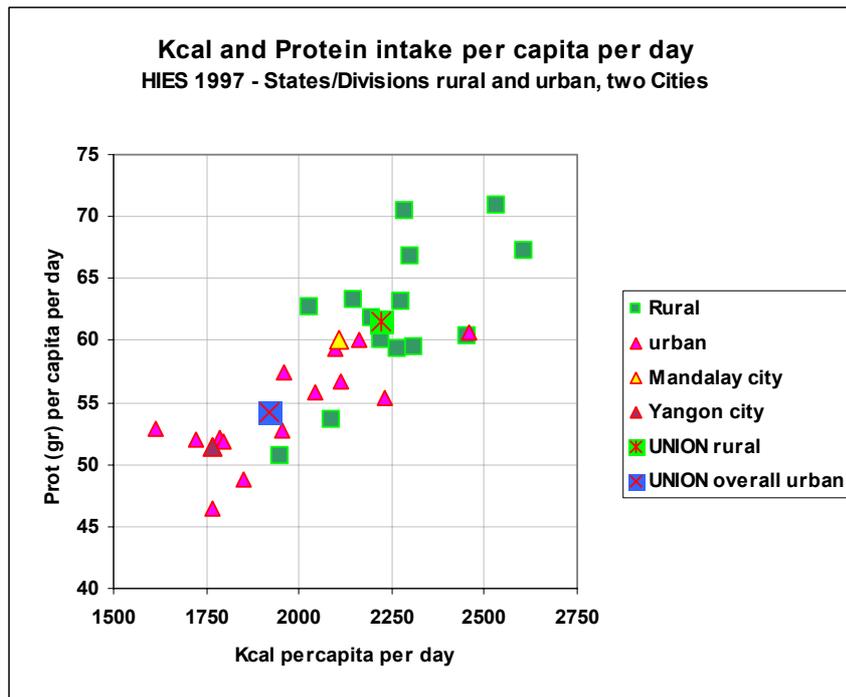


In order to facilitate a comparison between the years 1997 and 2001, two additional

charts are presented in the next page, where the position of each State/ Division is plotted.

It should be noted that the dispersion of the points both for rural (dark green squares) and urban (pink triangle) are more linear and apparently more logical in 1997. The overall figures for the Union of Myanmar are also plotted.

The figures found in CSO data (2001) are more dispersed and particularly the worst in urban areas.



The above charts are rather self-explanatory. However, it must be noted that it is not possible to combine the annual growth rates of State/ Division disaggregated by calories and proteins with their levels of intake.

For this reason the mission, in the more detailed analysis, employed multi-factorial analysis techniques (to compare both levels) and the trends of the per capita/day/intake (estimated in Kcal and grams of Proteins). The State/Division data have been processed in a desegregated form (i.e. separately by rural and urban components of each administrative unit) having already identified the weakness of the official definitions of “urban” and “rural”.

The figures make reference to the most recent estimations (2001) while the trends are reconstructed comparing 2001 figures with 1997 data.

The population figures which are used as a weight in the cluster analysis make reference to data of 2001¹³.

Unfortunately, the more recent information is not available and accordingly, there is a need, once available, to verify if and/ or how much the emerging patterns are still confirmed, developing or modifying themselves.

Apparently, the Union of Myanmar could be divided in **7 clusters**; some of them are identified by **patterns which indicate serious implications on future food security policies**.

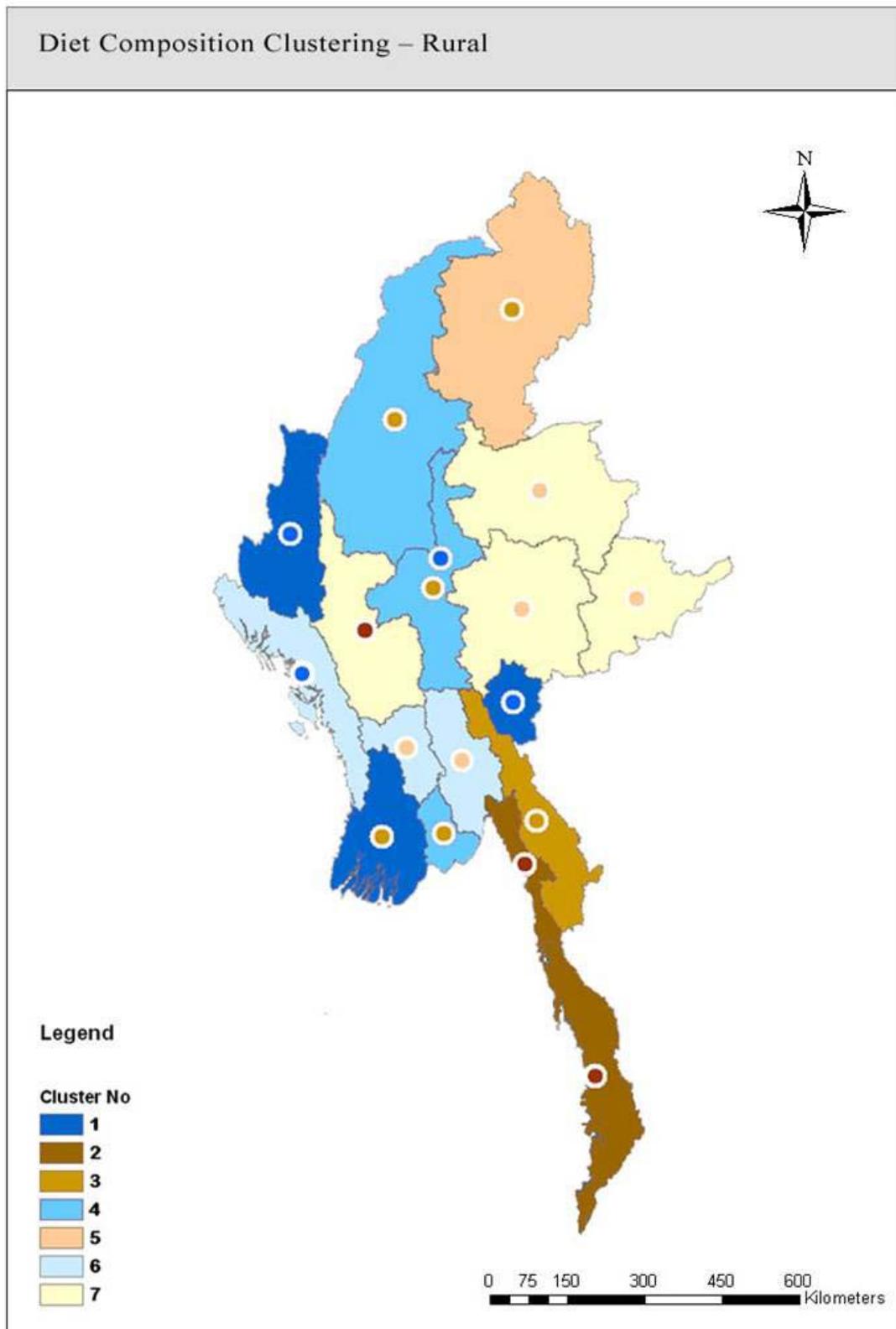
The map shows the clusters related to the rural component (chromatic scale on the States/Divisions), while the circle on each administrative unit shows which cluster their urban component belongs to.

At least 12 areas (either rural or urban in different States/ Division) should be considered **food insecure** due to:

- **scarce access to required food quantities and**
- **decreasing trends in consumption during the analysed period (1997-2001).**

The **worst cluster (cluster 2)** includes **Mon and Tanintharyi States** (both rural and urban areas) and **Magway urban areas** (see the map below). This cluster is characterised not simply by the lowest calories and proteins intakes but also by the

fact that these already poor intakes have worsened during the observed period (-6.4% and - 5.2% annually, respectively)..



The association of these patterns, combined with other variables derived from the processing of other food insecurity indicators clearly identifies these areas as “areas of concern”, which could primarily be viewed as “food insecurity hotspots”¹⁴.

Cluster 3 includes mainly urban areas of **Kachin, Kayin, Sagaing, Ayeyarwady, Mandalay** (excluding Mandalay city), and **Yangon** (excluding Yangon City too) and also the rural part of **Kayin**.

The overall poor nutritional levels and their trends confirm one of the most evident peculiarities of the Union of Myanmar: in general, urban food intake is poorer than that of rural areas. Further, the food intake shows worsening at about the rate of national average drop. However, protein intake shows a strange trend of improvement yet it is negative. In other words, the urban populations show a reduction in food intakes while improving their diet composition marginally (higher % of proteins).

In contrast, other urban areas (**Cluster 5: Bago, Shan and Yangon city**) record a protein intake remarkably very close to the national average but are characterised by a marginally lower intake than the national average. However, these areas have registered an important improvement during the observed period (1997-2001) when the protein intake is considered. In this case, the overall negative trend was reverted, and positive trends have been observed.

Clusters 6 and 7 show calories and protein intakes that are not deviated far from the national average. Both clusters are affected by negative trends (lower than the national average), but with a remarkable difference in Cluster 6 which enjoys a higher intake of proteins (namely the rural areas of Bago and Rakhine).

Cluster 4 which includes the densely populated rural areas of **Sagaing, Mandalay and Yangon** shows (for 2001) apparently adequate food intakes in terms of calories (2036 Kcal) and of proteins (54 grams per capita). However, the diet has shown a worsening situation when compared with the figures of 1997, particularly, in term of proteins. In other words, these populations have reduced their intakes and in particular, they have reduced the proportion of protein intake more.

Finally, the best cluster (**cluster 7**, rural areas of Magway and Shan, according to CSO data) is characterised by a higher caloric intake (2073 Kcal) and protein consumption (65 grams). A rather important improvement, particularly for proteins, has been registered during the observed period in this cluster.

It is indeed worth to be noted that the urban area of a specific State or Division is sometimes worse (it means it belongs to a worse cluster) than its rural parts. This fact suggest an important assumption that **Food insecurity is not always simply affecting rural/ remote areas (as most of the literature assumes), but also (and may be not seldom) affects very urban and central areas significantly.**

The quantitative profiles of the seven clusters are described here below.

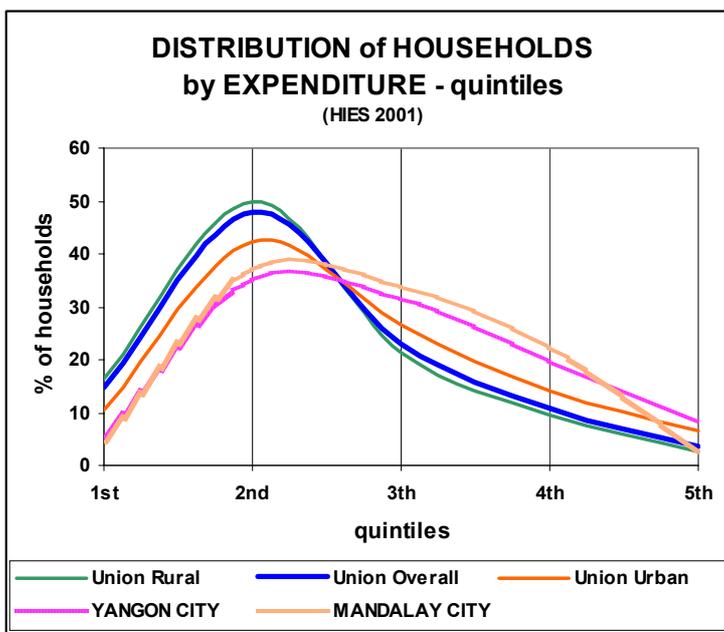
Classification of States/ Division according to Calories and Protein intake and changes occurred during 1997to 2001period for Rural and Urban areas					
CLASS	NUM	Kcal	Proteins (gr)	Kcal growth rate	Prot growth rate
2	5	1670	48	-6.4	-5.2
		----	----	----	----
3	7	1749	52	-3.1	-2.9
		----	--	~~~	--
5	4	1878	55	0.7	1.3
		--	--	++++	++++
7	2	1956	54	-4.7	-2.5
		~~~	--	--	~~~
6	2	1944	60	-4.8	-2.7
		~~~	++	--	--
4	3	2036	54	-4.2	-4.7
		++	--	--	--
1	7	2073	65	-0.6	1.7
		++	++++	++++	++++
UNION					
PROFILE	30	1937	56	-3.4	-2.2

sources: HIES 1997 and 2001

Distribution of expenditure by quintiles

In the absence of any information about the income distribution in recent years, it is still possible to use the available data on expenditure, desegregated by the class of expenditure, as a proxy indicator.

As the data from the two HIESs have been published according to a different number of “tiles”, the mission has aggregated the data by quintiles for allowing the possibility of a comparison between them. In addition, in order to carry out a comparison between States/ Divisions, the data have been opportunely deflated for making reference to national quintiles.



The chart here aside compares the overall Union with its rural and urban components.

The two mayor cities (Yangon and Mandalay) are also plotted for comparison.

Not surprisingly, the Union distribution is very similar to its rural component; a lower peak at the second quintile and

the lower flex in the following quintiles are obviously due to the urban contribution.

In 2001, the first and the second quintiles include 66.42% of rural population, and 52.70% of urban population.

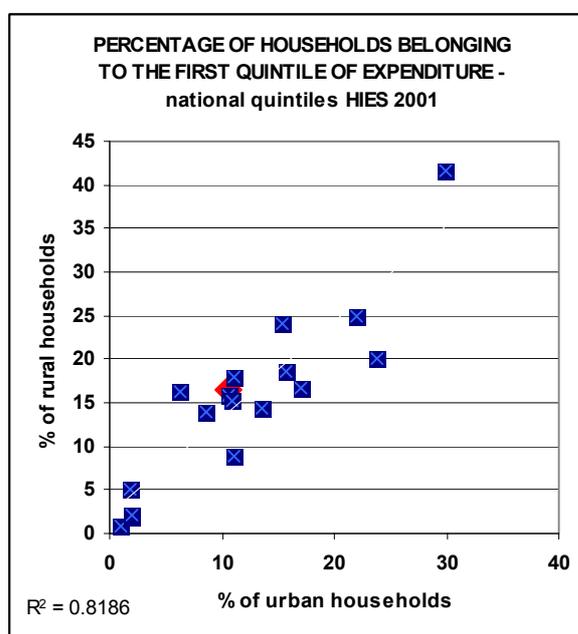
DISTRIBUTION OF HOUSEHOLDS BY EXPENDITURE - QUINTILES					
	1st	2nd	3rd	4th	5th
Union Rural	16.44	49.98	21.44	9.58	2.56
Union Overall	14.82	47.86	22.86	10.83	3.66
Union Urban	10.51	42.19	26.64	14.22	6.59
Yangon City	5.56	34.98	31.48	19.76	8.21
Mandalay City	4.48	36.92	33.76	22.23	2.59

source: HIES 2001

The two major cities, Yangon and Mandalay which are not included in the above “Union urban”, covers within the fort two quintiles 40.54% and 41.40%, respectively.

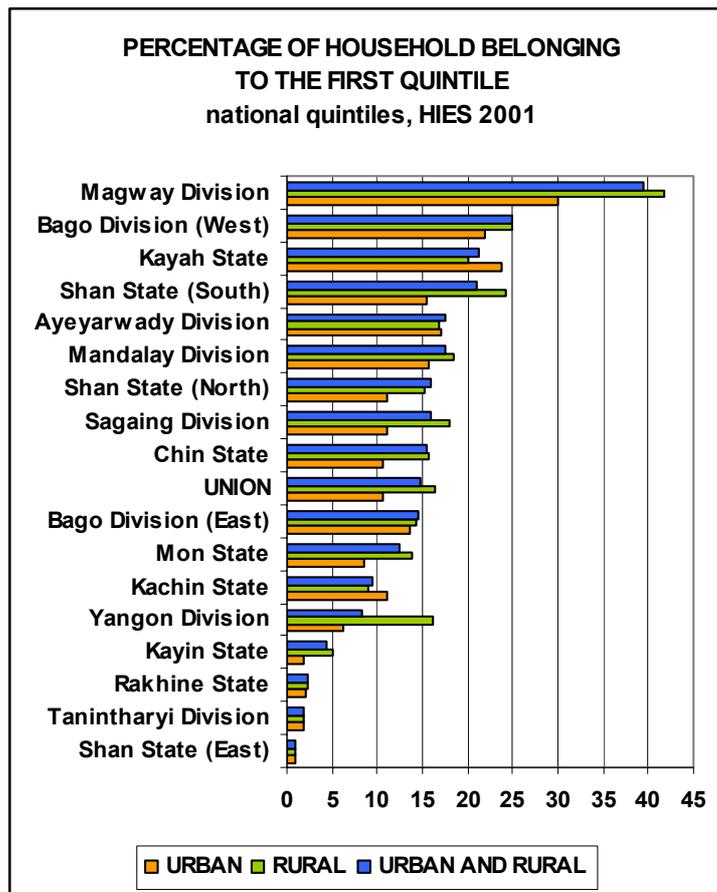
The above national figures are, however, a result of an extremely high variability between States and Division, both at rural and urban level. The percentages of households belonging to the first national quintile vary between 41.67% of rural Magway to 0.90% of rural Shan State (East). In addition to Magway, the most critical areas are Bago (West Division, 24.92%) and Kayah State (20.01%).

Rural and urban figures for each State/Division are rather correlated ($R^2 = 0.8186$) as it is also evident from the chart below.



In the next char, the States / Divisions are represented separately in their urban and rural components and sorted in descending order according to the rural component.

It is noted that, in some cases, the percentage of urban households belonging to the first quintile is higher than that of its corresponding rural figure (i.e. Kayah and Kachin States), Further, in Ayeyarwady Division the percentages are rather the same, confirming current opinion of many people.)



This result provides an additional element to the assumption that **urban conditions are sometimes worse than the rural situation calling for a serious revision of the most currently established and accepted fact files. It also implies a need for a revision of vulnerability and food insecurity related policies in Myanmar.**

2B – NUTRITIONAL OUTCOMES AND VITAL STATISTICS

An in-depth analysis of nutrition outcomes and vital statistics available in Myanmar was carried out by the mission. Only data sources statically significant at State/Division level were taken into account. It was decided to omit other important sources due to their low level (mainly 4 Region) of administrative desegregation¹⁵. It has been also verified that any kind of data at district level is statistically significant.

Nutritional data and other vital statistics are collected and published by different institutions:

Nutritional outcomes and sanitation data are available from Multiple Indicator Cluster Surveys (abbreviated as MICSs) carried out by the Department of Health Planning (Ministry of Health).

The first survey was conducted in 1995 with technical and financial assistance from UNICEF and produced “the very first set of data on the situation of Myanmar children at the sub-national level by urban-rural area of residence and by gender”¹⁶.

Between August 1997 and July 1998 a second MICS was conducted (with the assistance of UNICEF again); the result had been published under the title MICS 1997. A two-stage, stratified cluster sampling design was used in both surveys, but the 1997 Survey did not cover the “same [1995] sampled households”.

A third survey, designed to provide estimation of health indicators at national level (urban and rural areas separately) and for 16 “Region” (States/Divisions, as Bago was not divided in two separated administrative units) was conducted between June and August, 2000.

A two-stage sampling was used; 627 villages in rural areas and 182 wards in urban areas were selected according to a probability related to size. “After segmentation ... within the selected clusters, a random sample of 25600 households was drawn.”¹⁷ Due to the fact that the sample had been stratified by regions, it was not self-weighting. For the computation of the national figure, sample weight had been used. No official comparison between 1997 and 2000 MICS has been published/ provided.

The most recent MICS had been carried out on between June and August 2003 and in

this case 17 States/ Divisions had been considered (including Bago East and Bago West). In the first stage, 518 villages in rural areas and 162 wards in urban areas had been selected as clusters with a probability proportional to the estimated size. At the second stage, 40 households had been randomly selected from each cluster. A total of 27200 households (from 680 clusters) had been selected.

In spite of the intention of “furnish[ing] data needed for monitoring progress toward MDGs set at the UN General Assembly on Special Session on Children in May 2002”¹⁸, the report has not provided any comparison with the previous (2000) survey.

Some vital statistics such as Infant Mortality Rate (IMR), Under Five Mortality Rate (U5MR) and Maternal Mortality Rate (MMR) had been collected by the CSO National Mortality Survey (1999) and are currently collected by the Routine Data Collection System¹⁹ (HMIS) of the Department of Health Planning of the MoH²⁰.

Both sources (MICS and HMIS) are affected by serious inconsistencies although due to different reasons; in any case the main concerns emerge when a time series analysis is carried out:

- MICS data suffer from continuous changes of sampling design, lack of continuity of institutions responsible for the surveys, data bias, and poor supervision. These reasons were also confirmed by verbal and informal justifications provided in Nay Pyi Taw by key informants.

- Vital Statistics suffer for a heavy underreporting from the BHS (Basic Health Staff) as partially acknowledged by MoH publications²¹.

A data quality assessment carried out by the mission provides rather discouraging results and suggests a serious caution when the above data are to be used.

The mission assessment was limited to the available most recent years (MICS 2000 and 2003) and HIMS (1999 and 2003, as 2004 data was only available at the last moment, hours before the mission leaving Yangon).

MICSs 2000 versus 2003

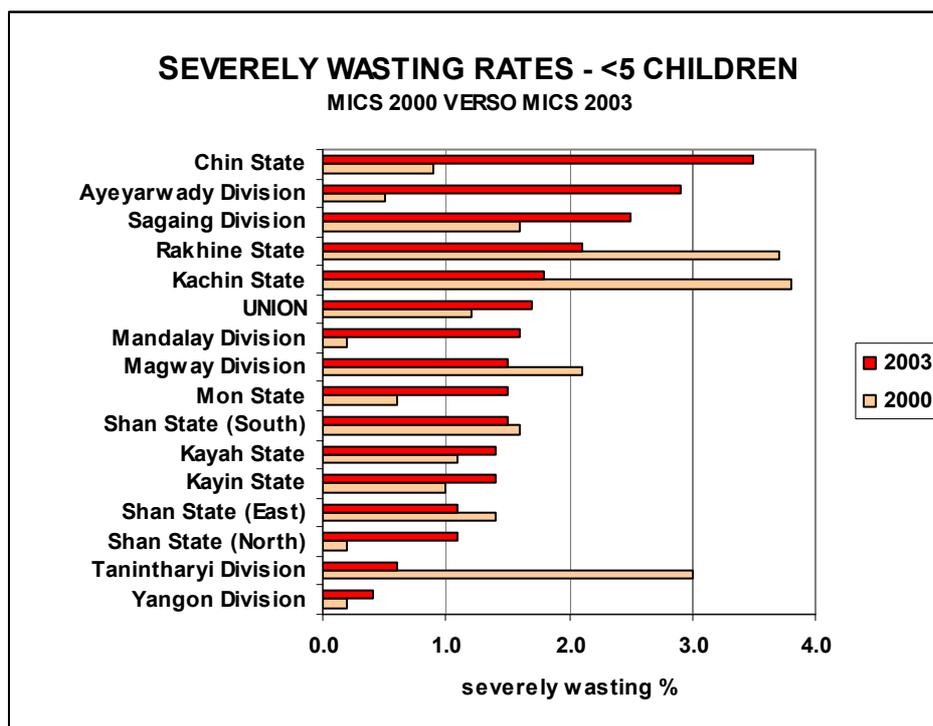
The most current nutritional indicators (Underweight, Stunting and Wasting rates - both moderately and severely) of <5 years old children, as provided by MICSs 2000 and 2003 have been compared at State/ Division level.

MICS 2000 versus 2003	
indicators	correlation coefficient
Underweight	0.751
Severely Underweight	0.242
Stunting	0.498
Severely Stunting	0.587
Wasting	0.018
Severely Wasting	0.000

Only the underweight rates seem to be reasonably correlated. Changes can obviously happen due to different paces in different areas, however, in such a small time interval (only 3 years); a reasonable correlation should have been found.

It is noted that the total “disaster” (in term of data reliability) is detectable when correlating the wasting rates. The chart shown in the next page is self-explaining.

According to MICS 2000 and 2003, Chin Ayeyarwady and Mandalay (Divisions) have tremendously increased their “severely stunting” rates, while Tanintharyi, Rakhine and Kachin did the opposite. This is the reason why the correlation coefficient, as shown in the previous table, is so meaningless.



Note: Bago is not included in the above chart as in 2000 Bago was still one administrative unit, while in 2003 it was split in two units.

Similar “discouraging” charts could be plotted for the other nutritional outcomes. It is sufficient to provide only the example of Tanintharyi: the estimation in the “severely underweight” rate was 15.7% (MICS 2000) but then, apparently, this rate has

drastically decreased up to 2.8% (MICS 2003).

As a paradox, Tanintharyi moved from the near worst position (15.7%) in 2000 to the best possible position. The common sense suggests that it is rather impossible to happen during such a short period. On the other hand, this mistrust was informally confirmed by key informants at the interviews.

Vital Statistics: CSO versus HMIS

A glance at the vital statistics increases the data reliability above mistrusts. A comparison between three mortality rates (Infant, <5 five and Mother) as estimated by CSO National Mortality Survey (1999) and by the Routine Data Collection System²²(HMIS 2003) is further meaningful.

In this case, only an example is enough to justify the mistrust. Infant Mortality Rate (IMR) of Shan State (South) was the worst (90.7%), according to CSO, 1999 in 1999 reached the best (18.4%) in 2002 according to HMIS 2003. The above portentous “improvement” can’t be justified simply by different data collection systems.

How to cope with such contradictory results?

The mission had to choose between two alternatives: either to give up the idea of using the above indicators or to smooth the last two observations computing average figures.

The mission decided to use averaged figures, although being aware of the limitations related to this decision. Accordingly, it was attempted to use the indicators at State/ Division level based on their average values (either 2000-2003 or 1999-2003).

In spite of all the already expressed concerns and being aware of all the limitations imposed by the data quality, the mission decided to carry out a clustering analysis at State/ Division level in order to assist the identification of “areas of concern” in Myanmar according to nutritional outcomes.

Sometimes the clustering outcomes, being heavily affected by data quality, are difficult to be interpreted. However, the mission decided to include in this report the cluster analysis results in order a) to demonstrate how contradictory the outcomes could be when using the available indicators and b) to promote positive reactions from the concerned institutions. In any case, they provide some useful insights to the

existing major differences inside the Union and urgently call for a better data collection in the future.

The following set of indicators (State/ Division level) has been included in the analysis:

Underweight rate, moderately and severely (<5 year old children):

Average MICS 2000 and 2003

Stunting rate, moderately and severely (<5 years old children):

Average MICS 2000 and 2003

Wasting rate, moderately and severely (<5 years old children):

Average MICS 2000 and 2003

Infant mortality rate

Average NMS 1999 and HMIS 2003

Under five year's mortality rate

Average NMS 1999 and HMIS 2003

Maternal mortality rate

Average NMS 1999 and HMIS 2003

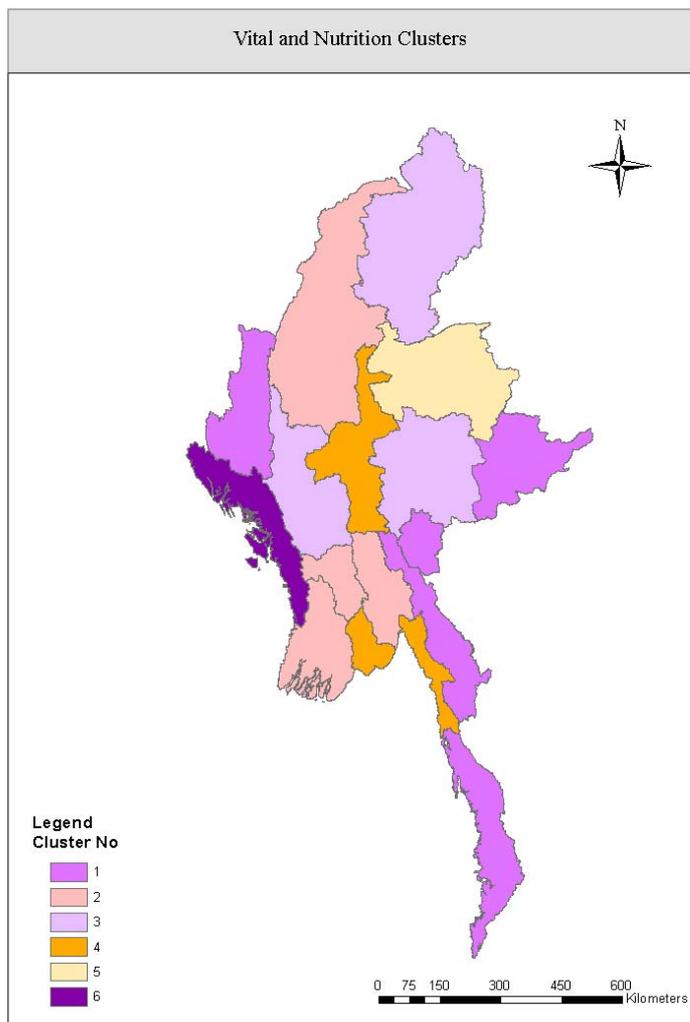
Maternal mortality rate

Average NMS 1999 and HMIS 2003

An additional indicator: access to safe drinking water (as available from average MICS 2000 and 2003) was included in the analysis to verify whether some relations exist between nutritional outcomes, vital indicators and this proxy indicator of hygiene²³.

The clustering outcomes are summarised in the table on the next page.

CLASS	No. of States/ Divisions	UW	SUW	ST	SST	WA	SWA	IMR	<5IMR	MMR	SA_WAT
		6	1	47.4	19.1	42.5	20.2	11.7	2.9	38.9	51.0
		++++	++++	++++	++++	++++	++++	--	--	++	----
1	5	36.7	8.8	38.8	18.5	8.1	1.5	39.0	58.8	2.3	52.1
		++	++	++++	++++	--	~~~	--	~~~	++	--
3	3	33.0	6.5	33.5	12.7	9.8	1.9	51.7	79.9	2.4	71.3
		~~~	--	++	~~~	++	++	++++	++++	++	++
5	1	20.7	4.8	33.7	13.5	3.8	0.7	44.1	70.6	3.4	69.9
		----	--	++	++	----	----	++	++++	++++	++
2	4	34.2	7.5	32.3	12.4	9.7	1.6	43.8	58.7	1.8	63.0
		~~~	~~~	~~~	~~~	++	++	++	~~~	--	~~~
4	3	30.2	5.6	28.4	10.3	8.3	0.7	33.7	44.1	1.3	75.4
		--	--	--	--	--	--	----	----	--	++
UNION											
PROFILE	17	33.2	7.4	32.5	12.8	9.0	1.4	41.3	57.7	1.9	65.8



The States/ Divisions are plotted on the map of vital statistics and nutritional outcomes according to six (6) clusters they belong to.

Cold colours identify “clusters of concerns”, while hot colours define better performing areas.

Rakhine State emerges as an isolated cluster (cluster 6) which is affected by nutritional outcomes far below the national average. In particular, the “severely” component of the three nutritional indicators are extremely high (more than twice the national figures).

The above overall worst nutritional condition seems confirmed by a remarkable low access to drinkable water (1/2 of national average).

However, some vital indicators are rather contradictory. The infant and the <5 mortality rates are better than the national averages²⁴. In contrast, maternal mortality rate is far higher than the national average and is similar to cluster 1 and 3.

A second area apparently seriously affected by nutritional problems is identified by **cluster 1** which includes four States (Kayah, Kayin, Chin and Tanintharyi). In this case, the first two nutritional outcomes (underweight and stunting) are above the national averages but the wasting rate is lower than the national average. According to some Health and Nutrition staff, the apparent contradictions between wasting and stunting could be, at least partially, explained by prevalent ethnicity.

In Rakhine, some vital statistics go in another direction while the access to drinkable water seems to confirm the worrying components of this cluster profile.

Cluster 3 (Kachin, Magway, Shan East and South), on the contrary, shows an overall nutritional outcome profiles close to the national averages, but seems affected by mortality rates very seriously. Some partial explanations for the remote areas belonging to this cluster could come (as verified at the occasion of the mission field assessment) from the lack of accessing to or utilizing health services especially for caring during pregnancy and delivery. Home delivery by family members is common without taking antenatal case. However this justification doesn't seem sensible when referred to the situation in Magway. .

Shan North State represents a stand-alone cluster (**cluster 5**). The reasons of this isolation are several. Poor performances of vital indicators against the good performances of nutritional outcomes are attributable, if we exclude the stunting rates. Curiously (and also surprisingly), MICSS had estimated that the wasting rates were the best ones, in contrary to the other, although information is limited geographically.

The next profile described in the table (**cluster 2**) includes the two Bago Divisions, plus Sagaing and Ayeyarwady. This cluster is characterised by a profile very similar to the national statistics, with the exclusion of the Infant Mortality Rate.

Finally Yangon, Mandalay and Mon State (**cluster 4**) come out at the best performing areas.

2C – HYGIENE AND FACILITIES

Inventoried the availability of hygiene and facilities data and an assessment of their reliability were carried out by the mission. Data available from the last MIC Surveys (1997, 2000 and 2003) and the last two HIE Surveys (1997 and 2001) were taken into account in the compilation and analysis.

The mission intended to analyse and combine several indicators computable from the above sources, and in particular:

- access to safe water,
- availability of sanitary excreta,
- availability of lighting,
- type of fuel for cooking.

These analysis are based on the general assumption that a higher access to these facilities is related, in general, to a better food security condition. In particular, a better access to safe water is considered as one of the fundamental preconditions for fighting undernutrition, as in many cases the results on an adequate, or near to adequate intake are forcibly penalised by a poor hygienic environment.

Unfortunately, as already explained, the analyses were restricted not simply by the fact that the outcomes of both the MIC Surveys and those from published HIE Surveys are statistically significantly different at State/ Division level and also due to other critical factors characterising the above indicators such as their relative elderliness and their reliability, particularly when analysed in time series.

Nevertheless, before making an attempt to combine Hygiene with Vital and Nutrition indicators, the mission carried out a preliminary analysis on the quality of the Hygiene and Facilities indicators.

Priority was given to the access to safe water, due to its relevance for any food security and vulnerability analysis. The above indicator is computable from both sources (HIESs and the MICs), although with some nuances, as only apparently the criteria for defining water as “safe” are similar in the two sources. This facilitates the comparison where the mission used from the HIES the aggregate “good sources of water”, which includes “Piped Water, Artesian Well and Covered Well”, while from the HIES has computed the sum of “Piped into dwelling, Public tap, Tubewell/

borehole with pump and Protected dug well/spring”. This is because the MICS original definition of safe drinking water includes also “Protected pond and Protected Rain water”.

A first comparison between the two sources (HIES 2001 figures versus MICS [averages 2000-2003] figures) demonstrated that MICS offers a rather optimistic description when compared with CSO/HIES.

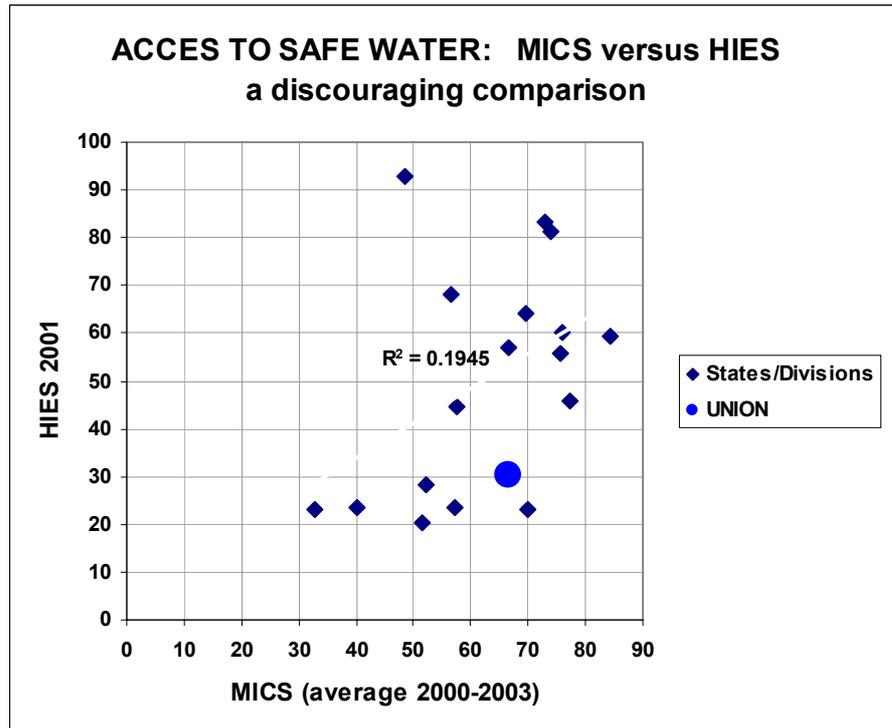
Even when the definitions, apparently very similar, could not have been fully applied by the enumerators in the field, the discrepancies it creates are so huge to induce concerns about their utilisation, particularly for defining which could be the most reliable.

Already at the first glance, at national level, the figures justify these concerns. According to HIES, only 51.3% of the Myanmar households had access to safe water in 2001, while according to MICS (when using average 2000-2003) the amount was rather higher (66.7%). In other words, the MICS estimation is approximately 15.4% higher than the HIES estimation. In terms of population (2001), this discrepancy means that the gap between the two estimations amounts to a slightly less than 8 million people.

Is it an underestimation by MICS or an over estimation by CSO/ HIES?

Obviously this gap has serious implications for any safe water policy, and for any project proposal aiming at providing safe water to people in Myanmar.

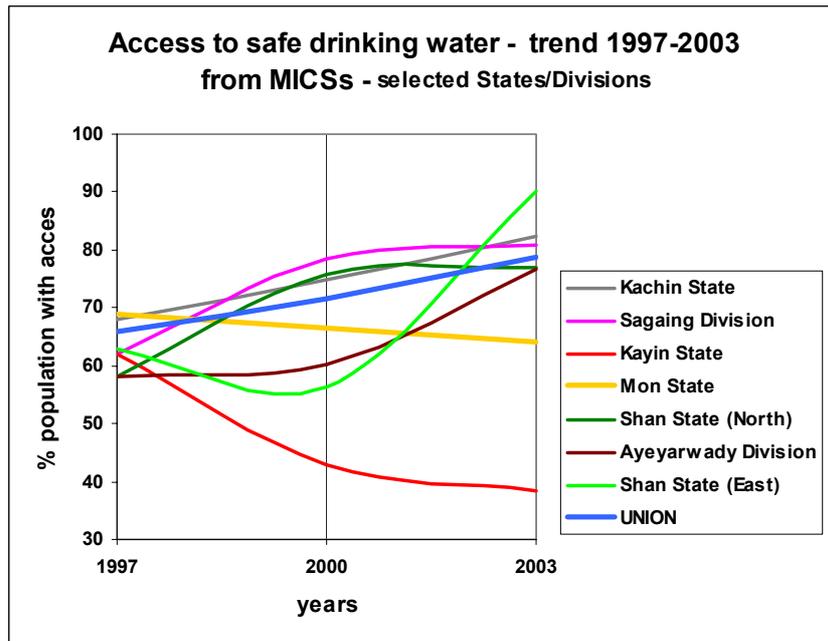
The first attempt was made by the mission to verify whether this over/ under-estimation is systematic and possibly related to misunderstanding of some definitions, which are rather similar. The chart below compares the figures at State/ Division level showing a lack of any regularity in the differences. In the lower areas of the graph, the relationship seems to be without any “elasticity”, while in the upper areas, when Chin State is excluded²⁵, a mild elasticity could be identified.



The mission made the second attempt: to analyse the consistency of the time series of the two data sets in order to verify whether these trends are regular.

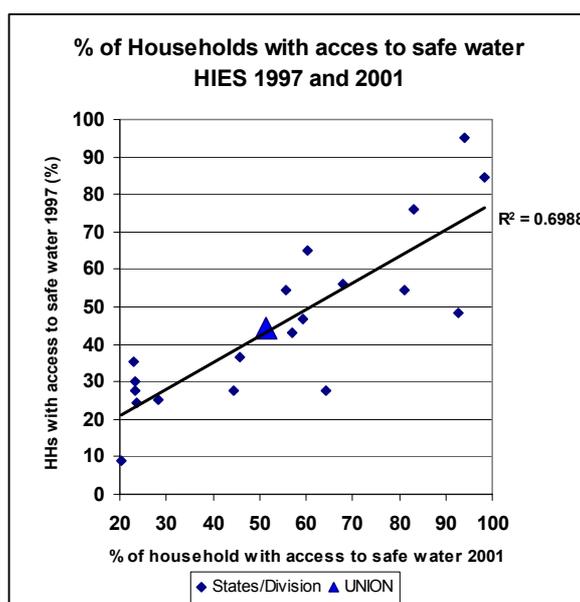
The chart in the next page plots the trend of the “access to safe drinking water” of a selected number of States/ Divisions. The mission had to use the wider aggregation of MICS “access to safe drinking water” since data disaggregated by type of source were not available.

Few comments can be made about the chart. While a strong “access to safe water policy” could had been so successful as shown in the case of Shan State (East), the deterioration of the situation in Kayin state is at least surprising and unjustifiable.



An overall comparison between 1997, 2000 and 2003 percentages at States/ Divisions shows a very poor correlation (1997 versus 2000: $R^2 = 0.3393$, 2000 versus 2003: $R^2 = 0.4861$). It is not reasonable to expect a very high correlation, as the States/ Divisions do not necessarily improve their conditions at the same rate. However, a very low correlation seems to be an indication of the poor reliability of the data.

Most of the evident inconsistencies of the MIC Surveys could be due to several reasons, for instance: sampling design criteria, data bias, in spite of the fact that the number of households surveyed was significantly high²⁶.



One of the more probable reasons would have been that MIC Surveys had been conducted by different Institutions probably using different criteria.

The same test, when applied to HIES data (although limited to 1997 and 2001, see chart aside) provides, at least, less contradictory results. The coefficient of correlation between percentages of households having access to safe water (1997 versus

2001) is more significant (0.6988)

As a result of the above tests/ considerations and due to the fact that CSO/ HIES data, (and not the MICS data), are available in a disaggregated levels referring to rural and urban part of each State/ Division, the mission decided to use the CSO/HIES figures in this report, although some important information is not included in the HIES dataset.

For instance, the mission, at the beginning of its activities in Myanmar intended to use the information on the “access to sanitary excreta” (from MICS), because of the relevance of this indicator for any food security analysis. Poor access means higher risk of transmission of different kinds of illnesses, in particular, the intestinal disorders. Further, in Myanmar, worms are rather present both in children and in pregnant mothers. However, (see the additional note at the end of this chapter) the mission disregarded this indicator due to its poor reliability verified through several tests.

When using the CSO/ HIES figures (refer to the table below) it is found that the access to safe water is still a critical problem in Myanmar.

ACCESS TO SAFE WATER (good source of water)				
		HIES	HIES	
		1997	2001	growth rate
UNION	% HHs	44.4	51.26	1.03
Urban	% HHs	67.9	77.50	0.95
Rural	% HHs	31.23	40.76	1.92
Rural/Urban	ratio	0.46	0.53	0.96

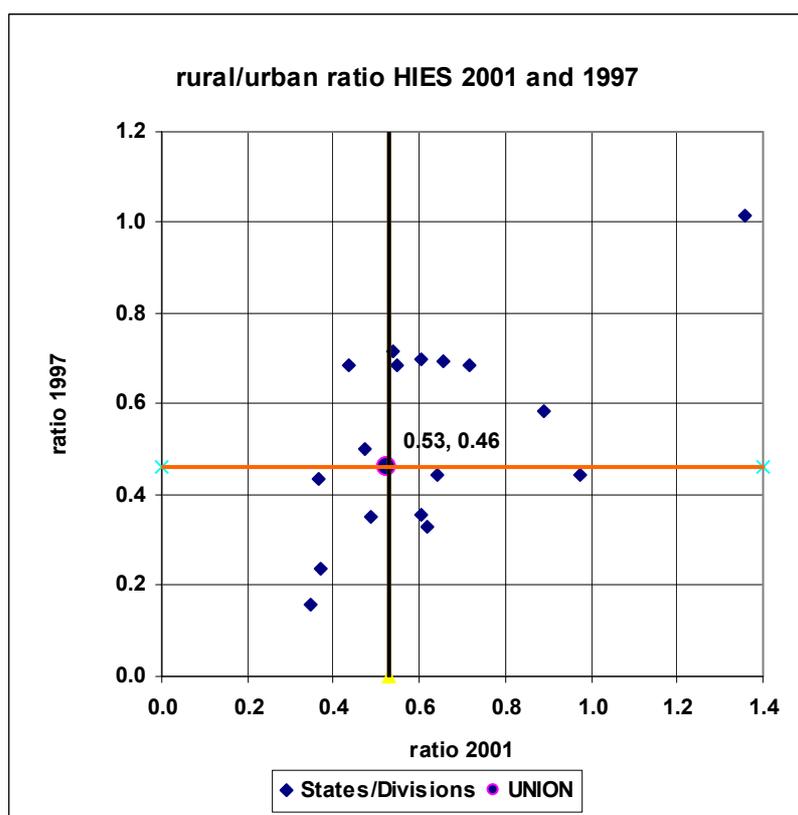
In 2001, half of the population in the Union of Myanmar was without having access to “a good source of water”, as per the CSO data and terminology. For this reason, the mission disagrees with the unacceptable calculation contained in the UN-OHRLLS “Country Assessment Report” that *“The percentage of total population with access to safe drinking water is 72 per cent according to 2000 MICS data exceeding the year 2015 target of 66 per cent”* . Nevertheless, the report has cautioned the reader that *“However the quality of water and water supply facilities still need to improve”*²⁷. The CSO assessment (2001) is rather less optimistic!

The problem of having access to safe water is particularly serious in rural areas, where 60% of households have still not got access. At the national level, the gap

between rural and urban areas is becoming smaller; the Rural/ Urban ratio moved between 1997 and 2001 from 0.46 to 0.53, characterised by a very slow annual growth rate (slightly less than 1%). However, the above national trend hides the massive differences between States and/ or Divisions, as shown in the chart (see the chart in the next page).

The chart is divided into four quadrants, defined by the coordinates of the Union of Myanmar average ($x=0.53$, $y=0.46$). The States/ Divisions are located in different quadrants according to their rural/ urban ratio in 2001 and 1997.

The right upper quadrant includes States/ Divisions with relatively better conditions in the rural areas, when compared with the overall Union level, both in terms of access to safe water (2001) and in a more or less significant improvement in access during the observed period (1997-2001). Kachin, Shan East and South, Sagaing, Magway and Yangon Division belong to this quadrant. On the contrary, the abnormal position of Chin (on the upper right border) confirms the concerns already expressed about the reliability of this estimation.



The upper left quadrant includes States/ Divisions with a relatively better access to safe water too (2001) but with the irregularity that these areas have worsened their

relative advantages during the observed period. This is the case of Shan North and Kayin.

The lower right quadrant includes States/ Divisions with relatively worse conditions in the rural areas in term of access to safe water (2001). However, these areas show marked improvement in their conditions during the observed period (1997-2001). This quadrant includes Both Bago West and East and Tanintharyi.

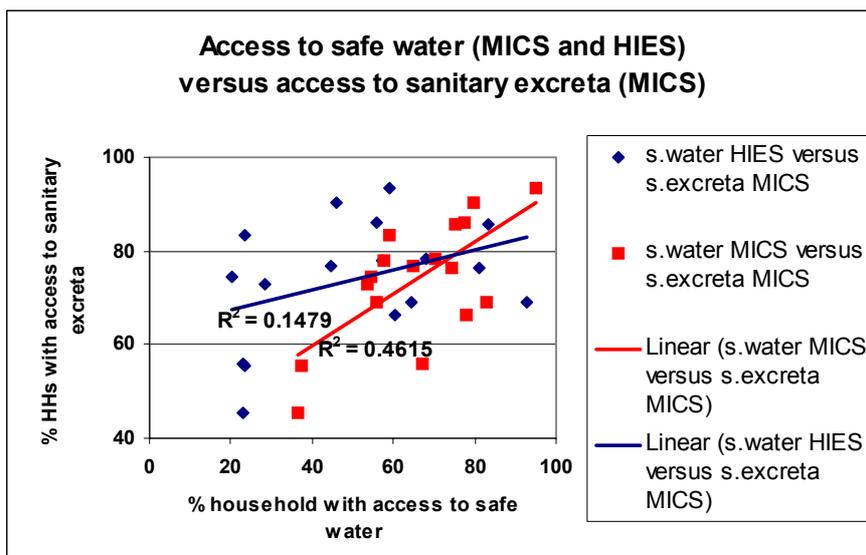
Finally, the last quadrant (lower left one) must be considered as a serious obstacle against the **comprehensive approach to food security**. The States/ Divisions included in this quadrant are characterised by relatively worse conditions of their rural part that has worsened during the observed period (1997-2001). In other words, their rural populations, already with less access to safe water, are more and more increasing their distance from the “urban” patterns. **Rakhine, Ayeyarwady, Kayah a Mon are affected by this negatively combined profile.**

Additional note

“*Ad hoc*” tests have been carried out by the mission using other three available indicators (“availability of sanitary excreta” (from MICSSs) , “availability of lighting” (only from HIES 1997) , “type of fuel for cooking” (from HIESs).

Availability of lighting was excluded because it was available only for 1997, and the mission expected important changes happened since then.

Availability of sanitary excreta was attentively analysed in relation to access to safe water, expecting to find some relationship between the two indicators.



The mission plotted the “access to sanitary excreta” against safe water (both from MICSs and HIESs). As the results were rather poor and unsatisfactory casting doubts on the reliability of data, the mission decided not to use these data.

Finally “fuel for cooking” information, although important to define “urbanity”, both existing and emerging, was not selected due to its poor variability in rural areas and consequently not providing sufficient background for discriminating between food secure and insecure areas.

2D – EDUCATION

FIVIMS considered Education indicators as important for understanding the constraints in development. After an attentive analysis of data availability with particular emphasis on their availability by gender and separately for urban and rural areas, the mission identified the following for the possible relevant indicators of vulnerability and overall food insecurity:

- Literacy rate, as a proxy for better access to information and knowledge transfers
- Primary school net enrolment, as a key indicator for a better future of an area
- Primary school retention, as an indicator of performances, in absence of “drop out rate”, generally used in vulnerability analysis.

The main source of the above indicators has been from the last three MICS (1997, 2000 & 2003). In addition, some more recent information was provided by the Ministry of Education.

As already noted in the previous sub-chapters, MICS data are strongly affected by several limitations. The most important and relevant among them are:

- different criteria of sampling
- different institutions who carried out the surveys at different dates

At least in principle, the MoE data are more reliable as they are collected in a more extensive way²⁸; however, the data reporting through the different steps is seriously affected by limitations of resources and difficulties in communications as confirmed by MoE staff in Nay Pyi Taw from.

The original aim of the mission was to map the educational levels, their dynamics and the constraints for education in order to provide a holistic classification at State/ Division level²⁹. However, this attempt was hampered by several inconsistencies found at the preliminary analysis of data quality.

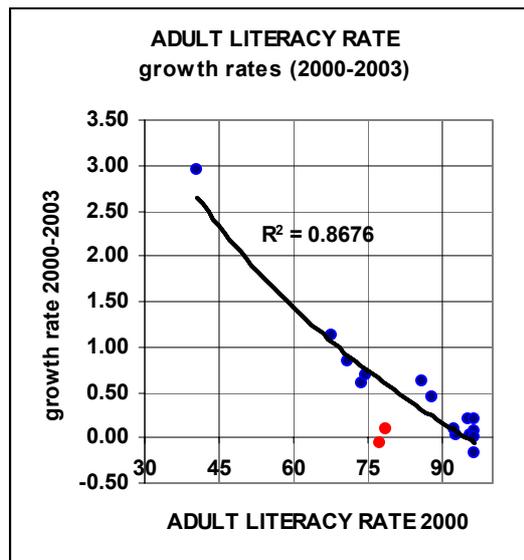
Adult literacy rate

An attentive analysis of MICS time series (1997, 2000 and 2003) shows that the adult literacy rate has increased very slowly during the recent years (2000-2003) registering

an annual growth rate equal to 0.19. This annual rate is considered to be very low even when compared with the figures of other developing countries.

However, within this very poor performance, the increase was more significant for women (0.29 versus 0.09 for men) and then reduced slightly at the adult literacy sex ratio (from 1.09 to 1.06).

Another positive result that should be emphasized is that the higher literacy rate increases were registered in the less literate areas (namely Shan East and North, Rakhine, Chin and Kayin) as shown in the chart below.



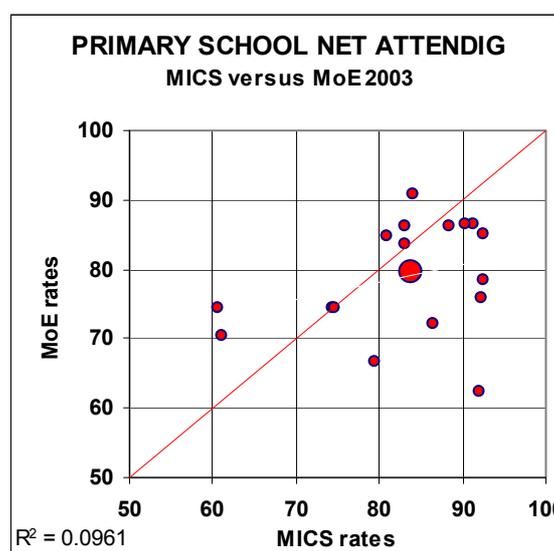
A few observations disturb the general pattern, notably the Tanintharyi Division where the rates are apparently decreasing (but why?) and the Ayeyarwady Division which does not register any improvement. The same inconsistency seems to be characteristic in the MoE time series 2001 to 2005.

However, a comparison at State/ Division level between the figures provided by MICS 2003 and MoE 2003 shows the lack of any correlation ($R^2 = 0.0961$). This assumption is rather evident from the chart below where the rates provided by the two sources (17 States/ Divisions and the Union) are plotted.

For a better visual clarity and understanding a red line has been added in the chart. If a precise correspondence or a near matching exists between MICS and MoE figures, the small red diamonds (State/ Division data) should stay on or near the above line.

Consequently, the relative distances from the red line emphasize the most relevant differences between the two data sets.

Mon State estimations provided by the two sources (see in the chart, the lower red diamond on the right side) are - rather appallingly different (the rate is apparently very high according to MICS 2003 (= 92%) but on the contrary it is apparently very low according to the MoE 2003 (= 62%).



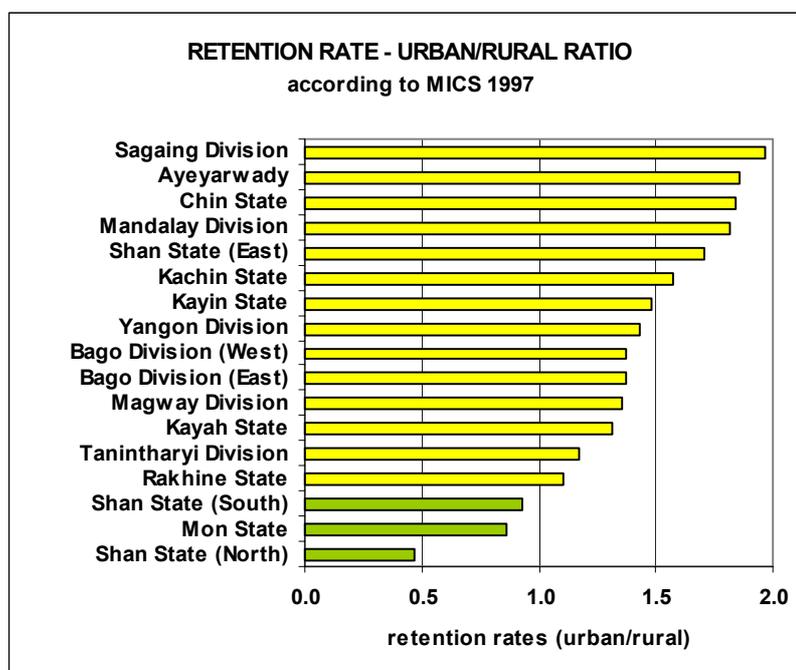
However, in any case, also not considering this particularly worrying case, the overall dispersion is very evident.

The outcome from this very discouraging comparison is that the MICS estimations seem more optimistic, in general. This fact is demonstrated by a higher frequency of diamonds in the area under the red line.

The dilemma faced by a person who wishes to use these indicators is evident. Which source should be considered more reliable and should be used?

Retention Rate

Another indicator considered by FIVIMS as extremely significant for vulnerability analysis and frequently used whenever available is the retention rate³¹. Retention rate is an indicator of performance and of quality/ efficiency of the education system.



In general, the retention rates are higher in urban areas and it is also related to gender. Urban areas offer more educational opportunities, and these provide a better school environment, in general (skill of the teacher, equipment, accessibility, etc.).

Unfortunately, in Myanmar, data desegregated by urban and rural environments are available only from MICS 1997.

In general, the 1997 figures confirm the expected patterns that the urban/rural ratio was extremely high, particularly in remote States. However, these figures are affected by few, not-understandable discrepancies, as shown in the graph below.

According to MICS 1997, Shan (both North and South) and Mon States were performing better in rural areas than in urban centres. This fact seems rather surprising, particularly because two years earlier (1995), MICS found that, on the contrary, the urban/rural ratio was for Shan North and Mon States = 1.4 and 1.9 for Shan South State.

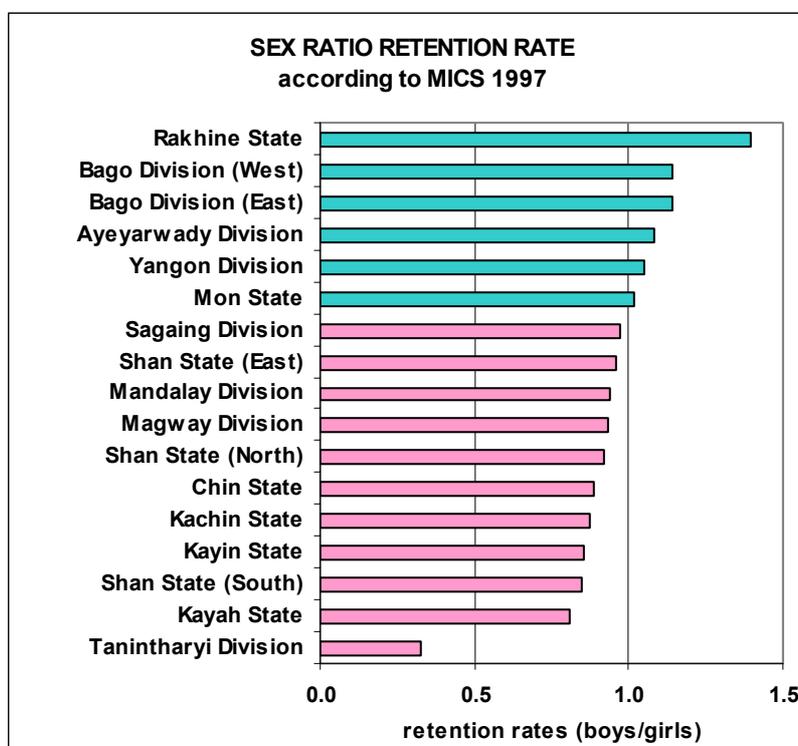
A tragic statement of facts: how much the user can be confident when using these data?

In many developing countries, the primary school retention rates for the boys are higher when compared with the girls' rate. The girls may have been discriminated by

the burden of domestic-work affecting their school performances. It may be due to the fact that at home girls do not find sufficient time for studying as much as boys do. Accordingly, whenever possible, the indicator was used by gender as recommended also by MDG Goal 3 - Indicator 9.

In the case of Myanmar, unfortunately, data desegregated by sex are available only for 1997, In general, girls were performing better which is a tendency confirmed for every education level during the most recent years.

However, according to MICS 1997, girls were performing better in remote areas than in more developed urban centres (see chart below).



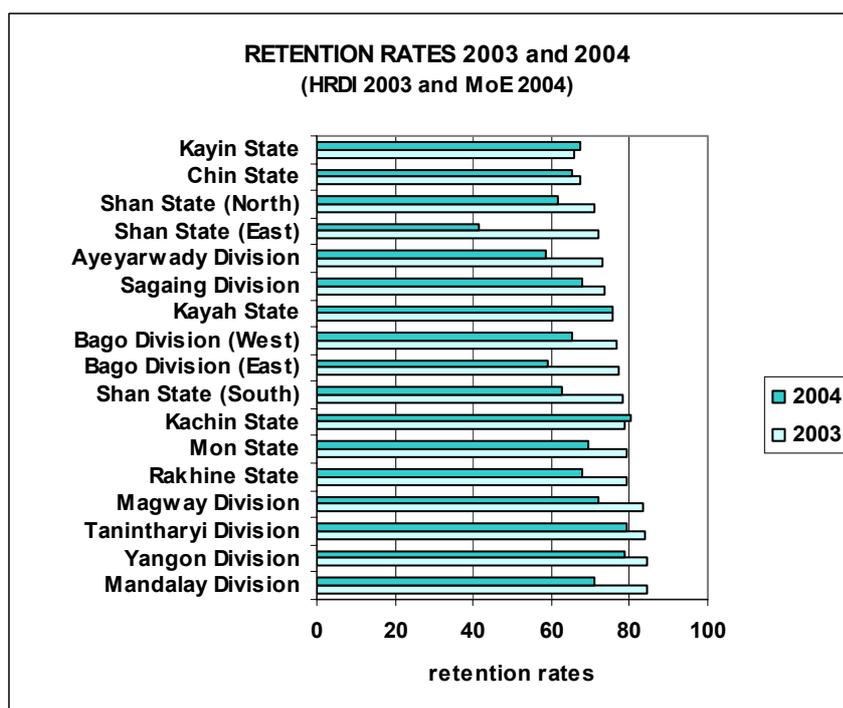
The opposite was true for boys (see chart here aside). The figures provided for Tanintharyi are certainly unreliable, as well as some doubts should be raised for figures for Rakhine State.

The mission made an attempt to collate the retention rates at short time intervals and to compute the annual growth rates. The results were so poor and the mission decided against the use of these data in this report.

Apparently, the retention rate has improved a lot between 1997 and 2000 (when comparing MICS 1997 and 2000), with the exception of Tanintharyi and Mon States.

In contrast, between 2000 and 2003 (when using data from HRDI) the overall improvements were very low. Further, in Kayin, Sagaing and Tanintharyi States/ Divisions, the situation has significantly worsened.

The mission carried out another test on the retention rates at State/ Division level between the data of 2003 (as described by HRDI 2003) and 2004 (data provided by MoE). The results are shown in the graph below.



These results present an appalling situation on the quality of data.

Few figures about the annual changes are quoted below: Shan State (East): -30.7%; Bago East, Magway, Mandalay, Rakhine, Shan South and Ayeyarwady are all between -10 and -20%. These data suggest a conclusion that a catastrophic change has happened. It should be noted that these are not weather related hazards! It is impossible for the retention rates to fluctuate between a year and the next one in such a magnitude.

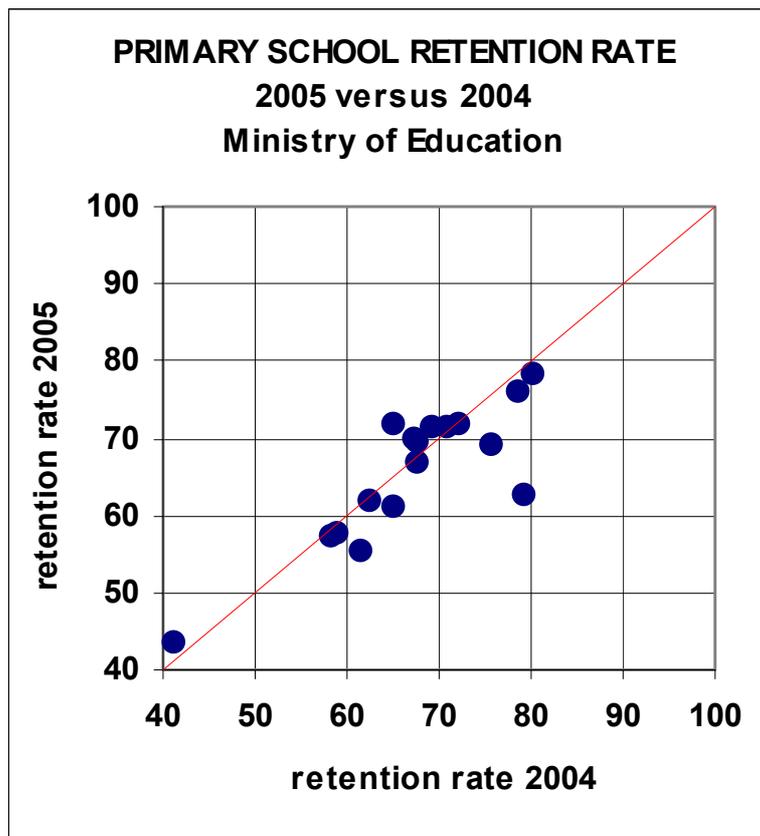
The user of these data should simply assume that the two sources are not comparable. However, the dilemma remains as to which source corresponds to the more reliable situation?

Finally, the mission performed an additional test on data reliability comparing State/Division figures referring to 2004 and 2005 as provided by the same source

(MoE).

In spite of the fact that the correlation between the data sets for two years is not poor ($R^2 = 0.7274$). As shown in the chart below, it should be emphasised that an overall worsening of the situation has happened.

Particularly, the worst performing States/ Divisions in 2004 are mainly those that further worsened their performances in the next year (2005).



2E – ESTIMATION OF LANDLESS

The mission made an attempt to identify and to obtain the necessary permission to access the most relevant data sources which could provide significant information related to vulnerable groups.

It is now generally believed that vulnerable groups are not totally located in rural areas, but also found in urban areas. Further, in rural areas, the most vulnerable groups have been identified in several case studies³², not simply between the more or less poor farmers, but particularly between the landless: i.e. people still living in rural areas but not having access to land.

The above condition doesn't mean, necessary, to be vulnerable or more vulnerable than the small farmers; however there is a high probability to be because these people mainly depend from casual labour or from petty market.

The possibility of accessing the household forms of Income and Expenditure Survey 2003 conducted by CSO or the household records collected by UNDP at the more recent Integrated Household Living Conditions Assessment (HILCA) Survey could have provided fundamental information about vulnerable groups and could have allowed to define their profiles including an numerical estimation of their dimension (how many they could be). Unfortunately, as already explained, the access to both sources was not allowed. On one hand, CSO has repeatedly denied the mission the access to the HIES 2001 (even simplified and anonymous records), and on the other hand, UNDP has justified its refusal that HILCA data is a property of the Myanmar Government. The mission could not even receive the IHLCA provisional reports prepared by IDEA consultant from UNDP.

On the contrary, the mission received the full collaboration from the MoAI, and an agreement was reached for an “*ad hoc*” data processing of the last Myanmar Agricultural Census (2003) according to the needs of the mission.

It is well known that up to now, only some advance results of the MAC2003 had been published by MoAI/ SLRD under the title ‘Advance Report on Myanmar Census of Agriculture 2003’ (Yangon 2005, 72 pages plus Appendixes).

This publication contains few tables and comments at national level, including a brief

comparison of the data from the previous Census (1993). The outcomes are the result of a partial data processing of about the 3.5 million questionnaires. In this report, few tables contain information at State/ Division level.

However, in spite of these limitations, the publication offers interesting starting points for identifying emerging problems related to vulnerability and food insecurity situation in Myanmar.

As a result of an attentive reading, the mission requested SRLD to produce a set of significant table desegregated by Districts, Gender and Holding Size. However, due to time constraints and logistical problems, the originally requested number of tables (about 20) had to be drastically reduced to seven (7). Nevertheless, the most relevant information related to vulnerability and food insecurity could be found, at least partially, even through this reduced dataset.

The use of the above data, integrated by time series data of major crops and few indicators derived by remote sensing data processing for generating a preliminary vulnerability map is described in chapter 3.

The use of MAC2003 information in this chapter, on the contrary, is related to an attempt to (approximately) estimate the number of people living in rural areas having no access to land.

A simple accountability exercise can provide some figures and lead to identify “areas of concern” requesting more attention in the future and possibly the introduction of some food security projects.

The estimations of landless in Myanmar are, as well known, rather difficult. Although official estimations are not provided by Myanmar Government/ Institutions the mission managed to obtain an unofficial estimation of rural landless and found to be between 10% and 15% (of the total rural population).

However, many independent or international sources had provided a figure which is significantly higher (up to 35-40%). For instance, according to the recent UNDP publication, Report of the Independent Assessment Mission of the Human Development Initiative Myanmar, (July 2006) *“current estimates are that 30% of rural people are landless overall. However, some parts of the country experience higher rates”*.

The FAO in its most recent estimation³³ provides even a higher figure (43.04%). However, this probably seems to be an over-estimation due to many reasons. In particular, the FAO estimation includes in the “landless households” in the rural areas and also the urban households, who in many cases (and rather obviously) do not have land. It appears that –when using a Boolean “true–false” criteria, they are considered are landLESS. This is the reason why the FAO report finds 91.08 % of landless in Yangon. (The report includes the population of Yangon city in the computation).

Both the table and the corresponding text in this report contain totally unacceptable figures. According to the report, Sagaing and Magway State should have only 2.76 and 4.02% of landless! There are evident contradictions when a comparison is made with so many other sources showing that in the central part of the Union, the landless represent an extremely important “area of concern”. The mission suggests that an “*errata corrige*” should be distributed to the users.

The already quoted NGO SFWG report makes a reference to less recent estimations: “*An extensive survey conducted at the household level in 23 vulnerable townships in 1996 found that landlessness ranged from a low of 7% in a remote mountainous township, to a high of 68% in a Rakhine State township, with average figures at about 40%*”³⁴

Reference can be made to many other sporadic reports, showing that the percentage of landless could widely vary between different geographic areas and even between neighbouring villages. Figures can vary from 38% and 75% households in selected Dry Zone villages, from 8% to a 50% in villages of southern Shan State, up to 75% in Mon State villages, and 35% in hilly Kachin State³⁵.

According to another FAO/UNDP frequently quoted document³⁶, the rate of landlessness in the Ayeyarwady delta townships of Mawlamyinegyun, Bogalay, and Laputta was about 50%.

To avoid misunderstanding, the definition of “landless” used at the occasion of MAC 2003 has nothing to do with the really landless people. Nevertheless, this fact is evident as the “so called” landless have been estimated to be about 0.36% or 0.32% of population and Agricultural Holdings, respectively³⁷.

According to MAC 2003, the population belonging to Agricultural Holding (including

also the few “so called” landless) amounted to 17,464,398, the number of households: 3,464,770³⁸ and consequently the average household size: 5.04. However, when using the District provisional data provided by MoAI/ SLRD, the mission got rather a higher figure for agricultural holdings (24,196,624)³⁹. **The gap is extraordinary!**

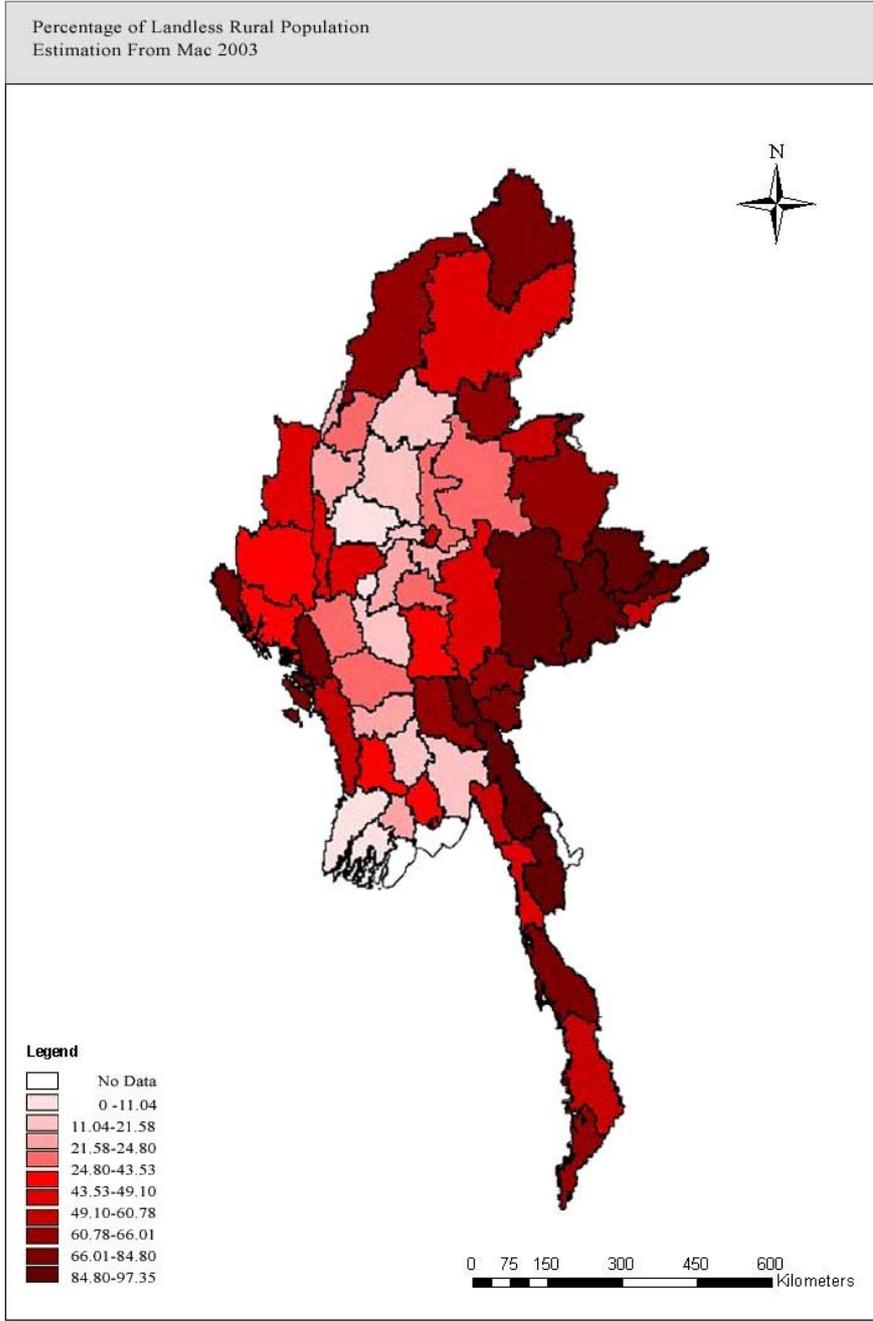
It is not clear which of the two figures is more reliable, since these were derived from the same source but processed at different occasions. In addition, it is not clear whether the same sampling criteria, when using only 20% of the questionnaires had been used. Unfortunately, in spite of many requests, the mission could not get any clarification from MoAI while during the mission was in Myanmar.

This **extraordinary huge** gap between the two estimations (around 25 million versus around 17.5 million) induces an additional element of uncertainty in trying to estimate the quantity of rural people not having access to land.

As already explained, “not having access to land” does not necessarily mean to be vulnerable or food insecure. However, there is a higher probability that most of these households could be in these conditions particularly if they are living far away from urban centres where some job opportunities are on offer.

As a realistic estimation from these two different datasets, the rural household not having access to land (=> 0.4 acres) could be estimated between 35% and 53% of total rural population.

The map (given below) showing the percentages as State/ Division level provides a significant contribution for understanding the problem, however, it should be emphasized that the percentages make reference to the total rural population of each State/ Division. Consequently, the reader should remember that the percentages of the central plain are related to densely populated areas.



The next table shows the Districts with a rural population more than half million and where the percentage of people belonging to non-farm holding households is higher than 35%. The subtotal gives an impressive amount of more than 7 million people.

More Populated Districts with a Higher Number of Non-farm Holders

District	Rur pop 2003	Not-holding pop 2003	% Non-holders
Myitkyin	597000	289668	48.52
Hpa_an	908000	802108	88.34
Dawei	511000	337862	66.12
Taungoo	912000	562332	61.66
Thayet	710000	252180	35.52
Pakokku	1147000	505649	44.08
Yamethin	1191000	450414	37.82
Mawlamyi	990000	439231	44.37
Thaton	809000	475038	58.72
Saiiwe	1050000	457045	43.53
Maungdaw	604000	428921	71.01
Yangon(N)	540000	209834	38.86
Tanuggyi	932000	417839	44.83
Loilem	554000	497971	89.89
Lashio	619000	396991	64.13
Hinthada	1303000	515921	39.59

Population: >0.5 million and % non—farm holders: >35

There are additional Districts with a lower rural population but still with a high percentage of people without land holdings. The table below shows the Districts with population between 250,000 and 500,000 and with a percentage of people without land holdings higher than 60%. About 1.2 million people without land holdings should be added to the previous list.

District	rur pop 2003	not-holding pop 2003	% not holders
BHAMO DI	290000	191425	66.01
KAWKAREI	426000	414160	97.22
HKAMTI D	304000	199850	65.74
KYAUKPYU	454000	305425	67.27
KENGTUNG	307000	285741	93.08
Subtotal	1491000	1205176	80.83

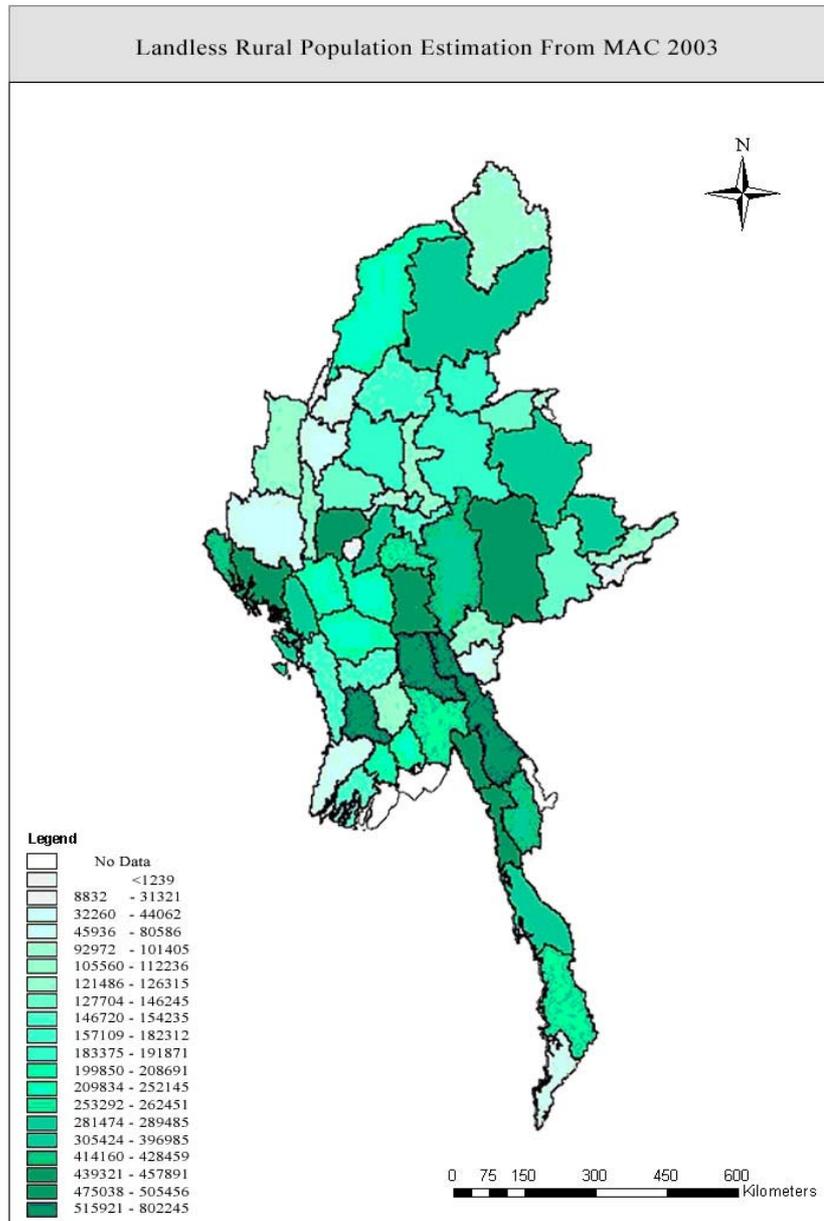
Finally, there are less populated Districts (< 250000) but with an extremely high percentage of not-farm holding population (> 70%).

District	rur pop 2003	not-holding pop 2003	% not holders
PUTAO DI	124000	92972	74.98
BAWLAKHE	38000	32260	84.90
KUNLONG	127000	101459	79.89
MONGHSAT	146000	137608	94.25
MONGHPYA	435000	364300	97.35
Subtotal	860000	728599	84.72

In contrast, in few significant cases, the estimated rural population is lower or very similar to the estimated population by MAC2003. The most surprising and not understandable case is Nyangu_U in Dry Zone. **There is an evident bias in the data.**

District	rur pop 2003	holding pop 2003	% of holders
NYAUNG-U	246000	244762	99.50
YANGON(S)	891000	959243	107.66
PYAPON	909000	1125805	123.85
Subtotal	1137000	1204004	105.89

The map below provides a overall visual assessment of the landless problem in Myanmar with respect to population.



2F – IDENTIFICATION OF SURPLUS/DEFICIT AREAS

According to most recent estimations of MoAI, Myanmar is a country with a surplus paddy production. During the agricultural years 2003-04, the total paddy production was estimated to be 24,339 thousand MT, and the paddy “surplus” was equal to 5,941 thousand MT⁴⁰. In the computation of “surplus” (see below)

MOAI officially defines Deficit/Surplus in the following way:

$$\text{Deficit/Surplus} = \text{Total Production} - \text{Total Utilisation}$$

$$\text{where Total Utilisation} = \text{Seed} + \text{Waste} + \text{Consumption}$$

In order to identify surplus/deficit areas in Myanmar, the mission decided to use the MoAI’ criteria. The decision was mainly motivated by the following reasons:

- to provide an assessment comparable with the official figures, utilising the same type of data and the same coefficients used by MoAI for a similar purpose
- and consequently to offer GOM some targeting suggestion for food security policies in the future, perhaps assisted by international agencies, bilateral assistance and/ or NGOs.

The mission had simply:

- used a larger set of crops (the four main cereals) because, as verified, the rice is the first but not the only the sole source of energy intake from cereal crops;
- carried out an analysis at a more geographic desegregated level (District) than the States/ Divisions as MOAI conducted,
- used average figures (from 2000-01 up to 2004-05) to provide assessments less affected by the yearly fluctuations of the crop production.

The crop time series (from 2000-01 up to 2004-05) made available by SLRD/ MOAI was used for the computation.

In the computation, the mission used the MoAI seed and waste coefficients. It is understood that MOAI estimated seed and waste components as a percentage of the

total production. For instance, at national level, the MoAI percentages (for 2003-04) were as follows:

seed component = 2.85% of total production
waste component = 4.29% of total production

When referring to States/ Divisions, the above percentages used by SLRD/ MoAI are slightly different.

The identification of the third component, i.e Consumption of the total Utilisation was more difficult because unfortunately, the mission could not get any official information about the criteria used by MoAI for defining the above figure.

However, the mission discovered that MoAI had estimated the daily per capita consumption of paddy (unhusked rice) = 0.8 Kg (corresponding to about 300 Kg yearly). To get the above figures, the mission divided the MoAI consumption figures by the estimated population as provided by the Department of Population. The computation was made separately State by State and, as result, it appeared that a constant daily per capita consumption of about 0.8 Kg of paddy had been used by MoAI.

The above MoAI criterion is rather acceptable as the figure defines more or less a potential per capita need (possibly recommended, although rather lower from what is recommended by MOH, as shown in Annex 16), not varying from place to place.

The consumption patterns (including those surveyed by CSO HIES) are expressed in terms of rice and not in terms of unhusked rice (paddy). Apparently, in Myanmar, the conversion factor from paddy to rice is about 0.6⁴¹; consequently the annual per capita consumption (in term of “possibly recommended” needs) is about = 180 Kg. Not surprisingly, this figure corresponds to the needs as estimated by WFP⁴² for Myanmar.

The figures at State/ Division levels published by MOAI show how much the “national surplus” hides the presence of States/ Divisions with large deficits along with the other States/Divisions with significant surpluses. Obviously, the food can move from place to place (surplus does not necessarily mean that local people have enough food); it is a fact that the MOAI approach to Surplus/ Deficit identification (as it is done in many other countries) is rather a simplified and a restrictive one.

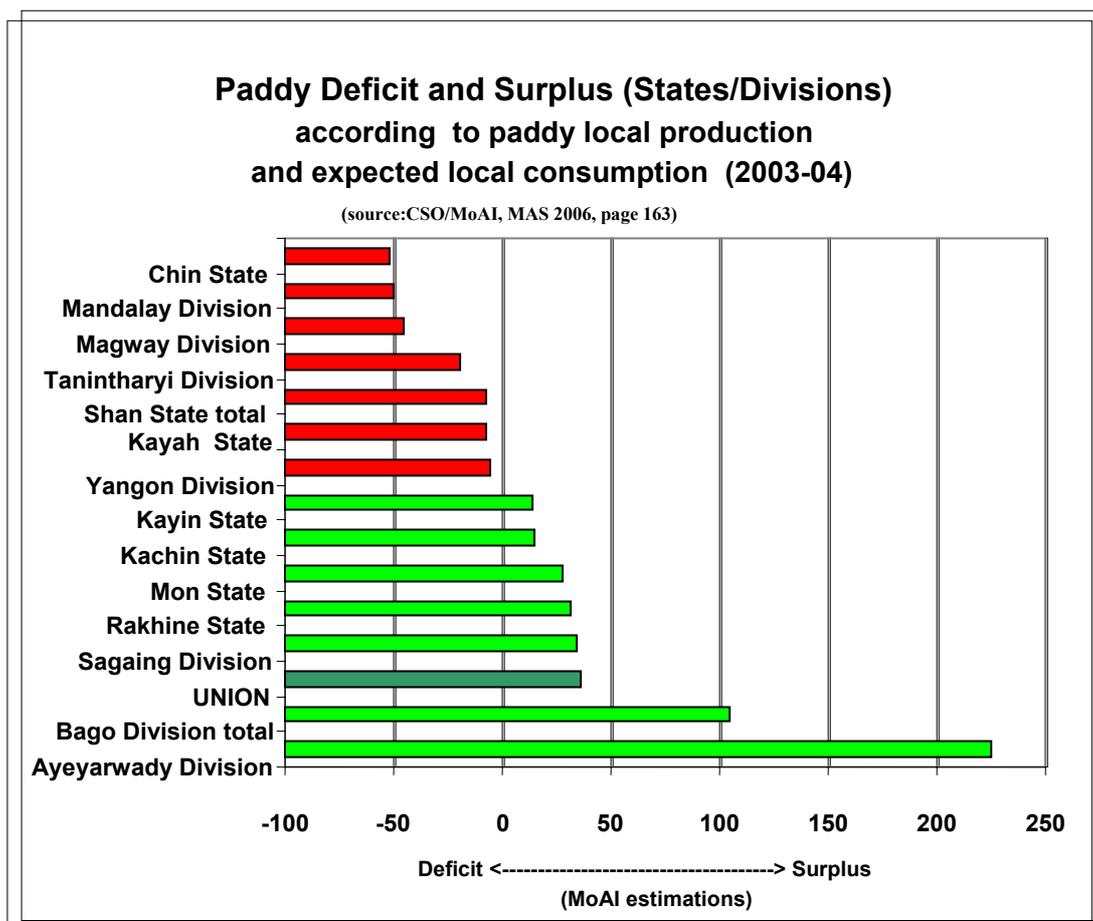
However, for the already explained reasons, the mission decided to use the same methodology.

Few provisional comparative results at State/Division level were presented at the donor meeting “Informal presentation on the activities carried out and preliminary outcomes” (Donors and International Agencies Meeting, Yangon, November 3rd, 2006).

At that occasion, the mission emphasised that a “staple rice” simplified approach can not be fully accepted, as in several parts of Myanmar, people are used to eat other cereals also due to varying agro-ecological conditions, traditional nutrition patterns, and several other reasons. Consequently, referring the concepts of surplus/ deficit to a single crop could introduce serious bias and underestimation of food availability in some areas.

This fact had already been noted by the mission when processing the data extracted from the CSO HIES 2001 published information at States/ Divisions levels. Curiously, CSO collects data for many cereals consumed, but publishes only the quantity of rice consumption, making a significant underestimation of cereal intake in some areas, as in the case of Chin State⁴³.

It is noted that the chart (given below) presented at the above Donor Meeting was distorted from the above mentioned bias.



After the donor meeting, fortunately, MoAI/ SRLD provided crop time series to the mission at District Level, allowing a more in depth application of the MoAI methodology. In particular, the analysis has emphasised further variability inside each State/ Division.

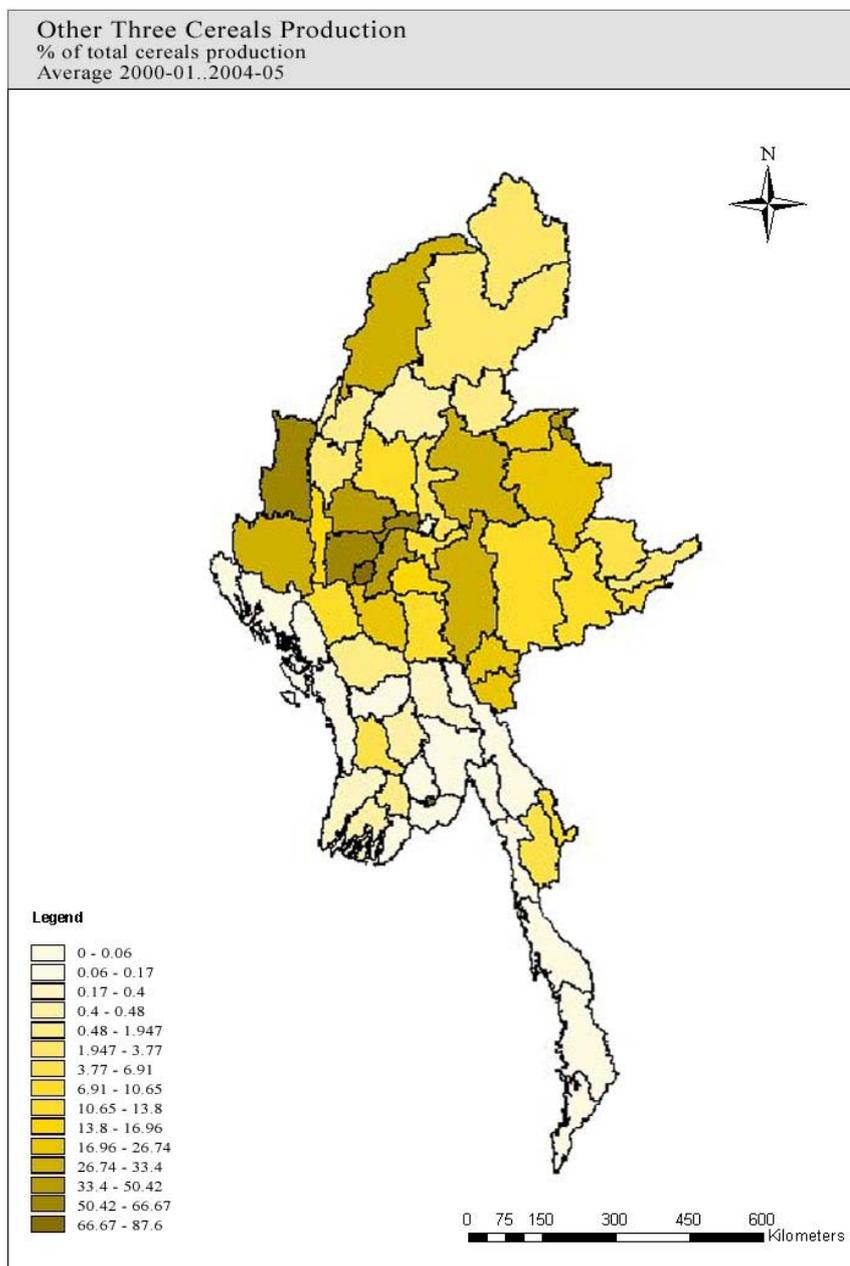
Four main cereals, namely paddy (unhusked rice), maize, wheat and sorghum⁴⁴ have been considered. To compare them in “a food security approach”⁴⁵, paddy had to be converted into milled rice according to the recovery rate used in Myanmar (60%).

The importance of the production (and consumption) of the other three cereals except rice is relevant in some Districts, particularly, in Dry Zone and some border areas⁴⁶.

The map in the next page shows their importance and the corresponding locations.

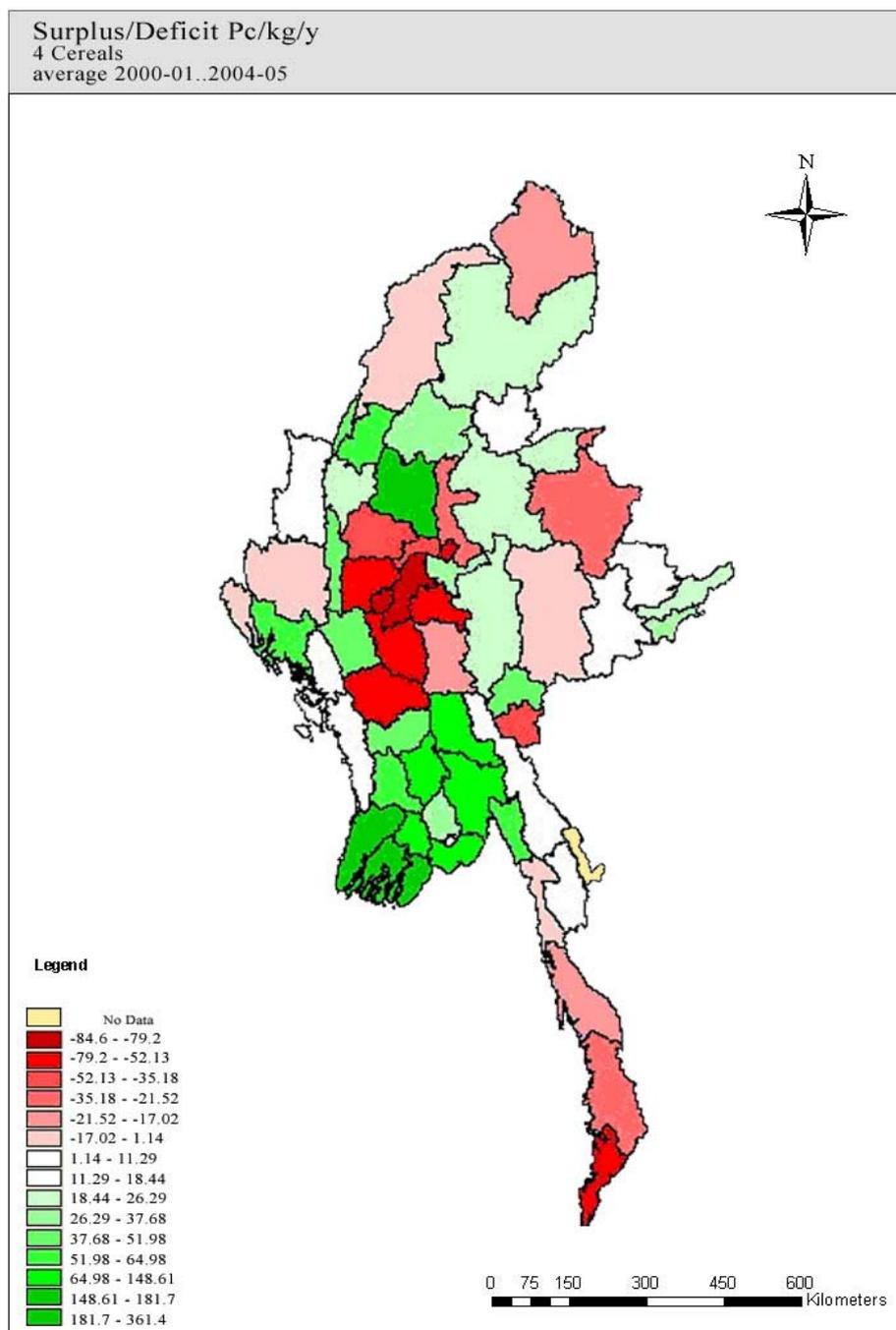
Their patterns are obtained computing from the average production (2000-01...2004-05) smoothing the effects of individual years. Obviously, the paddy quantities have

been converted into milled rice quantities for comparing the importance of the other three crops in term of production and nutritional contents. As the other three crops are normally consumed raw, conversion factors were not applied.



In order to identify surplus/ deficit Districts, and in the absence of specific seed and waste percentages for the Districts, the percentages of State/Division to which Districts belong were used. For all the Districts, the same per capita consumption quantities were used according to MoAI methodology.

The results are shown on the map in the next page. Dark red and pink areas shows different levels of (four cereals) deficit, while green identifies surplus areas, confirming the dichotomy opposing Dry Zone to the Southern/ Delta regions. It is worth to be noted that the deficit situation exist both in Tanintharyi and (partially) in Shan areas. In contrast, areas in Chin state show better conditions, in general, certainly due to an important component contributed by maize crop.



3 – FOOD INSECURITY AND VULNERABILITY

District Classification

In order to provide a provisional map of food insecurity profiling in Myanmar, a set of suitable indicators at district level were identified.

As extensively explained in Chapter 2 and in its subchapters, the major dilemma in approaching food insecurity consists of the facts that most of the currently used vulnerability and food insecurity indicators are available only at State/ Division level and their reliability is poor⁴⁷. The poor spatial resolution of data hampers the possibility of reaching any significant results.

The mission provided a provisional profile at State/ Division level using clustering analysis⁴⁸, at the occasion of the “Mission Demonstration Session” in Nay Pyi Taw, (September 20th, 2006). The session offered the institutions concerned with FIVIMS activities in Myanmar both the possibility of understanding the methodology applied by the mission and to be briefed about the mission’ “work on progress”. However, the mission intention was also to strengthen the counterpart’s awareness about the limits imposed by the fact that most of the indicators were available only at a State/ Division level.

The mission explained in which way, through a multi-factorial or *clustering* procedure it could be possible: a) to group (cluster) States/ Divisions, according to both similarities and differences in and across the States/ Divisions and b) to identify relative vulnerability levels. Few slides offered a simple example of the procedure, and it was clearly explained that the outcomes were provided only for demonstration purpose. The next few paragraphs are a re-phrasing of the PowerPoint presentation prepared for that occasion.

The example made reference to a classification of Union of Myanmar States/ Divisions using the following ten (10) indicators.

- % of rural population
- Access to safe water
- Primary school retention rate
- Primary school net enrolment rate
- Estimated Kcal per capita per day

- Estimated Protein (gr) per capita per day
- Severely wasting rate (children under 5)
- Monthly Household Expenditure
- Rice expenditure as percentage of food and beverage expenditure
- Food and beverage expenditure as percentage of total expenditure

17 States/ Divisions (excluding Yangon and Mandalay cities) were classified into 7 groups (Clusters) according to the level of vulnerability to food insecurity. It was suggested that at least 11 States and/or Divisions be considered vulnerable due to the “association” of different factors contributing to their vulnerabilities.

The mission emphasised the fact that the profile of each group (cluster) of States/ Divisions was an opportunity for providing some insights into the causes of food insecurity and vulnerability and for assisting the decision-makers with improved and targeted policy and programmed formulation. Few slides, describing four (4) most vulnerable typologies, each of them vulnerable for different reasons were shown according to the more significant food insecurity and negative outcomes and the major risk factors affecting the areas.

However, the mission very much insisted on its dissatisfaction, considering the shown outcomes as an evident demonstration of how much the mission “was far away from a significant result”.

The mission emphasised the fact that any attempt for a classification was strongly hampered by the poor spatial resolution of the currently available information. In order to sort out the impasse the mission, since the beginning of its activities in Myanmar, had envisaged three (3) different (although not alternatives) approaches:

- a) re-processing selected information from the Household Income and Expenditure Survey 2001, for characterising/ classifying the surveyed households (30,000) according to food insecure and vulnerable typologies (Household approach);
- b) processing the Agricultural Census 2003 (MAC2003) by district for characterising/classifying the Myanmar Districts according to the characteristics related to food insecurity and vulnerability (i.e. holding sizes, crop mix, openness to the market, gender issues and so on) with the inclusion of main crop time series (District approach);
- c) Complementing the District approach the mission had envisaged the use of

indicators related to “Exposure to agro-climatic risk”, computable from remote sensing images (i.e. extracting of statistics from SPOT/VGT 1km images).

At the occasion of the quoted “Mission Demonstration Session” in Nay Pyi Taw a considerable time was devoted to strengthen the participants’ awareness about these needs while requesting full collaboration from stakeholder institutions. It is a fact that as frequently mentioned in this report; the mission got full collaboration from MoAI, while the access to HIES was denied by CSO during its stay in Myanmar.

Due to the MoAI collaboration and support, the mission could develop a District approach, although limited to rural Myanmar. Inside rural Myanmar, it is related only to agricultural holders. As well known and already explained in Chapter 2E, the rural population not having access to land was not included in MAC2003. The urban population was not obviously included in the above Census.

Although with these limitations the results of the mission seem significant and are shown with comments in the following pages. However, **the user should be aware that a very important component of vulnerability and food insecurity, the urban food insecure people could not be included in the classification.** As far as it concerns the rural landless their relevance has been partially included using proxy indicators, as explained in Chapter 2E. These facts seriously curtail the overall validity of the classification exercises and call for an urgent action to provide access to HIES information, which was denied by CSO. Alternatively, the access to the recent IHLCA (UNDP/CSO) should be granted. However, unfortunately, up to now the mission could not get the expected collaboration from UNDP for eliminating the “institutional constraints”.

Following a conscientious analysis and several tests of new data extracted at district level from MAC2003, a large set of indicator were prepared and submitted for clustering⁴⁹.

Subsequently the above large set of indicators has been reduced with “fine tuning” procedures in order to provide a more reduced set of indicators still producing meaningful profiles.

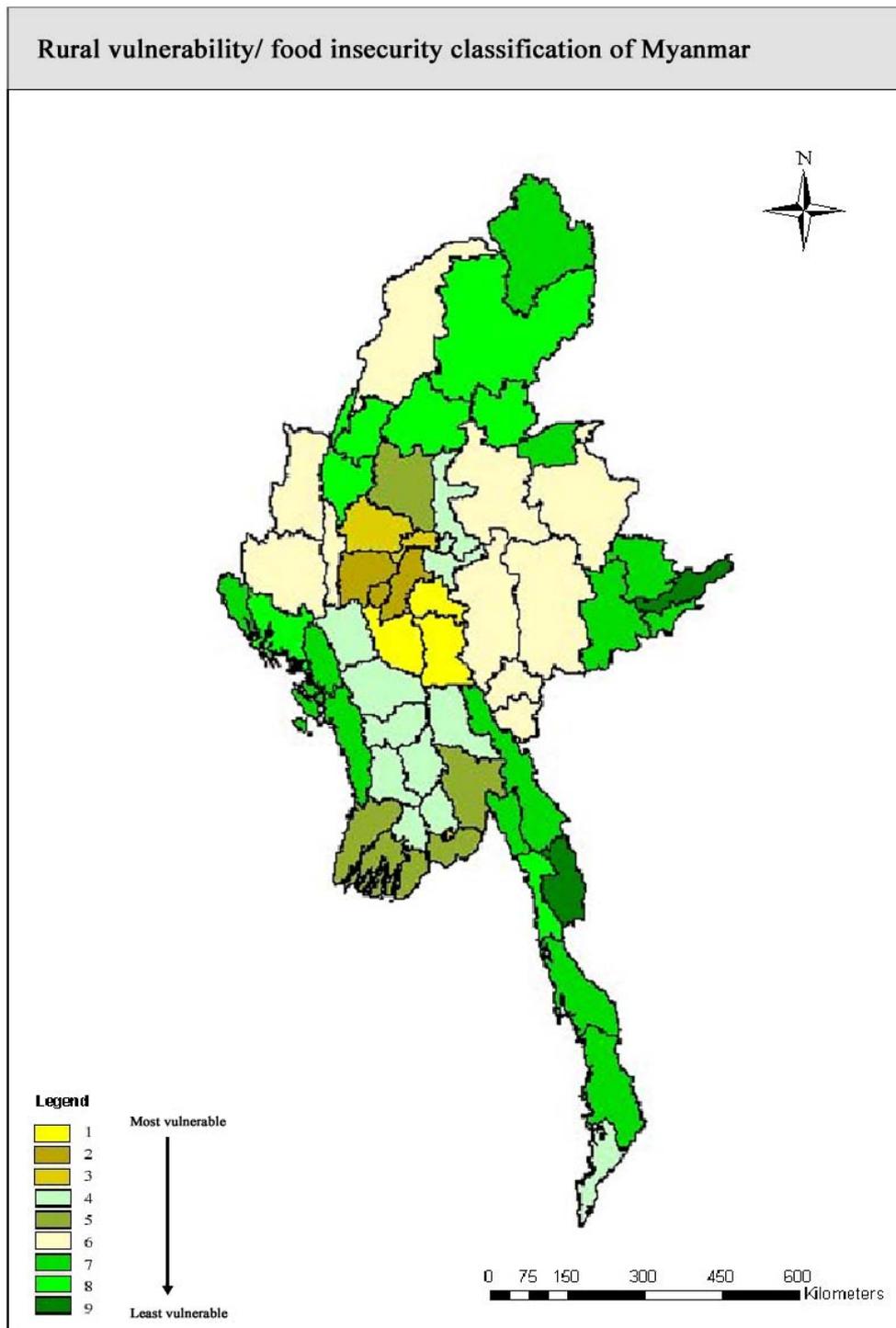
The final set of indicators is as follows (if not specified, the indicators make reference to agricultural holdings/ holders):

- 1) Estimated number of landless (not agricultural holders) in rural areas (%)⁵⁰
- 2) Per capita cultivated hectares (total rural population)
- 3) Average agricultural holding size (ha)
- 4) Agricultural activities as main source of income (%)
- 5) Non-Agricultural family-operated business as a main source of income (%)
- 6) Wages and Salaries from agric and non-agric sectors as a main source of income (%)
- 7) Surplus/Deficit⁵¹ (see Chapter 2F for definition and MoAI methodology)
- 8) Rice production (% of four main cereals)⁵²
- 9) Other three main crops) (% of four main crops)
- 10) Of which: maize (%)
- 11) Of which: wheat (%)
- 12) Of which: sorghum (%)
- 13) Production mainly for own consumption (% of total production) – all holdings
- 14) Production mainly for own consumption (% of total production) – only holdings <3 acres
- 15) Per capita livestock ownership (computed in Livestock) Unit)
- 16) Holdings <3 acres (% total holdings)
- 17) Holdings <3 acres headed by females (% total holding headed by females)
- 18) Holdings <3 acres headed by widowed females (%total holding headed by females)
- 19) Holdings <3 acres headed by separated/divorced females (%total holding headed by females)
- 20) Net Primary Production, forecasted growth rate 2005-2015 (FAO unpublished estimations)
- 21) Net Primary Production, forecasted growth rate 2015-2030 (FAO unpublished estimations)
- 22) Average Vegetation Index (SPOT/VGT time series 1996-2005)

(The indicators had been weighted according to district rural population 2003, provided by Department of Population)

The cluster analysis has clearly provided a division of the rural Myanmar in nine typologies characterised by very specific patterns.

The overall map, with different colours related to the nine clusters is shown below.

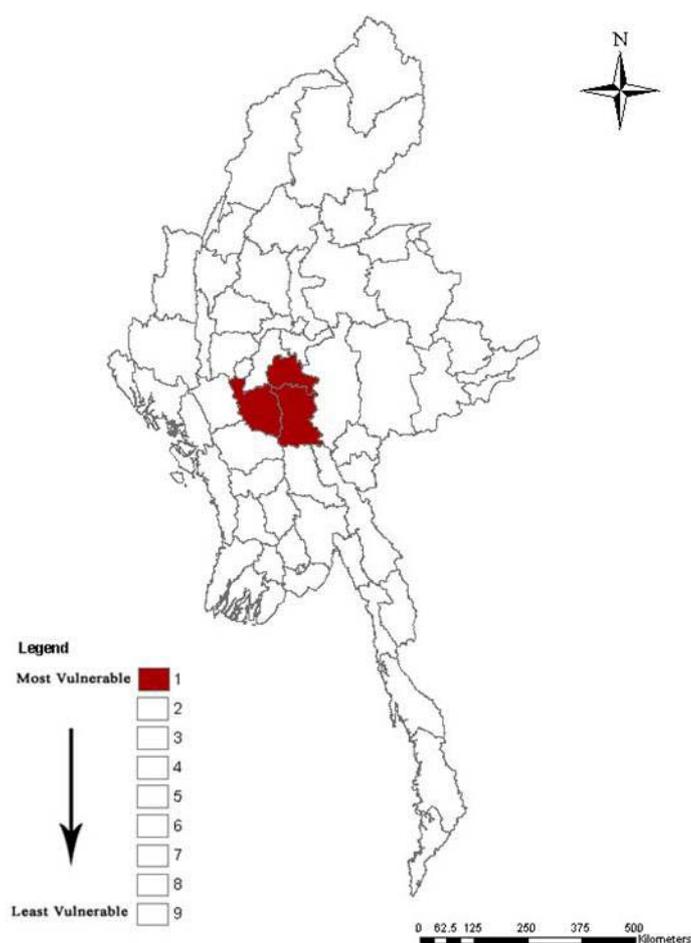


It is evident from the map that **the Myanmar Central Dry Zone emerges as more vulnerable and food insecure area.** However, it should be noted that this area is composed of three clusters (Clusters 1, 2 and 3) in a characteristics manner.

Cluster 1 includes Magway, Yamethin and Makita Districts which covers one of the driest areas of Myanmar (see case study in part 2 of this report) will be affected in the next two decades by a worsening trend.

In this area, according to a recent estimation of FAO, the Net Primary Production (NPP) will be affected by a severe decrease (-0.42% between 2005 and 2015; -0.38% between 2015 and 2030, when expressed as annual rates), while in most of the other parts of Myanmar would find only mild worsening (-0.17% and -0.18%, respectively).

The area has already been affected by a significant per capita deficit of staple food (main 4 cereals): 41.4 Kg/per capita/year; when using the WFP standard (0.5 Kg/per capita/day, it means 82days, slightly less than 3 months. Difficulties of growing paddy are only partially compensated by planting maize.



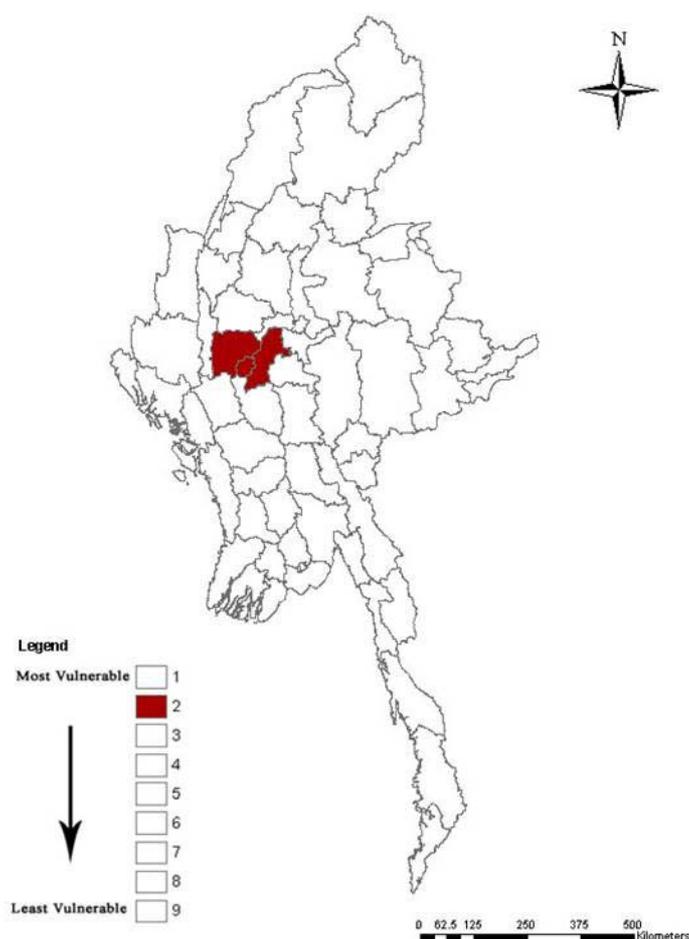
Map of Cluster 1

Land availability is a strong limiting factor and it is estimated to be only 0.64 ha per rural inhabitant. The exceptional low value is due to more than ¼ landless (not agricultural holder) in the rural population.

An average holding size of 2.6 hectares hides a rather unbalanced distribution by size; with an important component of big size holdings.

“Non-agricultural family operate business” and “wages and salaries” components are rarely the “main source of income”, not allowing to escape the vicious cycle of lack of land. Farm production is rather open to the market, only 12% of all farms declared “own consumptions” as their main purpose of production, and also for farms <3 acres the figure was low (24%).

Cluster 2 (Pokokku, Myingyan and Nyanung-U Districts) is another dry area affected by NPP similarly, although slightly less, negative trends similar to the national one; the expected annual average decrease should be 0.29% (2005-2015) and -0.31% (2015-2030).



Map of Cluster 2

This area is the most affected by a per capita deficit of staple food (main 4 cereals): 68.6 Kg/per capita/year. This per capita deficit corresponds to 137 days (4.5 months) if the WFP standards (0.5 Kg/per capita/day) are applied. In this case, Sorghum is extensively planted representing nearly half of the main four (4) cereals.

As in the previous cluster, the access to land is a strong limiting factor having only 0.67 ha per rural inhabitant, and in presence of nearly one landless out of three inhabitants. The average holding size is similar to the previous cluster. However, in this case, the farms <3 ha are about 41% of the total and holdings headed by females are mainly concentrated under this category.

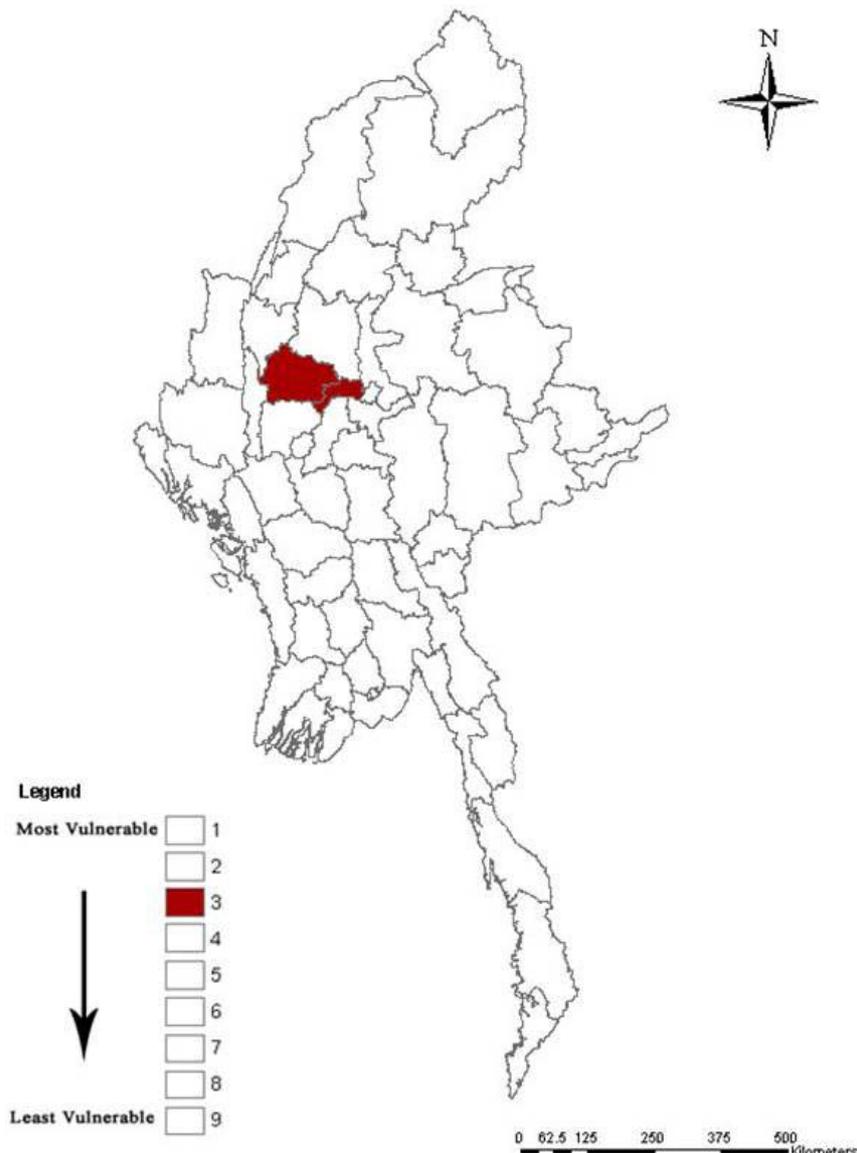
Opportunities for other sources of income are very few, as demonstrated by a very low percentage between the main income sources. In comparison with cluster 1, less links to the market are registered. Only 31% of holders with less than 3 acres declared that the main purpose of their production was for “own consumption”.

The third cluster of this group (**Cluster 3**) includes Sagaing and Monywa⁵³ districts. This area which is still dry will not be affected in the near future by the same NPP negative trends than the previous clusters (expected annual average decrease will be - 0.17% (2005-2015) and -0.20% (2015-2030).

However, the area is still affected by a disturbing per capita deficit of staple food (main 4 cereals) amounting to 64.4 Kg/per capita/year which corresponds to 129 days (more than 4 months) when applying the WFP standards (0.5 Kg/per capita/day). The crop mix strategy, as a logic answering low opportunity of growing rice, is represented (between the cereals) by an important role of wheat or sorghum, according to its local agro-ecological conditions.

More than in previous clusters the access to land is a strong limiting factor (only 0.52 ha per rural inhabitant), although the presence of landless is more limited. The average holding size is significantly high and it is around 3.4 hectares confirming a very small number of small farms (below 3 acres) any many large holdings.

Opportunities for other sources of income (wages and salaries) are slightly higher in this cluster and “own consumptions” as main purpose of production was declared by only 13% of all farmers while the figure for farms <3 acres was 24%.

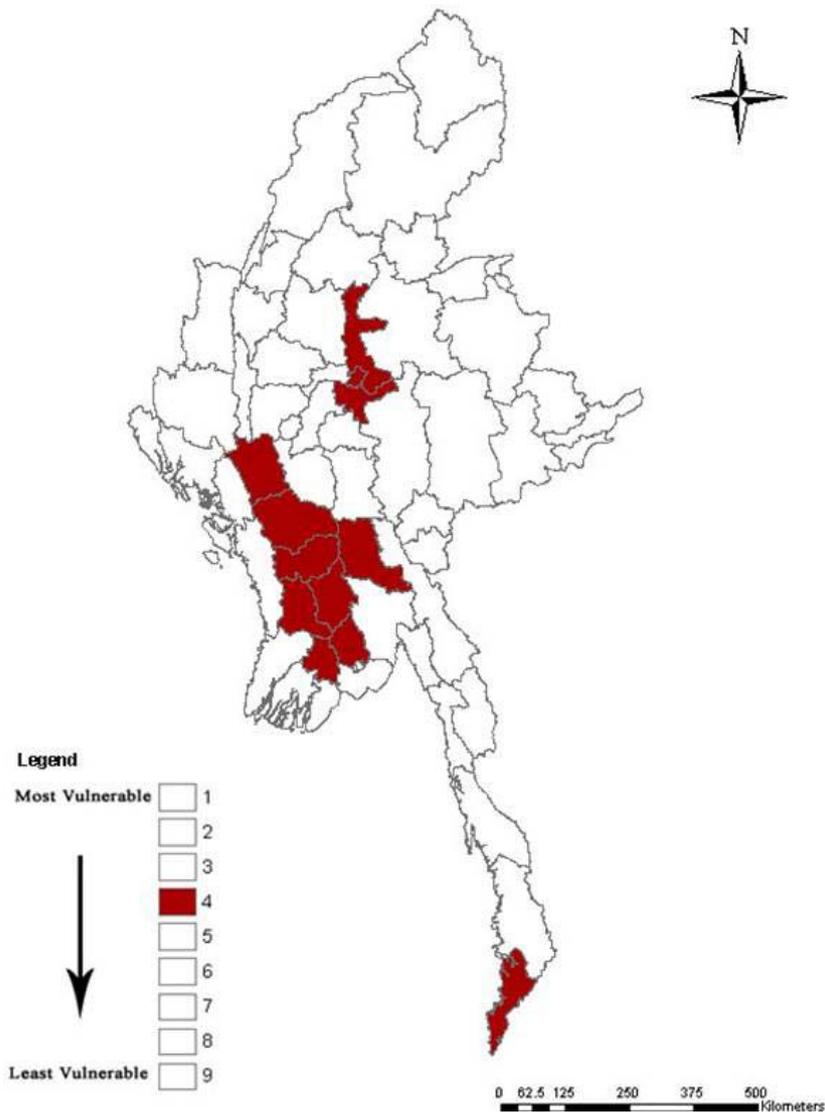


Map of Cluster 3

Cluster 4 includes 12 Districts more or less bordering the previous clusters and these districts are listed below:

Mandalay, Pyin-Oo-Lwin and Kyaukse Districts in Mandalay Division,
 Minbu and Thayet Districts in Magway Division
 Pyay, Thayarwaddy and Taungoo Districts in Bago West and East.

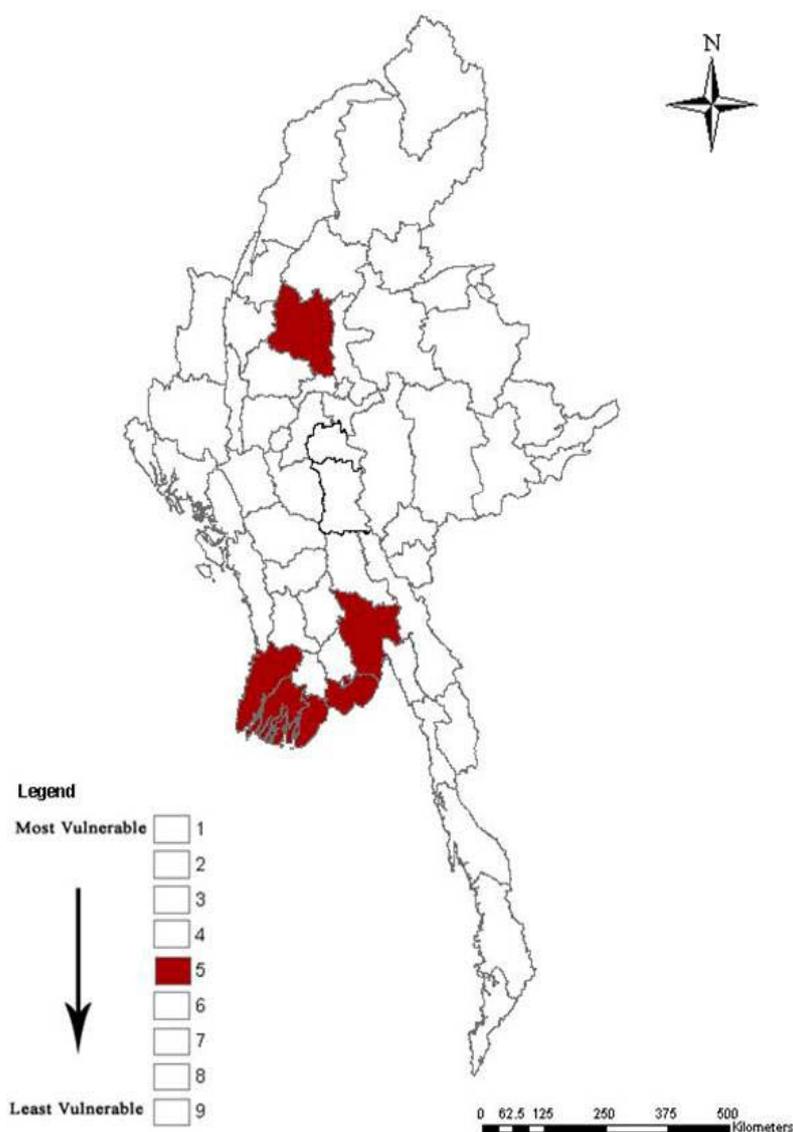
In addition, the following Districts: Yangon North, Hinthada, Maubin and Kawthoung are also included.



Map of Cluster 4

This area, still enjoying average vegetation conditions will be affected in the near future by a NPP progressive impoverishment. The expected annual average decrease will be the same 0.22% for both periods (2005-2015 and 2015-2030). This should be attentively followed up by the Authorities as the area is strongly dependent on rice production although it is presently characterised by a relevant surplus (nearly 4 months).

Access to land is a limiting factor (0.72 ha per rural inhabitant) augmented by the fact that a third of the rural population is estimated as landless. The holding average size is similar to the national figure. Farm production is fairly oriented towards commercial aspects and only 9% of all farms declared that their main purpose of production is for their own consumption.



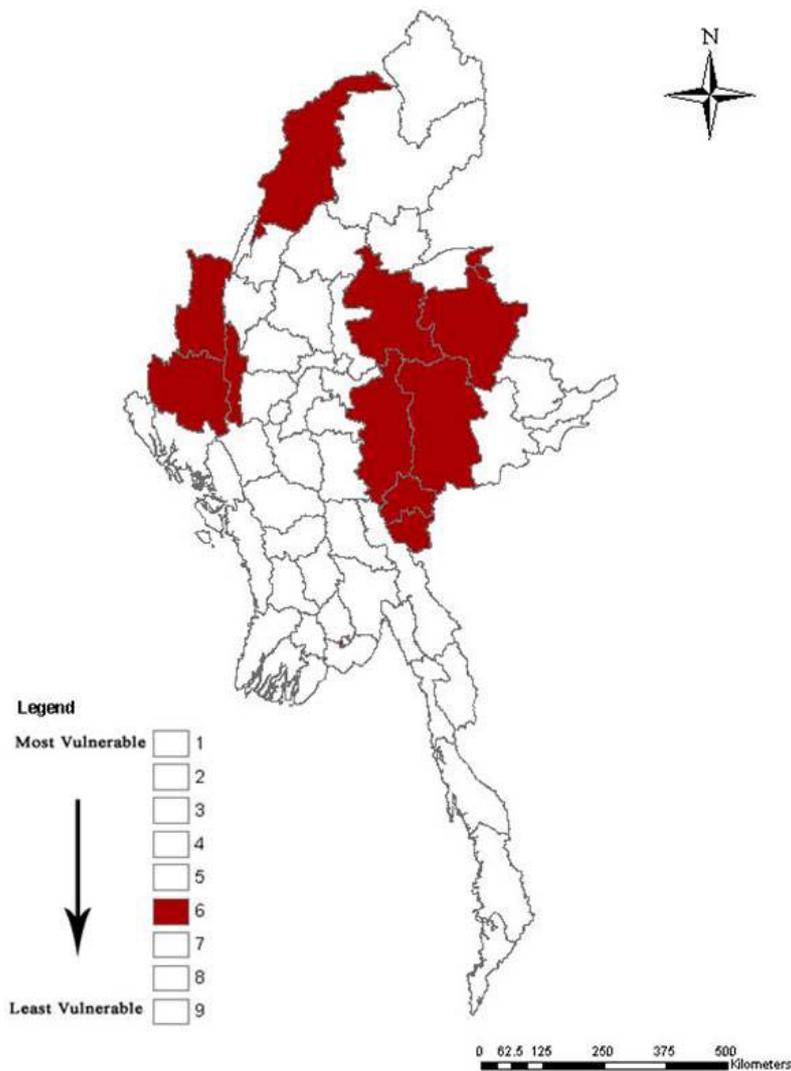
Map of Cluster 5

The next **cluster 5** includes mainly the central coastal part of Myanmar covering Patheingyi, Myaungmya and Pyawbwe Districts in Ayeyarwady Division, Yangon South and Bago.

Due to its peculiarity, Shwebo District is also included in this cluster. Characterised by high devotion to rice cultivation, these areas register an extremely high surplus (more than the double of the per capita WFP standards). However, in the future, this area will also be affected by a decreasing NPP, becoming “an area of concern”. According to FAO forecast, it is expected that between 2005 and 2015 the NPP decrease will be -0.16% (annual rate), during the next 15 years (2015-2030) the rate will be slightly higher (-0.19).

Average holding size is high (3.7 hectares) accompanied by 0.48 hectares per rural inhabitants denoting a high polarisation of land ownership. Apparently, the landless are not so many. While the livestock component is important (Livestock Unit per capita = 1.7) the integration with the market is evident with only 6% of all farms declared their production to be only for own consumption. However, it is important to note that farms <3 acres was low (26%).

The above described clusters are followed by a set of four additional clusters with a higher biomass level and less affected by the overall decrease of the Net Primary Production in the future.



Map of Cluster 6

Cluster 6 (11 Districts) includes most of North and South Shan Districts (Taunggyi, Loilen, Lashio, Kyaukme and Kunlong) and the entire Chin and Kayah States (namely

the western Falam and Mindat Districts, and the central-eastern Loikaw and Bawlakhe Districts)⁵⁴.

The area will not be too much affected in the near future by the overall decrease of the NPP, however, the area is already only a partially surplus area (less than one month) due to a very high component of maize production (1/4 of the overall 4 cereal production).

The main concerns are related to high percentage of landless (more than half of rural population), small size of most of the farms (almost 50% below 3 acres), high concentration of widowed and separated/ divorced females in small farms and rather difficult links to the markets. A 31% of all farms declared their main purpose of production as their own consumption and nearly half of holders with less than 3 acres declared to produce mainly for their consumption.

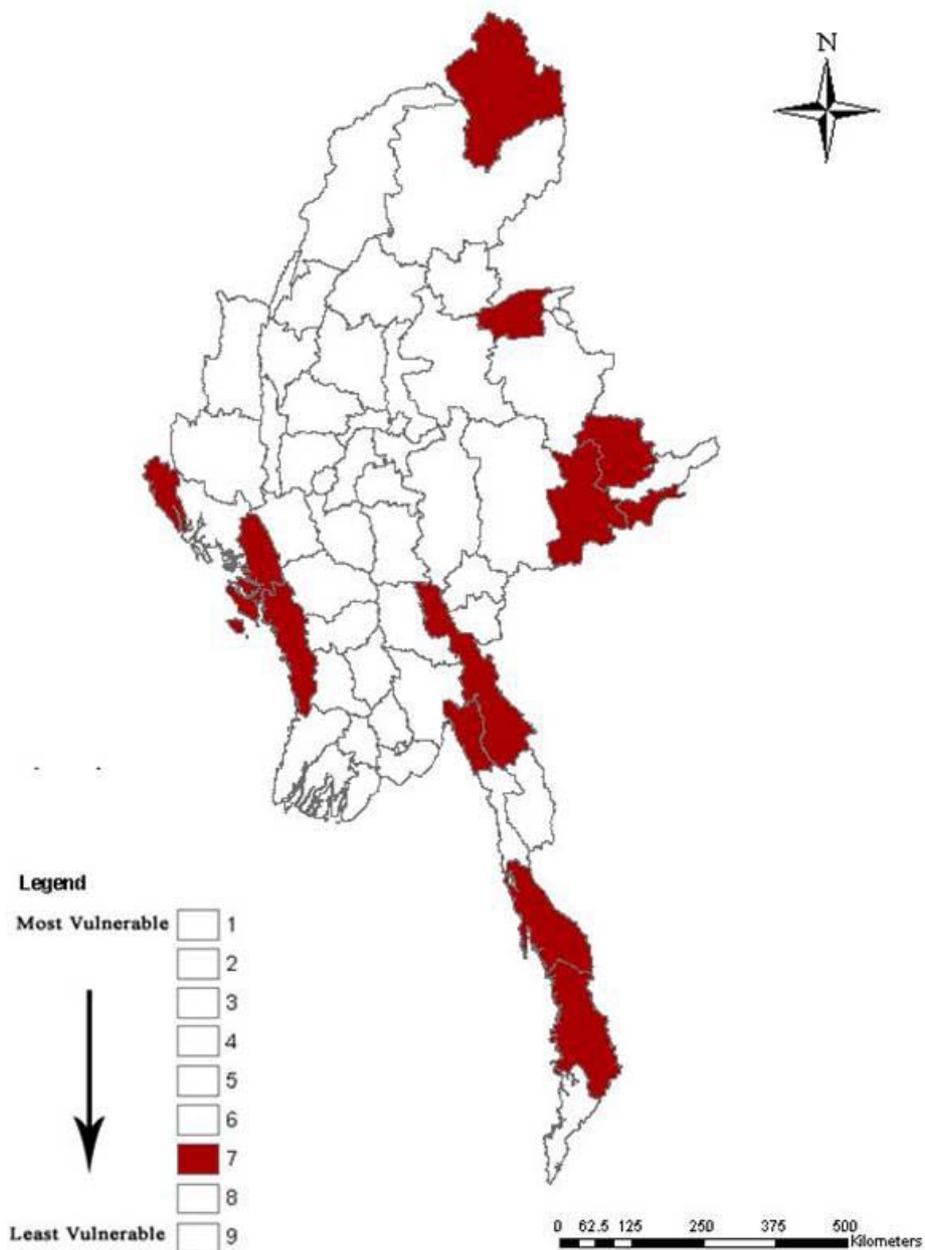
Twelve Districts belongs to **Clusters 7 include** most Districts of Rakhine and Ranintharyi States (Kyaukpyu, Thandwe and Maungdaw on western side, Dawei and Myeik on south-eastern side), of Shan East State (Kengtung, Mong Hsat and Tachileik Districts), and in addition Thaton (Mon State), Muse (Shan North), Hpa-An (Kayin) and Puta-O (Kachin).

Similar to cluster 6, this cluster also will not be too much affected by the overall decrease of the NPP. However, it is noted that the areas already enjoys of a meagre surplus (slightly less than half a month) with a very high dependency from rice.

Most of the concerns expressed for the previous cluster are confirmed and even emphasised.

An extremely high percentage of landless (two out of three between the rural population), a very small size of most farms (almost 60% below 3 acres), and a very high concentration in small farms of widowed and separated/ divorced females (nearly 70% of holdings headed by females is below 3 acres) are the characteristic feature of this cluster.

Finally, poor access to the market channels has been detected in this cluster. This cluster registers a higher percentage of holders producing “mainly for own consumption” when considering both all sizes and only farms below 3 acres. A high dependency from wages and Salaries has been found by MAC2003.



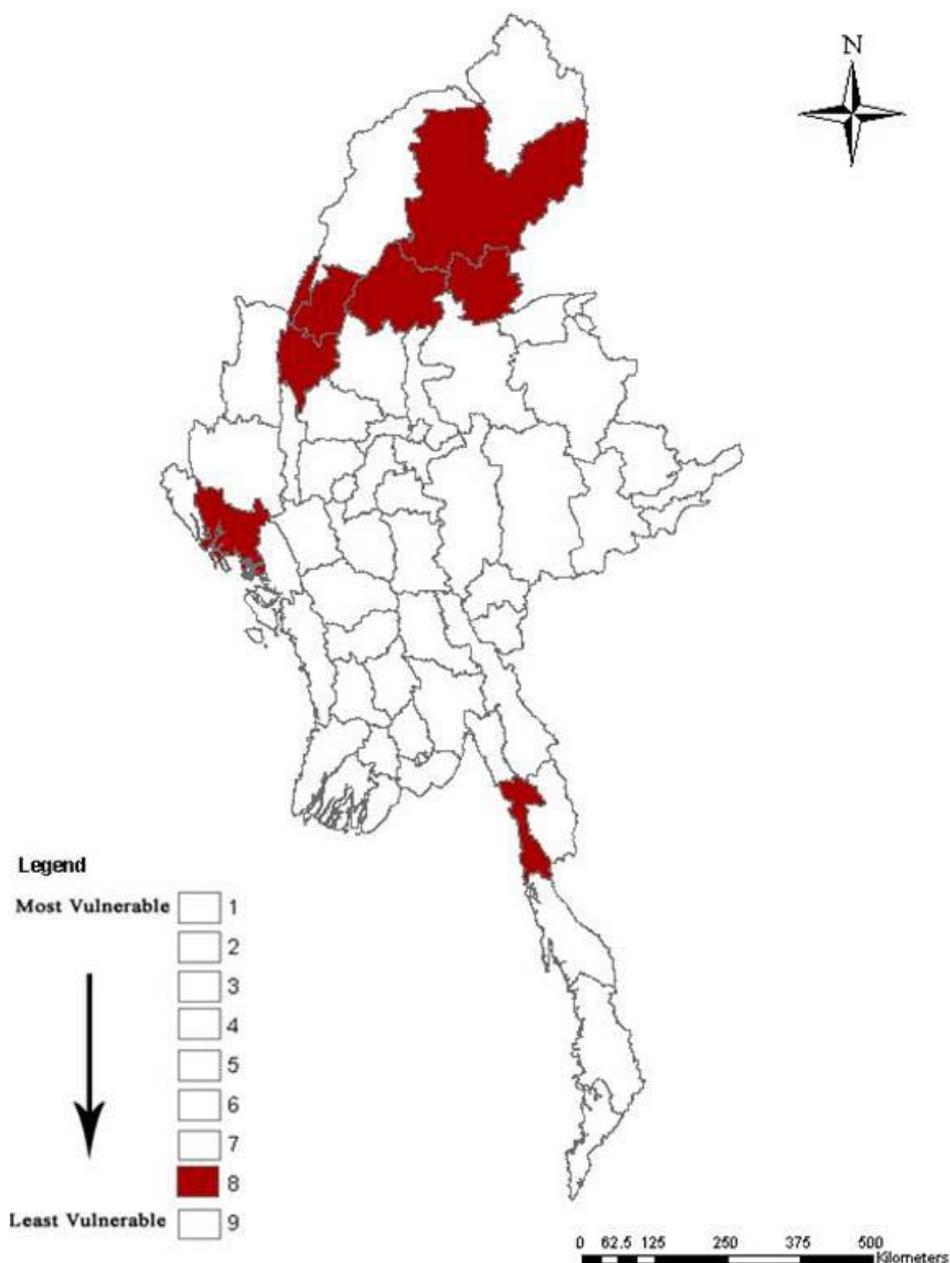
Map of Cluster 7

Cluster 8 includes additional eight Districts, most of them in Saigang state (Katha, Kalemio, Tamu and Mawlaik) and Kachin State (Myitkyna and Bhamo) and in addition Mawlamyine (Mon sate) and Sittwe (Rakhine state).

In the case of cluster 8, the NPP will perform better than the national average.

Many concerns already expressed for the previous cluster can be confirmed for this cluster as well. 2 out of 5 rural inhabitants are considered landless, links to markets are weak, average holding size is rather high but accompanied by a high percentage of

holdings below 3 acres (denoting ownership evident polarisations). In these areas the Livestock Unit per capita is rather high.

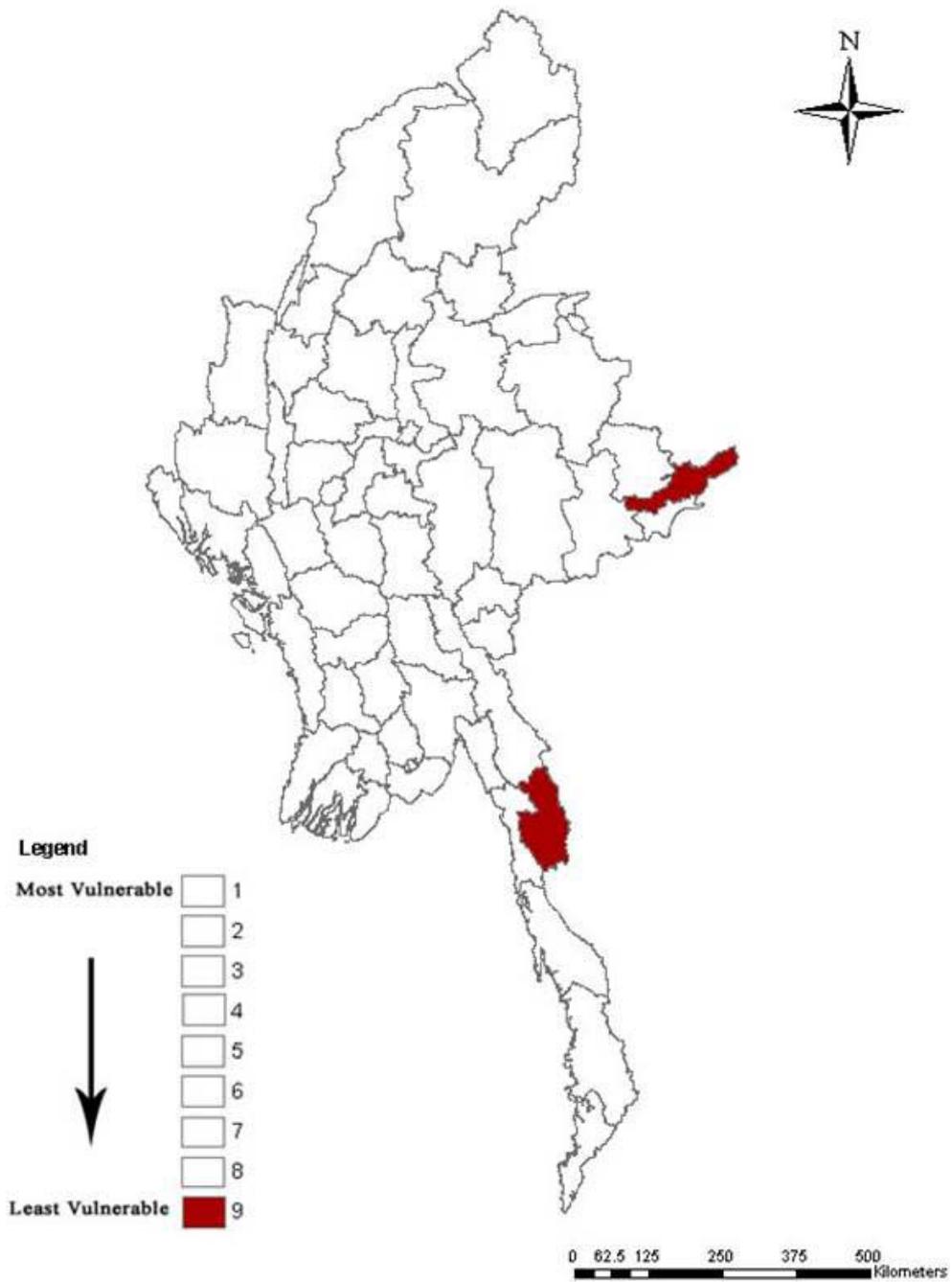


Map of Cluster 8

Finally, the classificatory procedure has isolated two Districts: Monghpyak (Shan East) and Myawaddy (Kayin state) (**Cluster 9**).

Good NPP performances are expected in the future in these highly vegetated areas. The highest percentages of landless has been found by MAC2003, however, the poor Census coverage induces a serious caution when trying to interpret the cluster patterns. In general, caution on the reliability of data for the border areas should be

made as in many cases, entire Districts were not surveyed (see annex 20) and in many Districts only few Wards were covered.



Map of Cluster 9

District clusters – A quantitative description

The Cluster quantitative profiles are summarised in the table below. The table is divided into three parts for clarity.

When appropriate, a colour scale (from red to bright green) had been used to mark cells according to a scale from negative to positive. When not applicable, other colours have been used on a graduated scale.

The symbols: +++, ++, ~~~, -- and ---- are used to facilitate the interpretation of the figure and their statistical explanations are indicated in the table below.

Explanation of symbols	
----	> -1SD
--	-1SD -- -0.2SD
~~~~	-0.2SD -- +0.2SD
++	+0.2SD – +1SD
++++	> +1SD
SD = Standard Deviation	

## Matrix - Part 1

MYANMAR DISTRICTS - CLUSTER PROFILES								
matrix part 1								
Cluster	number of Districts	Estimated Landless	Hectares Rur Pop	Holding Size Ha	Main_Inc from agric	Main_Inc from non-agric	Main_Inc from gag/sal	Surplus Deficit Kg/pc/y
1	3	28.1	0.6	2.6	85.6	9.6	4.6	-41.4
		--	--	~~~	++	++	--	--
2	3	29.6	0.7	2.7	85.2	8.0	5.9	-68.6
		--	--	~~~	++	~~~	--	----
3	3	13.2	0.5	3.4	86.9	5.3	7.3	-64.4
		--	--	++	++	--	--	----
4	12	32.7	0.7	2.4	88.6	2.7	7.8	57.4
		~~~	--	~~~	++	--	--	~~~
5	6	4.9	0.5	3.7	87.8	4.2	6.7	219.3
		----	--	++++	++	--	--	++++
6	11	56.1	1.5	1.6	75.2	10.8	11.0	10.4
		++	~~~	----	~~~	++	~~~	--
7	12	69.7	2.3	1.5	49.8	14.5	26.1	9.1
		++++	++	----	----	++++	++++	--
8	8	40.1	0.8	2.4	75.5	7.8	14.5	30.0
		++	~~~	~~~	~~~	~~~	++	~~~
9	2	97.2	17.1	1.0	7.1	10.6	64.1	16.9
		++++	++++	----	----	++	++++	--
Myanmar	60	34.8	1.2	2.5	78.6	7.2	11.5	51.0

Matrix - Part 2

MYANMAR DISTRICTS - CLUSTER PROFILES								
matrix part 2								
Cluster	4cer avail rice % 4 cer	4cer avail 3 other % 4 cer	4cer avail maize % 4 cer	4cer avail wheat % 4 cer	4cer avail sorghum % 4 cer	production mainly for own cons	prod<3acr mainly for own cons	Livestock Units percapita
1	83.1	16.9	11.5	0.1	5.3	12.3	24.2	1.4
	--	++	++	--	~~~	--	--	~~~
2	40.9	59.1	10.9	1.3	46.9	20.8	31.0	1.1
	----	++++	++	~~~	++++	~~~	--	--
3	52.0	48.0	5.4	24.6	18.0	13.3	23.9	1.4
	----	++++	~~~	++++	++++	--	--	~~~
4	96.8	3.2	2.3	0.6	0.3	9.3	25.6	1.4
	++	--	--	~~~	--	--	--	~~~
5	98.3	1.7	1.4	0.3	0.0	6.0	26.2	1.7
	++	--	--	--	--	--	--	++
6	72.1	27.9	25.6	1.5	0.7	31.5	45.2	1.1
	--	++	++++	~~~	--	++	++	--
7	97.7	2.3	2.0	0.3	0.0	35.6	60.9	1.2
	++	--	--	--	--	++	++++	--
8	99.0	1.0	1.0	0.0	0.0	26.4	59.0	1.8
	++	--	--	--	--	++	++++	++
9	95.2	4.8	4.8	0.0	0.0	82.2	96.7	1.3
	++	--	~~~	--	--	++++	++++	--
Myanmar	87.4	12.6	6.1	1.7	4.8	18.8	37.5	1.4

Matrix - Part 3

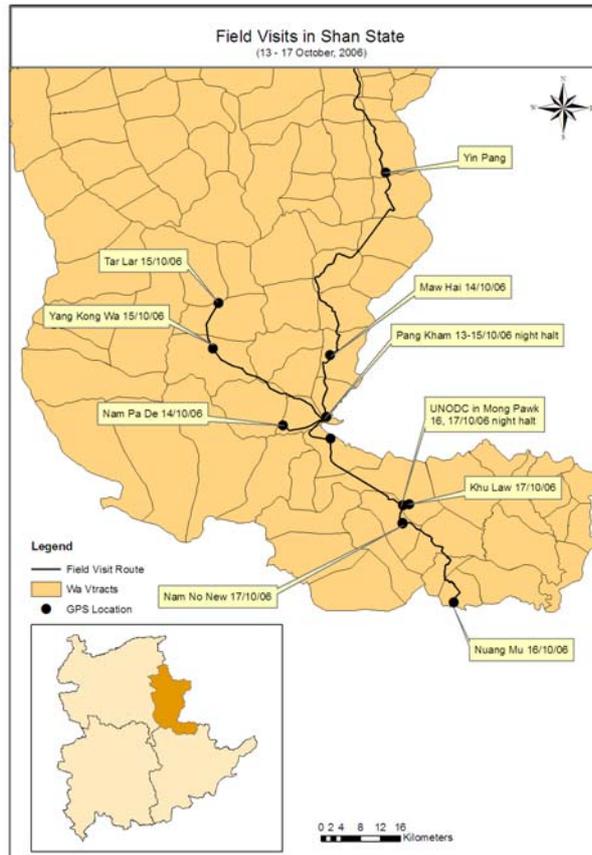
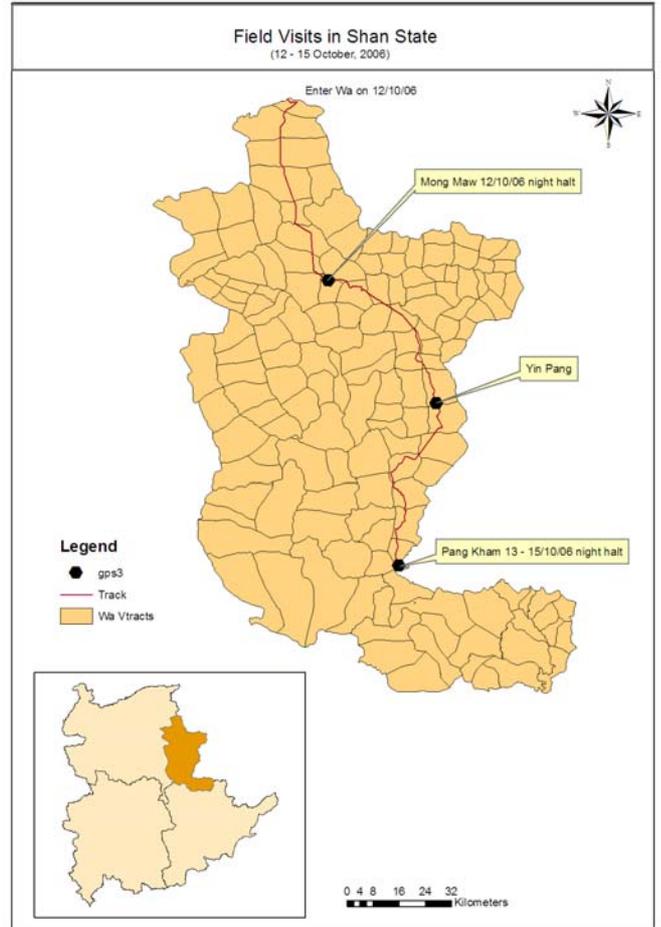
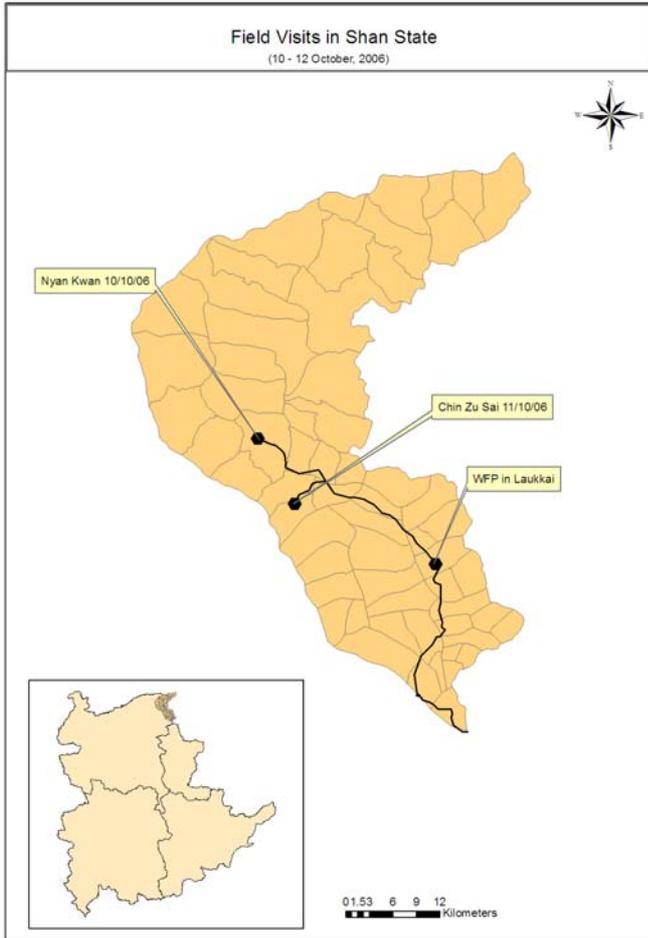
MYANMAR DISTRICTS - CLUSTER PROFILES								
matrix part 3								
Cluster	4cer avail	holdings	fem hold	f_wid hold	f_div hold	NPP 2005-15	NPP 2015-30	Vegetation Index
	Rice	<3acres	<3acres % fem	<3acres % f_wid	<3acres % f_div			
	% 4 cer	% total	tot	tot	tot			ann_ave
1	83.1	28.8	32.4	34.4	28.7	-0.42	-0.38	0.42
	--	--	--	--	--	----	----	--
2	40.9	40.4	41.2	43.4	45.9	-0.29	-0.31	0.36
	----	~~~~	--	~~~~	~~~~	--	----	----
3	52.0	28.3	34.3	30.3	39.5	-0.17	-0.20	0.39
	----	--	--	--	--	~~~~	~~~~	----
4	96.8	36.6	42.5	44.7	46.9	-0.22	-0.22	0.51
	++	~~~~	--	~~~~	~~~~	--	--	~~~~
5	98.3	24.8	35.6	30.5	28.8	-0.16	-0.19	0.45
	++	----	--	--	--	~~~~	~~~~	--
6	72.1	48.2	53.6	55.4	54.8	-0.14	-0.13	0.61
	--	++	++	++	++	++	++	++
7	97.7	59.8	70.6	69.3	71.9	-0.08	-0.08	0.61
	++	++++	++++	++++	++++	++	++	++++
8	99.0	40.1	53.0	51.1	54.5	-0.01	-0.03	0.59
	++	~~~~	++	++	++	++++	++++	++
9	95.2	75.7	77.2	82.6	57.5	0.01	-0.03	0.64
	++	++++	++++	++++	++	++++	++++	++++
Myanmar	87.4	38.7	46.4	45.9	46.5	-0.17	-0.18	0.51

4 – CASE STUDIES

Special Regions in northern and eastern Shan



Itinerary maps



4A – INTRODUCTION

The FIVIMS mission has been requested to visit “*Special Regions in northern and eastern Shan state where about 90% of country’s opium is grown*”. As per the item 5 of the TOR of the mission, “*a case study on the poor, food insecure and vulnerable in northern and eastern Shan states, especially Kokang Special Region 1, Wa Special Region 2, and Shan/Akha Special Region 4*” was expected.

This visit had been conceived inside the overall goal of contributing “*to improved targeting and programme and policy development, and to effective and timely interventions by the Government and other national and international stakeholders concerned*”.

The “*case study for Kokang Special Region 1, Wa Special Region 2, and Shan/Akha Special Region 4 in northern and eastern Shan states*” was added to the original TORs “*to better understand key factors leading the vulnerable populations to poverty and food insecurity as well as their coping mechanisms and capacity*”.

In order to achieve significant results, the mission scheduled a 20 day field appraisal and was efficiently assisted by UNODC and WFP (the two UN Agencies actively working in many zones of the above border areas (with the exclusion of Special Region 4). The mission formulated a detailed itinerary including a list of villages expected to be visited.

The list of villages was defined according to the following criteria, a) villages located in different agro-ecological and climatologic areas, b) ethnicity, c) level of accessibility (proximity to townships/ cities versus remoteness), d) exposure to the market and e) presence or absence of projects.

However, the mission encountered many difficulties in getting the required permission from Myanmar Government and was informally requested, through the FAO Office, to drastically reduce its stay in Shan border areas. In the meantime, the mission was always informally informed that the permission could be provided by the Myanmar Government under the condition that the mission also makes a visit to Dry Zone of the Myanmar Central Plain. Accordingly, the mission accepted to reduce its length of stay in border areas from 20 to 10 days, with serious curtailment on the itinerary and the number of villages expected to be visited.

In order to achieve reasonable results, the mission was obliged, at least partially, to revise the village selection criteria; as a result the “remoteness criterion” was the most sacrificed and this bias should be taken in account when reading the appraisal results.

In spite of these limitations, the mission had the opportunity to visit a limited number of villages (different agro-ecological environments, different ethnic groups).

Before leaving Yangon for the field visit, the mission prepared detailed checklists related to different types and levels of interviews (village, agricultural patterns, and households). In addition, an anthropometric outcome sheet was prepared to assist in the identification of vulnerable households to be targeted for the interviews (see annexes 9, 10, 11 and 12).

The above checklists have been extensively used in most of the visited areas, with the full collaboration of the local authorities. However, it should be noted a few exceptions that:

1. In spite of the official permission granted by Wa Central authorities, the Mon Maw local authorities denied the opportunity of carrying out the village appraisal in their territory and consequently the mission had to cancel part of its itinerary.
2. The appraisal in Region 4 was practically impossible since the mission could not get permission. However, the mission could drive straight to Kiangtong from Region 3 and had the opportunity to have a glance at the roadside villages. Since the permission was not granted to have any interviews, only visual appraisal was possible and accordingly, there was no reference made to Special Region (Region 4) in this report.

In addition to the political constraints imposed on the mission, unexpected bad weather was also a serious constraint limiting the mission’s access to villages for appraisal. An unforeseen delay of the end of the monsoon season was observed and it was confirmed both by local sources and by remote sensing images.

The conditions of dirt tracks were very poor, frequently requiring the use of winches for the 4WDs provided by UNODC and WFP. Due to these weather constraints:

- few villages which were originally expected to be visited cancelled from the itinerary,
- the expected requested time for reaching the villages significantly increased

and the time available for the local appraisals had to be shortened.



A comparative overview

Although, as just noted, heavily affected by political and weather constraints, the mission could visit nine villages⁵⁵ and could interview only nineteen households⁵⁶. The households had been targeted, as far as possible, according to a preliminary screening, based on nutritional outcomes quickly collected when arriving in the villages. In the above nine villages, both overall village profiles and agricultural patterns profiles were collected.

Few weeks before the mission appraisal and in coordination with the mission, a fairly larger number of villages particularly, a large number of households had been investigated by WFP for its food security assessment. The WFP assessment conducted between the 17th and 24th September had the main objectives of testing the new questionnaires for the WFP food security assessment and monitoring program and providing some quantitative data to a rapid assessment conducted⁵⁷ by the mission from 10th to 17th October 2006.

It is a fact that although WFP questionnaires were meant to address specific information needs of WFP, the questionnaires were rigorously discussed with the mission when drafted in Yangon, and could be considered as “road-opener” for the incoming field appraisal of the mission.

The WFP survey, although mainly limited to monitoring activities, has provided valid background information for the mission to have a reference for its appraisal. WFP surveyed 23 villages⁵⁸ (10 of them in Kokang and 13 in Wa region) while 97 and 129 households were respectively interviewed resulting a total of 226. Questionnaires used by WFP are given in annexes 13 and 14.

Although the main purpose of the field data collection of WFP has been to test how to gauge food insecurity level using a set of easy-to-be-collected indicators for a “*measurement of food access component of food security*” (namely: HFIAS (Household Food Insecurity Access Scale, CSI (Coping Strategies Index), WFR (Wage to Food Ratio), and IDDS (Dietary Diversity Score)) useful and important outcomes have emerged from the results.

For instance, the WFP outcomes have been extremely important both in assisting the final identification of villages to be visited by the mission and in comparing the mission appraisal outcomes with those provided by the larger (although limited to

very few indicators) WFP survey.

In addition, the mission, once left Yangon at the end of its stay in Myanmar, had the opportunity of receiving a digital copy of the data collected by WFP survey. The outcomes derived from the WFP questionnaires and presented in the next pages are the results of a mission independent data processing, according to criteria more related to the own goals of the mission.

The first table below compares Kokang with Wa on the basis of the four indicators used by WFP. The figure sometimes slightly differs from those published by WFP as the mission preferred to use weighted average for each special region due to the fact that the surveyed villages were of different sizes and consequently weighting procedures could lead to a realistic comparison between the two Special Regions.

The overall food insecurity, when measured through food access components (HFIAS) is diagnosed by WFP as “moderate”; the situation is apparently slightly better in Kokang than in Wa. On the contrary, according to the observed coping strategies, Kokang seems more (but still “moderately”) food insecure. According to WFP computation, Kokang also seems to be affected by a smaller Dietary Diversity, but the mission reached opposite results when reprocessing the same data.

	HFIAS	IDDS	CSI	WFR 2005	WFR 2006
Kokang	3.13	2.38	3.82	1.64	1.77
Wa	3.43	2.08	3.28	1.47	1.42

Legend, according to WFP criteria:

HFIAS: 1=Food Secure; 2=Mildly Food Insecure; 3=Moderately Food Insecure; 4=Severely Food Insecure

IDDS: 1=Adequate; 2=Borderline Adequate; 3=Moderately Deficient; 4=Severely Deficient

CSI: 1=Food Secure; 2=Mildly Food Insecure; 3=Moderately Food Insecure; 4=Severely Food Insecure

Wage to Food Ratio (WFR) has resulted more favourable⁵⁹ situation in Kokang, and it is worth to be noted that the improvement is during the last year. In contrast, in Wa it was found less favourable and slightly worsening situation between 2005 and 2006.

About 1/4 of the households (23%) has been found headed by females, with a higher

probability in Kokang (26%). However, the WFP draft Bulletin suggests that “*Data collected does not allow for an analysis of the reasons why so many households were headed by a woman*”. This fact could be due to difficulties in understanding the question but it should not be ignored that the literature denounces that about 60,000 person recently migrated out of Kokang area to the more internal areas of the Northern Shan for continuing cultivation of poppy.

The WFP survey has also found that in Wa the households headed by females have a higher probability of having children under 5 years old⁶⁰.

“**Agricultural activities**” (farming on their own land).has been declared as the most important source of income “during the last 30 days”⁶¹ by more than 2/3 of the households. This is found to be at a higher proportion in Wa.

Less than 1/4 of the interviewed households declared that “**casual labour**” was the most important source of income. When considering only the households headed by females, this ratio reach more than 1 out of 2 with a higher proportion in Kokang i.e 1 out of 3 households. Out of these two activities, very few households declared another activity as the main source of income.

The **access to land** has been investigated both in terms of holding size and according to “access to land with some irrigation system”.

While the access to agricultural land is considered, more than 50% of farm holdings have size only less than one acre (6 mu) and cases of landless were seldom detected by WFP.

Opportunities of irrigated land are very limited and more frequent in Wa than in Kokang, which is less that 50% of the households declared to have “access to land with some irrigation system”. This figure is 40% in Kokang and 54% in Wa.

Strong gender discrimination emerges from the fact that, practically, women hold only gardens or lands with a size smaller than 1 acre. In Kokang, all the women heading households were found (by WFP) to be holding less than one acre and in Wa, the percentage was found more than 90%. These WFP outcomes are not surprising, considering that these percentages are not so far from those collected in the eastern Districts of North Shan at the last (2003) Agricultural Census. In the overall Shan North State, the area of the farms headed by females and below 1 acre was significant 16% of the total area included in the above threshold. In Lashio district, it was 17%

and in Kyaukme, it was 26%. It is worth to be noted that MAC 2003 excluded the farms below 0.4 acre, while the WFP survey included those.

In general, at least in the WFP surveyed villages, about 40% of the household enjoys piped water facilities. This fact could be related to the fact that all the villages selected by WFP got in the past or were presently getting some kind of assistance from UN agencies or NGOs. However, the above figures (60% in Wa versus 23% in Kokang) are the result of dichotomised opportunities.

Kokang mainly get drinking water from protected wells and sources (50%) and in a smaller amount from (rivers, ponds, etc.). Wa seems to have only two alternatives: either to enjoy piped water or to access to unprotected sources.

According to the WFP survey, the access to drinking water is apparently gender related. Particularly in Kokang, the household headed by females have less opportunity to collect water from safe sources and were found more (twice than men) depending from unprotected sources (rivers, ponds). Heavy burdens from other impellent jobs could be related to this distressing situation.

The picture emerging from **questions related to food access** (in general, expressed in *“how many time during the past 30 days” did it happen* [i.e. eating less, going to sleep hungry, and so on]) are particular important for identifying levels of food insecurity.

The picture makes reference to mid September, at the end of the lean period or at the beginning of the harvesting period for some villages located at lower altitude. Due to this fact the information should be cautiously used.

Recent⁶² **worries about “not having enough food”** are rather recurrent, and significantly more frequent in Wa than in Kokang (more than 2 out of 3 households in Wa versus a slightly less than 1 out of 2 households in Kokang), probably reflecting the uncertainties related to the recent poppy ban in Wa Special Region.

Households headed by females were found not only more burdened⁶³ but also as more frequently burdened by this worry. The above “subjective” perception has been verified through checking particular situations that could have possibly happened.

“Not being able to eat some preferred foods like high quality rice or meat” is

rather a rule, particularly in Wa and it frequently recurs (*“more than ten times during the last month”*).

“Eating only few type of food like only rice and greens” is the most recurrent coping mechanism. In Wa, almost all households did it, and many times during the last month. On the contrary in Kokang, apparently, this coping mechanism behaviours is developed mainly by HHs headed by female (only less than 1/3 of the HHs headed by males is obliged to do it, while more than 90% of HHs headed by females is compelled to do it (more than 9 out of 10 in Kokang and 8 out of 10 in Wa).

To **“eat less in any main meals”** is a more frequent coping mechanism than “to eat fewer meals in a day” both in Kokang and Wa. However, and worryingly, both to eat less in any main meals and to reduce the number of meals during the day are more recurrent in Wa (where 70% of the HHs reduces the quantity of each meal and 50% reduces the number of meals during the day). In addition these coping mechanisms happen in Wa very frequently (it means “more than 3 times monthly” and a high frequency of “more than ten times monthly”)

“Having no food at all” is a less recurrent situation, apparently ¼ of the interviewed HHs had been affected “at least one day per month”. In this case, the gap between Wa and Kokang seems smaller. “To go sleep hungry” and “to go a full day without eating” have been observed very seldom both in Wa and in Kokang.

Between the other coping mechanisms the most common approaches seem to be:

“Purchasing food on credit or borrow money to buy food” is a current practice, more than 50% of the HHs adopts it, particularly in Wa, and the number is 64%. In Kokang, this practice is gender related, 80% of HHs headed by females practice it.

“To get an advance for next harvest or labour”; 4 out of 10 HHs are compelled to do, with about the same proportion in the two Special Regions. However, in Kokang, this coping mechanism is still a gender related one (2 out of 3 HHs headed by female must adopt it for survival).

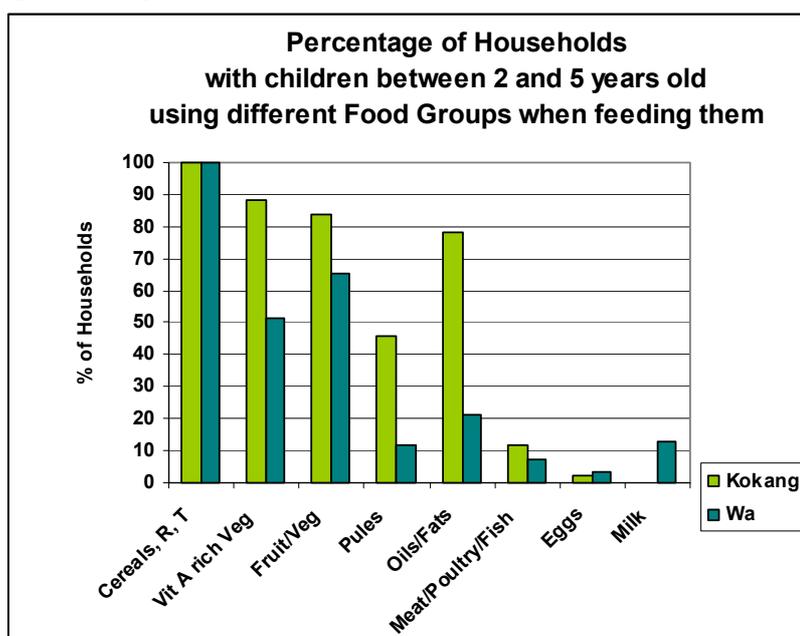
On the contrary “not sending the children to school” was rarely observed (only few cases related, again, to HHs headed by females).

“**Working and spending the night away**” is a coping mechanism extremely rarely practiced probably due to lack of opportunity elsewhere and distances.

As far as it is concerned with **access to food**, the WFP survey has mainly concentrated its attention on children between 2 and 5 years old through a specific set of questions on the “yesterday food consumption” of eight food groups, relevant for their nutritional meaning. Consequently, the following remarks make reference to this specific age group.

According to the current WFP methodology, the answers were requested only in terms of YES or NO, and the answers were not related to physical quantities.

The outcomes offer a confirmation of better conditions in Kokang when compared with Wa. The chart below provides, at a glance, evident differences between the two Special Regions.



A presence of at least six food groups has been detected by WFP only in less than 2% of the surveyed households.

Less than 20% of the HHs consumed at least five food groups.

This percentage is **significantly higher** in Kokang (38%) than in Wa (6%).

Better feeding practices for children in Kokang are confirmed by the fact that there the **median of the observations** was found in the cluster of “consumption of at least 4 food groups” while in Wa it was noticeably found in the border between 2 and 3 food groups (where the first food groups are obviously: cereals, roots and tubers).

In any case the food groups related to intakes of animal protein have never been

practically detected everywhere.

The figures are impressive: “Meat/Poultry/Fish/Seafood” has been declared only by 8% of the Households, a same percentage (8%) has been found for “Milk and Milk Products”, while in only 3% of the Households “Eggs” had been given to the children according to the “yesterday food consumption” observations.

The ranking of the food groups according to the frequency of quotations is as follow:

Cereals, Roots and Tubers	100%
Other fruit and Vegetables	73%
Vitamin A rich vegetables and fruits	65%
Oils and Fats	43%
Pulses, Legumes, Nuts and Seeds	24%

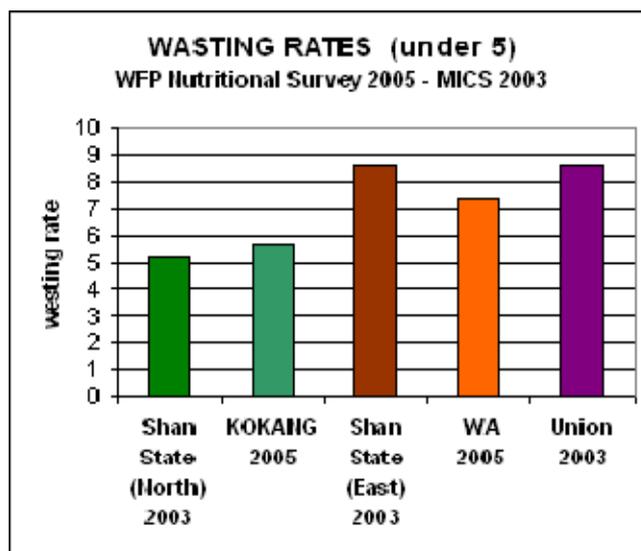
followed by the already quoted percentages of Meat, Milk and Eggs.

It is worth to be noted that the alternative to vegetable proteins (that could complement cereal intake) is not frequently practised in Kokang (only less than 50% of households having children between 2 and 5 years old use them) and have seldom been observed in Wa Special Region (where only 12% of households having children between 2 and 5 years old use them).

The fact that Kokang children were certainly in a better profile than the children in Wa had been already found at the occasion of the 2005 WFP “Nutritional Survey”⁶⁴ in the same areas.

The above survey in 2005 found the wasting rate (children under 5 years old) in Kokang Special Region rather lower than in Wa Special Region.

The chart here compares the figures of the two Special Regions.



The most recent official estimations (MICS 2003) of Shan State and the Union have also been included in the chart. There is strong evidence that both Special Regions (and particularly Kokang) are better than the Union (2003).

In the meantime Kokang is a bit worse than Shan North State (2003) and Wa is better than Shan East State (2003).

According to WFP survey, 78% of the Households in the surveyed villages of Wa have benefited “during the past 30 days” (lean period 2006) from some form of Food Aid/ Assistance. In Kokang, this figure is only 7%. This is partially due to the current situation in Wa, with an expected worsening situation for 2006 due to the recent poppy ban.

In the surveyed villages, slightly less than half of Wa households benefited from Food for Education, and a similar percentage from Food for Work, while in surveyed villages of Kokang 1 out of 10 household benefited from Food for Education and no one from Food for Work. In Wa, 1 out of 10 households was benefited from Food for Training, while no beneficiaries have been found in surveyed villages of Kokang.

In Kokang, the food aid assisted very few households mainly benefiting from Vulnerable Group Feeding Programme (45%) and the same percentage from other Food Aid programmes. Both these two programmes have not been frequently observed in Wa Special region.

In Wa, many households are benefited simultaneously from two or more types of food

aid/ assistance. 1/3 of the benefited households are assisted by two types, and 1/10 from three types.

A significant contribution for identifying how much the recent poppy ban has affected the living standard in Wa Special region can be provided by the answers to a question expressly included in the WFP questionnaire: ***“is life in this village better or worse than 3 years ago?”***. The self-assessment was provided in each village by key informants. However, the results are commented in terms of Households and Population and not in terms of Villages, due to rather different dimensions between the WFP surveyed villages.

In Kokang, 92% households (89% in terms of population) declared that their life is better, and only a small quantity (respectively 8% and 11%) declared that the situation has worsened.

On the contrary, in Wa Special Region, according the self-assessment provided by village key informants , the situation is not so good. 61% of households have improved their conditions, while for 13% of HHs, the situation has worsened. The additional 26% of households has not apparently changed their conditions.

The mission, in coordination with the WFP survey, has investigated on more specific aspects of food insecurity with particular emphasis on local constraints hampering a socio-economic recovery after the poppy eradication programme.

As already mentioned, the full set of the information collected by WFP has been made available only after the mission’s field appraisal.

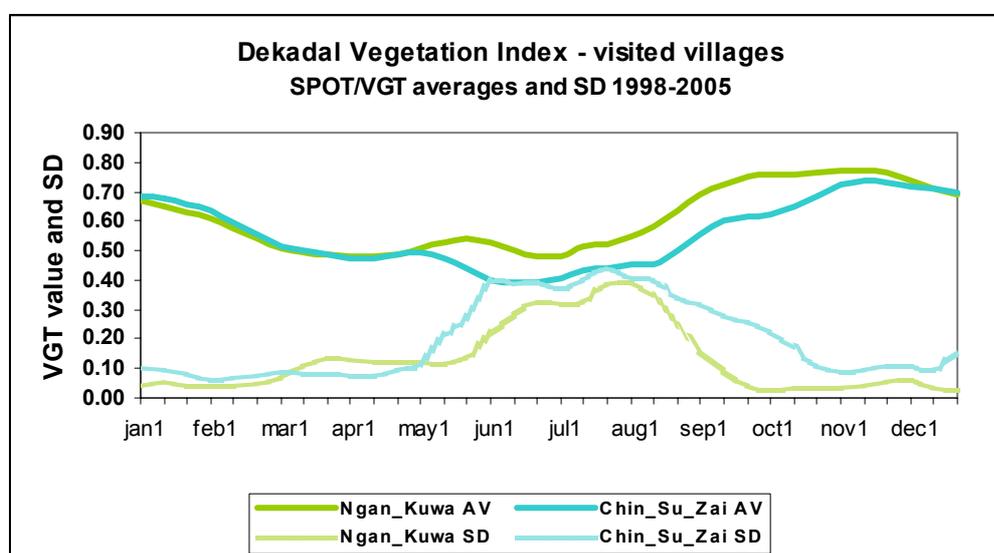
This fact is apparently a disadvantage. However, it offered the advantage of comparing and complementing two separated field results. It is worth to be noted that the mission appraisal was carried out, when possible, in the same villages visited by WFP with the purpose of a more in depth investigation on specific food insecurity aspects.

WFP attempt has been to provide a quantitative assessment (as far as possible) of the food insecurity levels, the mission appraisal has tried to provide a qualitative assessment, for instance targeting for ad hoc interviews at households considered more vulnerable (see next pages) and investigated the reason of their vulnerability. Field activities of WFP and the mission should be considered as complementary to

each other and the results of this synergy have been very relevant.

The above table finds a confirmation in the statistics extracted from SPOT VGT images and describes the vegetation cycles. The chart (see next page) shows the average level of the vegetation index around the visited villages⁶⁶ during the solar year.

As declared by local farmers and shown in the chart, Ngan Kuwn has opportunities for an earlier start of the growing season and during the monsoon period it enjoys higher moisture. In the meantime, the start of the growing season is more reliable in Ngan Kuwn than in Chi Su Zai (see the discontinuous lines showing the decadal inter-annual Standard Deviation (SD)⁶⁷).



In other words, the season seems more reliable, although the first rains could induce the farmers to sow too early, as frequently confirmed by local key informants. However, in both cases, during the winter season, the moisture is enough for allowing a two-season cropping system.

2.

Upland and lowland rice is planted to the maximum extend, including well maintained terraces, but in addition, maize and tea have been frequently found.

In addition, when asked to provide a list of the main six crops in the order of priority, the key informants and the households in the visited villages have declared faba beans, soybeans and sweet peas.

Intercropping has been observed while travelling through the region. However, in the visited villages, when specifically questioned during the interviews, the farmers declared that they do not practice it. Sometimes, only maize is simply planted with upland rice but it is just to mark the borders.



Legumes, fruits and vegetables have been observed too. The list of those detected/described in the visited villages is very long, confirming the possibility of improving their use/production (see plant dictionary, annex 18).

Home gardening is a frequent practice, although limited by the hard work in the field: *“I have a large garden, but little time to look after it”* said a female household head. Sometimes the lack of seeds and/or technical advice is hampering any improvement.

3.

Land availability is the main limiting factor for food availability, provoking a less frequent use of fallow practices than it has been in the past. In the visited villages, fallow is practiced each 5-6 years. In addition, “slash and burn” still continues to be the current answer to food needs.

The farmers said that rainfall is frequently inadequate at planting time. No summer crops are grown due to difficulty of irrigation. Although water sources are available, villagers can not afford to have high cost of irrigation.

In last year (2005), the farmers have been affected by lower (than normally expected) crop performances. Probably the farmers, when requested if *“the current situation [was] better or worse than the previous year one”* had in mind the consequences of

the 2005 harvesting on their 2006 consumptions (see next point).

4.

It is a fact that, according to farmers' declaration, the price of rice had not increased during the last year (on the contrary, it did mostly everywhere else in Myanmar).

On the contrary the daily earning of an agricultural labourer had been stable, or in some cases, it had slightly been increased.

Consequently, the mission could verify, at village level, what WFP wrote as a result of its larger assessment carried out few weeks earlier: “[the Wage to Food Ratio (WFR)] .. has increased from 1.7 last year to 1.8 this year”⁶⁸ (i.e.: it slightly improved⁶⁹).

5.

A significant change in type of crops cultivated has been observed which includes new tea and sugarcane cultivations. Informal interviews indicated that the change is mainly a recent one and there is an increasing trend for this change. This new trend has been partially induced



by the Chinese market demand and partially provoked by projects implemented in the area.

The relative importance of this change and the two types of cultivation had been difficult to be evaluated because of the differences in the different situations and also of the opposing opinions expressed by key informants.

However, there are evidences that most of the observed changes have been promoted by private initiatives of Chinese merchants providing new seeds making purchase contracts, and guaranteeing prices.

The influence of Chinese merchants is important not simply as a demand component but also as a mechanism of transferring new knowledge and practices.

The case of the observed shift to “organic tea” is a good example. *“Last year tea cultivation was good, but prices were too low. This year, due to “organic tea” popularity in China, Chinese merchants offer higher prices for organic tea”* said a farmer in Chin Su Zai village. The above shift has been facilitated by the fact that only few farmers, and very seldom, use inorganic fertilizer (only urea) while some of them use organic fertilizer (farmyard manure). However, the mission appraisal found that most of them use neither inorganic nor organic fertilizers.



6.

In the visited villages, the self-sufficiency lasts approximately for 5-6 months. However, few worse-off households identified through anthropometric criteria validated by local key informants declared that food from their own production was sufficient only for 3-4 months. Post harvesting losses are a key contributing factor which exceed 20% of the production according to some farmers.

At the same time, it happens that the farmers, when requested how they could cope with lack of food, declared “selling corn”. This confirms a very current palatal attitude in both Special Regions that maize is frequently defined as a “fodder” and seldom recognised as a “food”.

7.

In most of the observed cases, maize throughout the year and specially, when the lean period approaches is gradually introduced into the daily food intake depending on the scarcity of rice. At the beginning, a very small quantity of maize is mixed with rice and this quantity becomes more and more important when the “lack of food” becomes more and more a serious problem. In other words, the borderline between what is considered “fodder” and what is “food” moves up and down according to the seasons and the household conditions.

8.

Probably for the same reasons, the results of an attempt of introducing buckwheat are related to the same attitude related to palatability. The “rice dependency syndrome” seems an attitude so deep-rooted in local and in Myanmar people, in general. When food insecurity is evident, several supported actions to assist the farmers in differentiating their crop mix are facing “palate” constraints. Only new cash crops are well accepted because the cash generated by the new crops allow farmers to purchase rice.

9.

The primary source of income, according to the 2006 WFP survey is “farming” (2/3 of the interviewed households). However, only 1/3 of households headed by females declared farming as their primary source in concordance with the fact that these households own only gardens or small agricultural plots.

In contrast, casual labour and small trading is more frequently declared by females as the primary source of income. For this type of households, remittance too plays a relatively important role (as being observed in about 1 out of 10 households). In addition, the entire interviewed household declared to be heavily indebted.

10.

A quick nutritional appraisal was carried out by mission in the two visited villages. Mothers with children <5 years old were randomly selected. Their height and weight and those of their children were measured and recorded⁷⁰.

Without claiming any statistical evidences (too few measurements were done due to time constraints) but supported by extensive visits of village dwellings, the mission found that the nutritional status of the children and their mothers is within the normal range⁷¹. However, infant mortality rate is found to be a matter of serious concern

and the reasons could be related to hygiene conditions.

Vitamin A deficiency (through a visual identification of Bitot's spots) was not detected. Most of the villagers are using iodized salt with a satisfactory amount of iodine inside (i.e. more than 15 parts per million). The check was done by the mission with iodised salt quality testers. No Visible goitre among the respondent mothers as well as in children was detected. The average duration of breastfeeding is 16 months and it was found that weaning starts at the proper time.



11.

The limited information on food intake and composition of the intake collected at household level does not clash with the more general ones (although limited to children between 2 and 5 years old) collected by WFP:

- Cereals, Roots and Tubers: 100%
- Vitamin A rich vegetables 88%
- Other fruit and Vegetables: 84%
- Pulses/Legumes/Nuts/Seeds: 46%
- Meat, Poultry, Fish: 12%
- Oil: 84%
- Eggs: 2%
- Milk and milk product: 0%

A comparison with Wa percentages (as shown in the next pages) provides a very clear evidence of a better situation in Kokang.

Meals are frequently combined with pumpkin, bamboo shoots and vegetable. As observed by the mission, the consumption of animal protein is very scarce, eggs are seldom consumed and in some cases, their use is hampered by nutritional taboos. The consumption of oil and fat is rather rare and also if declared “being used” was seldom found at home.

The recourse to wild food is frequent and not necessary limited to the lean period. Yam, Taro, Pi-paw and “Pighargou” fruit were the most frequently mentioned. Banana is currently quoted as an important “wild food”.

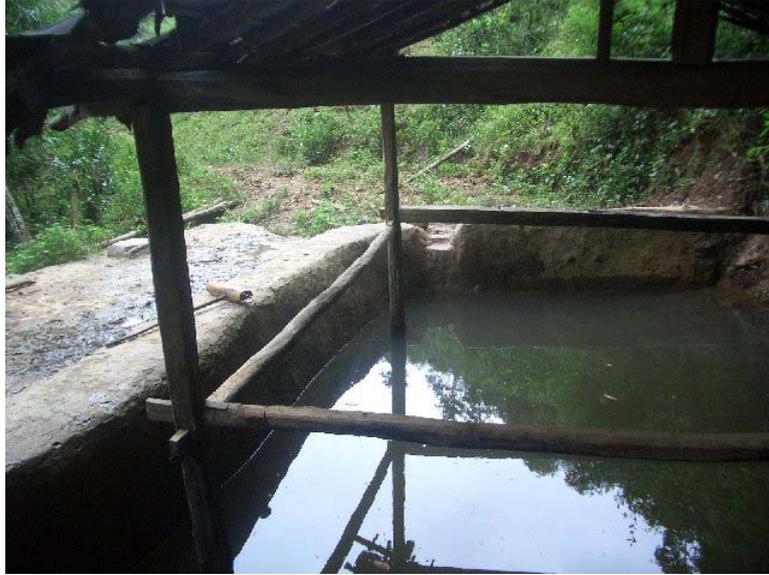
At the interviews, it was revealed that the adjective “wild” could had been translated⁷² as “not planted food”, it was found that people eat banana only in difficult periods. The same attitude palatability has been observed for many other kinds of fruits, whose trees have been found near the dwellings but their fruits were not eaten or not considered for their nutritional contents. In other words, several perennial crops which were not considered as edible have been observed.

As detected through an “ad hoc” question, the lack of “*awareness on nutritional concepts (role of different type of food, how to improve the food intake through complementation practices)*” represents a serious local bottleneck hampering the use or the proper use of available food resources, with particularly reference to micronutrient components.

12.

The lack of safe water and proper hygiene practices are other limiting factor. In the visited villages, latrines do not exist. However, for the time being “going to the fields” is not so negative in a still rather wild environment. Probably, the presence of improper latrines inside the villages could be more a negative aspect than a positive one.

The most worrying aspect concerns the access to the use of safe water. Water is mainly collected from the nearby villages mostly from unprotected tanks filled by natural sources. However, during the dry period, water is fetched only from the streams/rivers, far away in the hilly area. Water, once brought at home is stored in uncovered containers and when used without boiling.



Another concern is related to the fact that the presence of poultry inside the dwelling.

13

Health facilities are far away and have been listed by village key informants between the most important “village needs”.

4C – WA (Special Region 2)

In Wa Special Region 2 also, the mission had to deal with time and itinerary constraints. The originally proposed itinerary already shortened by the Myanmar Government before leaving Yangon, was farther curtailed by the denial of permission for visiting villages by the Mon Maw Local Authorities. The list of villages to be visited was already included for prior approval both by the Wa Central Authorities and the Myanmar government. It is a fact that the mission was allowed to carry out an attentive appraisal only in the central-southern part of the Wa region, and was obliged to skip the northern part.

The expected negative impact of the recent (end 2005) poppy ban on the livelihoods of the population seems certainly serious, but not as dramatic as had been foreseen.

The mission appraisal findings, although limited by the already explained constraints, are comforted by the results of the WFP Survey (September 2006).

In about 2 out of 3 villages visited by WFP the key informants declared that the *“village life was better than three years ago”*⁷³, while a “worse life” was declared in only 15% of villages⁷⁴.

Further, the WFP survey has estimated that in Wa Region the Wage to Food Ratio (WFR) *“has increased [i.e. improved] from 1.4 last year to 1.6 this year”*⁷⁵ [i.e. between 2005 and 2006]. Without claiming statistical evidences, the mission outcomes derived from a limited number of household interviews seem confirming the above opinion of WFP.

The households interviewed during the appraisal were selected not according to some sampling criteria (with the expectations to be representative of the “universal”) but were **based on** the worse-off strata of the population. As already mentioned, the households to be interviewed had been identified, as far as possible, according to anthropometric measurements (collected by the mission team as soon as arrived in the village) and validated by local informants.

As described in a more detailed way in some of the next points, a large majority of the (worse-off) households expressed the opinion that either the *“current situation is better than the previous year [2005] ”* or “no change” happened.

Another positive indication comes from the fact that almost all the households declared that “*the current [during the lean period] food consumption is normal, as compared with the yearly average consumption*”.

Only very few households declared that the situation worsened. An extensive analysis of the livelihood of these households, when accessing the full content of the questionnaires used by the mission, led to emerge a situation that could explain their negative self-assessment. For instance, a households claimed that they “used to plant paddy rice *around*, but rich people occupied *their* land” (confirming both the incertitude of land ownership and the possibility of abuse from rich people). In general, the household size of those ones claiming the situation worsened is exceptionally large (about 10 components).

1.

Upland rice is the most important crop followed by maize and lowland rice. Soybean and sweet pea are included in the list of the first six crops as declared by farmers’ interviews in the villages.



Wheat and potato are sometimes listed as new introduced crops. Wheat

and potatoes have been introduced by UNODC but for both these crops, it is more correct to mention about “re-introduction” as in the local cropping tradition potatoes (particularly) were planted but during the more intensive poppy period, it had been rather abandoned.

Tea and rubber are rather new crops found in the area.

There are many opportunities of taking advantage from the winter season. It is a fact that frequently legumes and more seldom wheat are planted. The importance of these winter crops is not simply related to their nutritional contribution but also valued from an environmental point of view in their role in protecting the slopes from erosion and landslides.

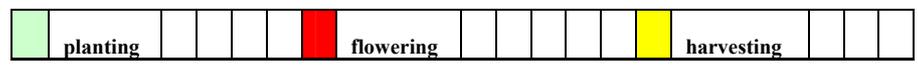


The table below summarises the crop calendars as described by farmers. For each village, the crops are sequentially listed according to the importance given them by the key informants.

A comparison of the data in the table shows for the same type of crops both rather different lengths and different starting points of the growing seasons exist. It is evident that different local characteristics including the presence of particular microclimates, altitude and different type of soils play an important role. This fact calls for an urgent and attentive inventory of the local agro-ecological conditions for assisting any current/ future poppy-substitution policy.

Local peculiarities are confirmed by the trends of the biomass, as detected using SPOT/VGT images.

WA														
Village	crop	Ap	My	Ju	Jl	Au	Se	Oc	No	De	Ja	Fe	Ma	
Maw Hai	upland rice	planting					flowering			harvesting				
	lowland rice		planting				flowering			harvesting				
	maize		planting			flowering		harvesting						
	wheat								planting		flowering			harvesting
	soybean		planting		flowering			harvesting						
	sweet pea								planting		flowering		harvesting	
	upland rice			planting			flowering			harvesting				
Nam Pa De	maize			planting		flowering				harvesting				
	rubber			planting										
	lowland rice			planting			flowering				harvesting			
	sweet pea								planting		flowering		harvesting	
	faba bean								planting		flowering		harvesting	
	upland rice	planting				flowering			harvesting					
Tala	maize			planting	flowering									planting
	lowland rice	planting					flowering			harvesting				
	sweet pea								planting		flowering		harvesting	
	wheat								planting		flowering		harvesting	
	soybean	planting			flowering				harvesting					
	upland rice	planting		flowering					harvesting					
	maize	planting		flowering					harvesting					
Young Khong	soybean		planting		flowering				harvesting					
	lowland rice		planting		flowering				harvesting					
	sweet pea								planting		flowering		harvesting	
	upland rice	planting		flowering					harvesting					
	maize	planting		flowering					harvesting					
Naug Mu	lowland rice			planting			flowering			harvesting				
	upland rice		planting			flowering			harvesting					
	maize		planting			flowering			harvesting					
	soybean		planting		flowering				harvesting					
	potato								planting		flowering		harvesting	
Khu Law	lowland rice				planting		flowering			harvesting				
	upland rice	planting				flowering			harvesting					
	tea				planting									
	maize	planting		flowering			harvesting							
Nam Naw	lowland rice					flowering			harvesting				planting	
	upland rice			flowering			harvesting						planting	
	tea			planting										



2.

The farmers have listed between the most serious “factors limiting the crop performances” as “insufficient rainfall at sowing time”. On the other hand, and particularly, this year (as the monsoon arrived late and lasted more than normal) the paddy seeds risk to be contaminated by “fungus plant disease”.



According to the WFP 2006 estimation, most of the households independently from being headed by males or female declared “Agriculture” as their primary source of income. Casual labour as the primary source of income seems not as so important as it was found in Kokang region where only 3 out of 20 households falls

into this category.



In general, the farmers expressed the opinion that the access to marginal lands is not a problem, but the problem is the lack of resources for improving the cropping conditions (in particular: terracing). However, the farmers frequently complained of not having benefits from newly

claimed lands (paddy land) and in some cases, they had been obliged to leave their plots under land tenure incertitude for the benefit of rubber plantations. *“Most of upland where we grow paddy has been taken for rubber. This should be stopped!”* said an angry farmer adding *“The situation worsened; now we need to find a job in rubber plantations”*.

In any case, “slash and burn” is a very frequent practice. Apparently, every three years, the farmers (when the plots are far away from the villages) move to another place accelerating the deforestation process.

On the contrary, the farmers declared to practice fallow only every 10-12 years with a relevant impoverishment of soils.

3.

Maize is an important crop and most of time, it is used as a cash crop, and also conveniently sold for the extraction of alcohol (local name: “Kau bab lau”). Farmers get 5 Yuan from a bottle of 750 ml of this alcohol.

In general, they do not eat maize or more correctly, they do not want to eat maize. *“When [1976-79] the communist occupied this area, villages ate only maize, now they don’t want to eat maize any more”* said a key informant in Nam Pa De (Lahu village).

However, during the lean period, many households are compelled to eat a mixture of rice and maize. Both in village and



household interviews, this coping mechanism belong to the most frequently quoted.

The use of maize as a cash crop is certainly a more reasonable strategy under marked opportunity. However, this attitude, implying some kind of “market related” risk is encouraged to some extent by the fact that at least in the visited villages, the households are benefiting of food aid/ food distribution in a significant way (see next points).

4.

Sequential cropping is seldom practised, however, sometimes sweet pea is planted once the upland rice is harvested. Another important cropping sequence has been introduced by UNODC with the distribution of wheat seeds.



Wheat cannot be properly defined as a “new crop” (while buckwheat apparently is) because it belongs to those secondary crops (and they are many) abandoned during the most profitable poppy period, when it was not worth to plant it for cash when there was sufficient cash flow existed from selling poppy for buying rice. Due to poppy eradication, the skill and knowledge have been lost⁷⁶. Farmers appreciate wheat but they complain about the fact that the seed distributions were not continuous and in particular, there are not proper suitable mechanism introduced

for processing food from wheat. In summary, an overall lack of technical assistance is denounced. During the lean period, households are obliged to mix rice and wheat in a very unfair “hotchpotch”.

Intercropping and crop rotation are very rarely practised. The awareness that mixing upland rice and legumes is not only important for their added nutritive value but also for soil conservation, replenishing nitrogen level in the top soil when growing leguminous crops.

Few new intercropping strategies have been observed such as upland rice intercropped with tea.

Home gardening is seldom practiced and the produce is for self-consumption. The lack of local demand and the distance from other potential (urban) markets are hampering the possibility of selling part of them and in some cases enlarging the plots.

The mission has found a large variety of vegetables that could be successfully planted

and could significantly increase both the quality of the household food intake and the opportunities of partially been sold, particularly for those not too much affected by far away transport problems (the less perishable ones).

However, as already emphasised, the farmers claim the lack of technical advices, seeds availability and micro-credits hamper the initiatives of some kind of horticultural business.



5.

Post harvesting losses are found to be a very serious matter. The farmers' evaluation, the losses ranged between 15% and 40%, and are especially high in upland rice production.

Rodents, rice stored pest (*Sitophilus oryzae*) and fungus diseases can destroy seeds during

storage. The traditional technique of putting large flat stones along the piles sustaining the granary (preventing the climbing of the rodents) is almost abandoned, although the process is still in farmers' memory. Apparently, the relevant contributions to food availability provided by better post harvesting practices are generally ignored.

For farmers, reaching 500 gr of food per capita per day is well deep-rooted. The 500 gr per capita/day corresponds to rice needs as estimated by WFP (180kg per person per year). As the farmers eat an average of about 400 gr (i.e. about 20% less) the contribution of good postharvest practices is extremely important, particularly because it is evident that significant increases of production are not foreseeable.

6.

The villages (at least those visited both by WFP and FIVIM) are rather dependent on different types of food assistance. However, reference on food availability is made to the end of the lean period and this fact should be taken into consideration in an overall assessment.

While in Kokang, food assistance was found to be minimal and targeted towards

special social categories. In Wa, probably due to the worries about the expected very negative effects of the recent (end 2005) poppy ban, 78% of households interviewed by WFP resulted as beneficiaries (*“during the previous thirty days”*) of some kind of food assistance.

According to the above WFP 2000 survey, the dependency for food assistance and other programmes is rather relevant. 42% of the interviewed households in the surveyed villages had benefited (during the last 30 days) from Food for Work programmes, 44% from Food for Education, 9% from Food for Training. The WFP Vulnerable Group Feeding program benefited 4% of households. It was 2% from the Mother and Child Nutrition program, while 14% of households benefited from other food aid programmes. More than one third of the households benefited simultaneously of two types of food assistance, while 1 out of 10 benefited three or more types.

Although part of this assistance is provided as Food for Education, introducing development goals and not simply facing the poppy ban emergency, there is a risk of thwarting the various attempts to assist in diversification of the cropping systems simultaneously promoted by the UN agencies and NGOs. The fact that in the majority of the visited villages, the key informants had declared that the *“village life was better now than three years ago”* could lead to assume that some kind of “addiction risk” to food assistance exist limiting the attempts to find and test sustainable agricultural solutions.

7.

The risk of “addiction to food assistance” is clashing with the evidence that actual possibilities of increasing food availability exist. There are strong evidences that a better attention to winter season crops (both wheat and legumes) could improve the food availability significantly not ignoring the fact that although for different reasons, crops yields can be improved not simply in terms of the quantity but also of the quality.

For wheat, many attempts have been made by UNODC but apparently, at least according to the informal opinions expressed by the farmers, without too much continuity and in particular without providing guidelines and assistance for a suitable food processing. For legumes, the problems are mainly related to seeds, both in terms of availability and better quality. Most of seeds are imported from China through private initiatives.

In any case, the emphasis on paddy production and paddy development are fading into the background amidst other important food security issues.

8.

Although the mission did not had the opportunity of a deep investigation (this issue was not in mission TOR) serious concerns have been expressed, through informal communications when staying in Wa region, on the fact that most benefits derived from new paddy reclamation area went to the better-off communities through formal, informal and sometimes simply “illegal” procedures. This is what frequently emerged from farmers’ complains. As in other contexts, the lack of a land registry is facilitating the above procedures.

9.

The conversion to rubber offers a good example on the tangled play between different components of food security issues and policies in the region. The new rubber plantations, sometimes consisting of a true remodelling of the hilly landscape must be considered as an interesting alternative to poppy cultivation. Rubber, being a cash crop seems to partially compensate for income losses due to poppy eradication policy. However, due to the rubber tree characteristics (the trees become productive only after seven years) this alternative cropping strategy can only be adopted by better-off. Poor people cannot wait that long without an income. For them, in a short time, there is only a marginal advantage offered as casual labourers due to compelling need to find a survival for tomorrow.

10.

Rubber and rubber plantation are developed under the expectation that at least during the next 20 years the Chinese economy will express considerable rubber demand that it will necessarily continue to request an imports.

However, there are many open questions:

- how long the Chinese economy will last to express this demand and
- if the Chinese economy finds cheaper inputs elsewhere and consequently will reduce the expected import from this border area.

The relevance of these concerns should not be under evaluated. In the mean time, it is not easily foreseeable that due to internal (with Myanmar) persisting political

difficulties, these remote border areas will have the possibility of a significant improvement of their economic integration into the Myanmar market.

Nevertheless, only trans-border strategies will facilitate the development of these areas; but the risks of creating new dependency (from China) could arise.

11.

Tea planting seems more interesting and suitable as it can provide a quicker income (normally the first plucking is possible after two or maximum three years) however, in the region, during the last years, tea prices stagnated at such a level that many farmers declared that it is not worth planting tea.

Recently new possibilities emerged (a) to produce “organic tea”⁷⁷ and (b) to introduce from China “only one year cycle” varieties.



According to the farmers the price offered by Chinese merchants for local “organic tea” can be five-ten time higher than for other types of tea. The mission did not have the opportunity to verify the “optimism” of this information and to which geographic extent it is applicable. However, there are evidences that trend moves along this direction.

The mission found that in some plantations, supported by projects, the farmers use chemical fertilisers only during the growing first year in order to strengthen the tea plants and then the crop (at the third year) is provided to merchants as “organic tea”. It is not clear which responsibilities the projects have, well knowing that any trace of chemical fertiliser (even if used only during the growing first year) can be easily detected in a laboratory, and if discovered, the consequences for the plantation investments could be very serious. To avoid it, a better definition and understanding of what is “organic” should be provided to the farmers.

Another observed strategy consists of the introduction of new varieties of tea from which leaves can be picked at the end of the first year. Once collected the leaves, the plants are uprooted and substituted by new ones. The farmers adopting this new

strategy argue for the economic advantages of this solution.

This technique has been introduced by Chinese merchants providing an additional proof that alternative cropping strategies have been/are more frequently introduced by individuals (merchants) than by institutional operators, with the “advantages” – emphasised by farmer’s hat they guarantee market outlets⁷⁸.

12.

Most of time the daily rice per capita intake was found exceeding 500 gr per capita, a quantity rather surprising due to (a) the mission appraisal has been carried out at the end of the lean period and that (b) the households had not been targeted for getting a statistically valid sample of the full population of the village (this was not possible due to lack of time) but intentionally had been selected for investigating the livelihood of the more vulnerable and poor households and identify bottlenecks hampering their recover/development. To do this the households were identified, as far as possible, on the basis of nutritional outcomes validated by local key informants.

For Wa region, the concerns about the diets should be related more towards qualitative than quantitative patterns. The recourse to vegetables is not a frequent



practice as confirmed by the fact that only a slightly more than half of interviewed households declared they ate during the last week.

Animal protein intake is rather rare, one third of household declared that the last meat of fish intake dated “more than six months ago”; the consumption of eggs was denied by half of them and $\frac{1}{4}$ ate the last egg “more than six months ago”.

The recourse to vegetable proteins (legumes) that could at least partially compensate the lack of animal proteins and complement the cereals intake has been not frequently found (half of interviewed households declared they consumed them “more than six months ago”). This represents a serious concern because, on the contrary, the agro climatic environment is suitable for pulses.

The same comments should be expressed about the consumption of fruits. Apparently, for most of the people, fruits are not food, although frequently eaten under food scarce conditions.

Oil has not been found, when visiting the households, in slightly less than half of the dwellings and when found, the declared consumption was far lower than the WFP recommended quantities. However, this could have been partially compensated by pig fat.

13.

The mission found some difficulties in defining the food self-sufficiency as provided by farmers' self-assessment. The answers present some bias probably due to a poor translation of the terms "self sufficiency". Sometimes, the food assistance component seems to be included in this. However, for the worse-off, a rough estimation in terms of their production (all the interviewed worse-off had access to land), excluding the food assistance, provides a rough estimation of least ½ year of self-sufficiency but with a high variability. According to village key informants in each visited villages, considering the overall population, about 20% of the households could be identified as "food insufficient households" for 4 months.

14.

The collection of wild food seems not so frequent and mainly related to the last two or three months of the lean period. Bamboo shoot, mushrooms, yam and taro are the most frequently quoted.

However, sometimes yam and taro are collected and sold. Also in this case, the meaning of the adjective "wild" could have been improperly used, as a synonymous of "not planted, spontaneously growing"⁷⁹. Farmers complain about increasing difficulties in gathering wild food, "*the forest are almost destroyed*" said a farmer



giving the impression that his worries were more related to the opportunity of an income generation activity than his needs during the lean period.

15.

In Wa visited villages too, as in Kokang region, mothers with children <5 years old were randomly checked (height and weight were measured for both children and mothers) providing meaningful information.



Without claiming any statistical evidence (too few measurements were done due to time constraints) the mission found a worse overall nutritional status in Wa than in Kokang villages. Several children have been found moderately undernourished (wasting rate <2SD), and with a

MUAC below 13cm. These rough evidences should be considered in relation to the outcomes of the recent (2005) WFP nutritional survey. WFP estimated the wasting rate (< 5 year old children) in Wa region equal to 7.3 (in Kokang 5.7%).

Mortality among <5 year old children was found to be high. Vitamin A deficiency was not prevalent although people are not covered by vitamin supplementation activities.

Angular stomatitis is common among children in Wa villages. Some mothers in the visited villages have been found anaemic.

In general, the diet composition for children between 2 and 5 year old seems both rather poor and unbalanced, particularly when compared with the Kokang figures. According to 2005 WFP survey, the percentages of children (2 -5 years old) that during the “previous day (leaning period)” consumed different food items were for:

- Cereals, Roots and Tubers: 100%
- Other fruit and Vegetables: 66%
- Vitamin A rich vegetables 51%
- Pulses/Legumes/Nuts/Seeds: 12%
- Milk and milk product: 13%
- Meat, Poultry, Fish: 7%

The “*awareness on nutritional concepts (role of different type of food, how to improve the food intake through complementation practices)*”, as verified by using a specific question is dramatically absent, only 15% of households declared to have some knowledge on this.

16.

A relatively higher under-nutrition (when compared with Kokang areas) seems mainly related either to an improper use of existing water (that when available⁸⁰ is not protected and when brought at home, never boiled, etc.) or to a real lack of an easy access to water (particularly during the summer period). According to verbal information collected in some villages, fishing ponds are used as a source for drinking water.

17.

The above unfair situation is worsened by the lack of latrines very frequently. In case of isolated villages, scattered in the forests, this fact does not introduce serious risks. However, when villages are nearer to townships or in more densely populated areas, the risk of contamination increases.



The risks are higher in ground level dwellings used by the poorest as observed in many visited villages and the presence of livestock and free pigs under the dwelling built on piles does not pose a serious risk.

18.

Malaria has been declared as a very serious problem, health centres are far from villages and in addition, people do not have any health knowledge on preventing and treating diseases. Many households declared: *“We don’t want more children, but we don’t know how to do”*.

On the contrary in the visited villages good quality iodized salt (with a satisfactory amount of iodine present, i.e. 30 parts per million) is found to be used.

19.

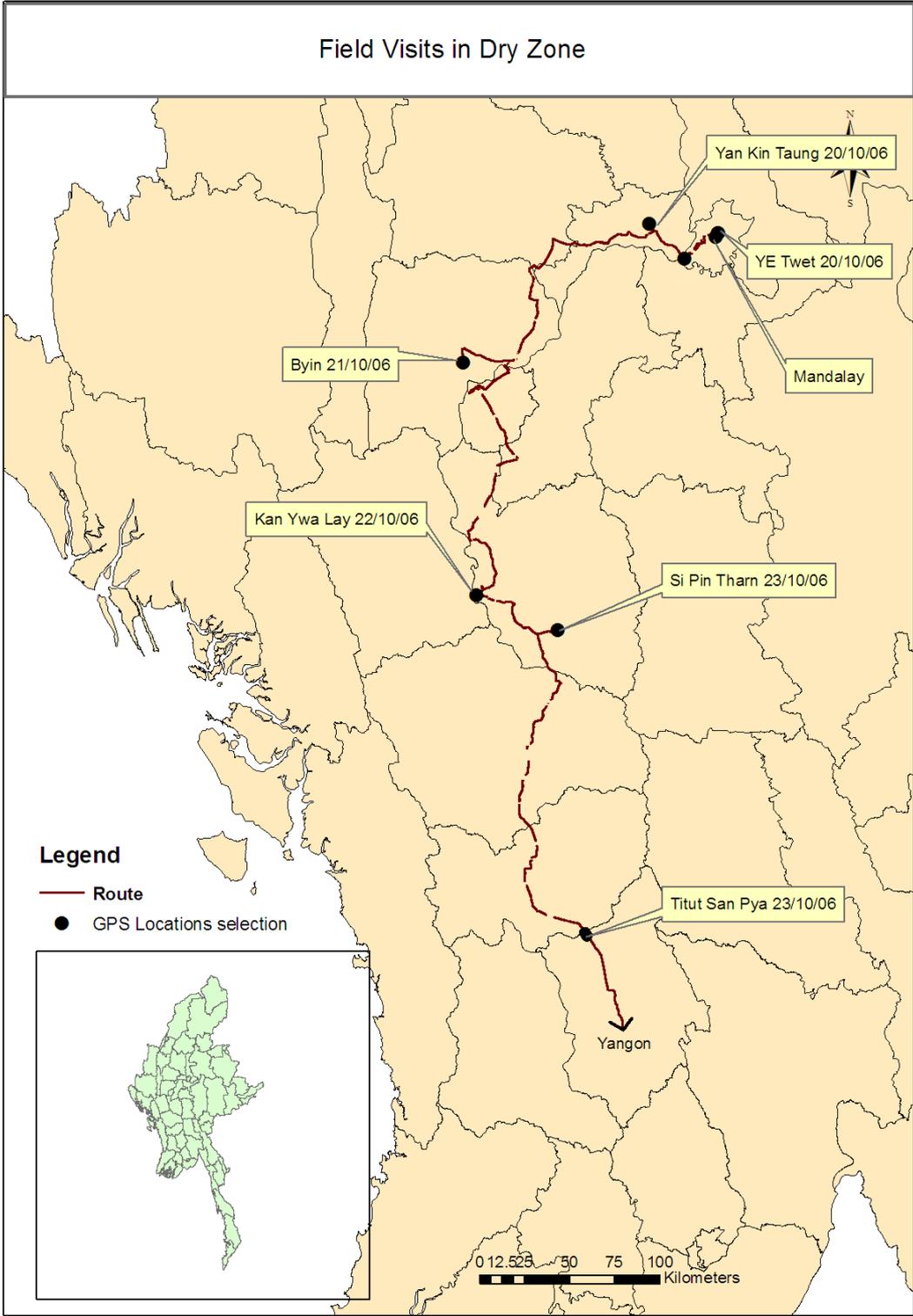
Farmers’ expectations, as expressed at the household interviews are mainly related to the availability of buffalos and pigs. Less attention for roads and electricity was detected.



5 – CASE STUDY
Myanmar Dry Zone



Itinerary map



5 – MYANMAR DRY ZONE

After completing the Shan border area appraisal, the mission was requested by the Myanmar Government to cross the most drought prone areas of Myanmar Dry Zone.

Due to time and personnel constraints⁸¹, the methodology applied by the appraisal has been rather different from that was used in the Shan border areas.

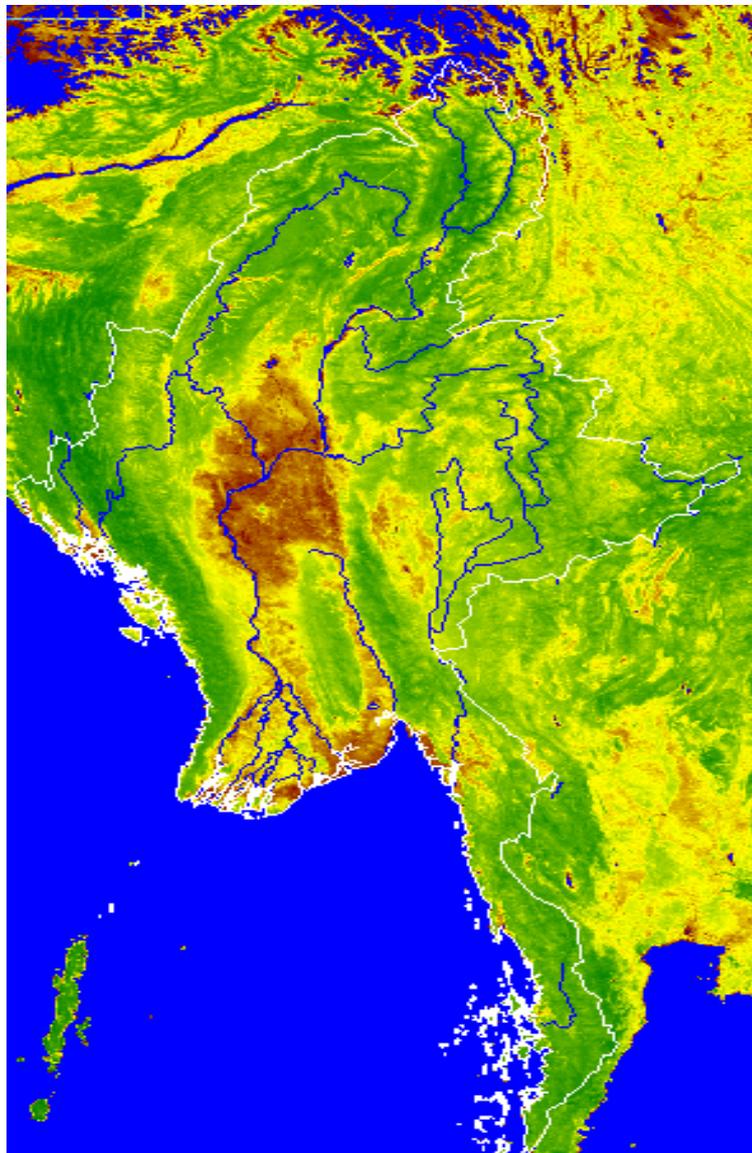
However, a different approach was justified also by different emerging “area of concerns” and in addition, the mission took the advantage from a recent nutritional survey⁸² carried out by WFP in collaboration with the Ministry of Health in a part (Magway) of the visited area.

The peculiarities of Dry Zone are rather known, the current literature emphasizes a scarce and erratic rainfall regime, combined with a high population density making this area particularly food insecure.

The mission had the possibility of suggesting an itinerary crossing some of the dryer areas of Dry Zone. The identification was done, during the stay in Yangon, using the available time series SPOT/VGT images (1 km resolution).

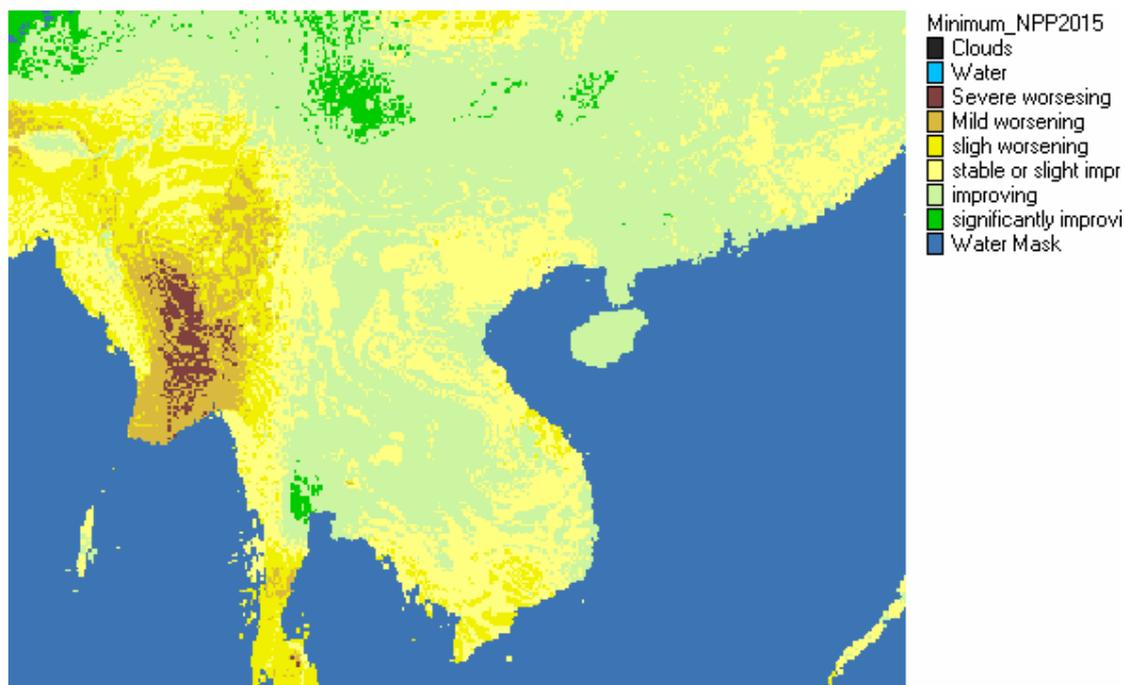
The map aside shows the annual average level of the “Vegetation Index”

(strongly correlated with the biomass production). Dry Zone emerges (brown



colours) as a dry hole in the overall Myanmar redundant level of biomass.

The main concerns of this area are related to the fact that in the next decades in Myanmar, according to FAO recent estimation⁸³, the Net Primary Production (NPP) would decrease. The imminent decreases would happen most of or all the central part of Myanmar starting from Dry Zone and interestingly, more and more, in the southern part of the country.



The map above shows the foreseen changes, expected during the period 2005-2015. In Dry Zone, a decrease of the NPP is expected to be already severe, while in most of the other part of Myanmar would still mildly be worse. Anyway, inside SEA countries, the overall Myanmar and the Mekong delta will be the areas more affected in the next decade.

The table below shows the expected changes at national level during the next decade and the next 25 years. The changes are expressed in term of compound annual average growth rate.

Although the national averages hide within country differences, however, there are three evidences: a) a rather stable NPP is expected in most of the countries⁸⁴, b) Myanmar is the only one negatively affected, c) Yunnan (China), on the contrary, will enjoy even more favourable conditions.

Countries	growth rate 2005-2015	growth rate 2005-2030
Myanmar	-0.12	-0.10
Laos	0.12	0.07
Thailand	0.06	0.08
Vietnam	0.00	0.02
Cambodia	0.06	0.05
China (Yunnan)	0.25	0.22

When zooming the images, the Myanmar Districts, expected to be worsen in a more serious way, can be easily identified. Significantly, between the eight Districts worsening more than 0.28 % yearly (2005-15), five of them are located in Dry Zone.

Their negative trend is confirmed also when a longer period (2005-2030) is considered.

Districts	State/Division name	growth rate 2005-2015	growth rate 2005-2030
Bawlakhe	Kayah	-0.31	-0.32
Loikaw	Kayah	-0.24	-0.30
Magway	Magway	-0.37	-0.34
Meiktila	Mandalay	-0.48	-0.44
Myingyan	Mandalay	-0.36	-0.37
Nyaung-U	Mandalay	-0.30	-0.30
Taungoo	Bago (E)	-0.34	-0.33
Yamethin	Mandalay	-0.43	-0.42

The concerns for a diminishing NPP are prone to be worse when the man-made components are taken into consideration.

Dry Zone is densely populated, most of the land has been already converted to agriculture and its intensive use has already aggravated a strong degradation, worsened by soil erosion and gullies.

In the meantime, there are many evidences that Dry Zone has been affected (between 1993 and 2003, last two Agricultural Censuses) by the same agricultural holding polarization that has characterized the overall rural areas of the union of Myanmar.

During those ten years, the number of Land Holding increased 26.55% while the number of acres increased only slightly more, i.e 28.41%. Consequently, the average holding size registered a very small increase which is only 1.46% in ten years (!). However, these general trends hide the following facts:

- The increase of number of holding was mainly due to an impressive increase of holdings under 1 acre (+173.73 %, 45% of total growth)
- In terms of land availability the holdings under 1 acre increased their extents only of +69.7% (explaining only 1.34 of the overall growth in the extents).
- Consequently, these small holdings decreased their average size from 0.49 up to 0.30 acre, registering a -38% impressive decrease.
- On the other hand, the number of holdings with 20 and more acres registered an increase equal to +78%, with a small contribution (only 9.9%) to total growth.
- On the contrary, the extents at their disposal doubled (+99%), explaining 51% of the overall growth of the extents.
- It is evident, from these figures that the average size of these holdings increases from 27.7 up to 30.0 acres, registering a positive growth equal to 12.3%.

In this polarisation process of the holdings, the number of land holdings with intermediate sizes slightly increased (only +26%) but it is worth to be noted that their relative frequency diminished (from 89.7% down to 80.4%).

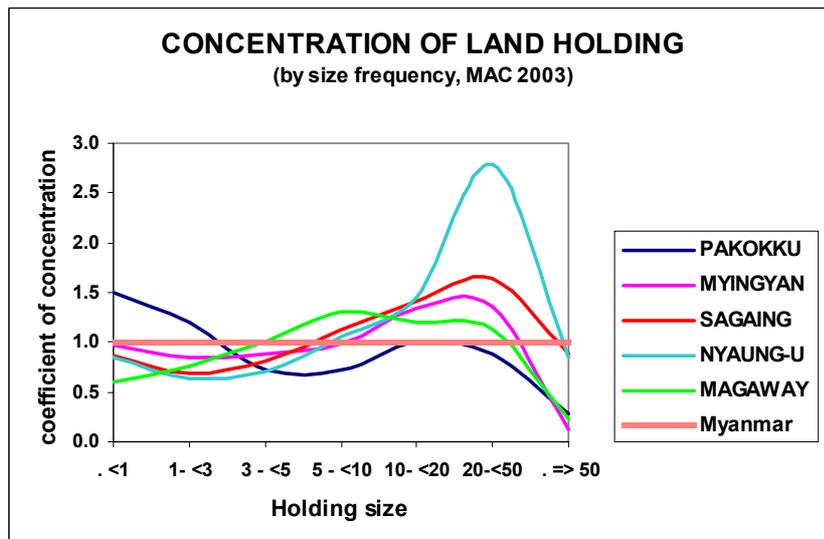
The above decrease was accompanied by a small increase of the acreage (+15.8%). Consequently, the overall average size did not change substantially in ten years (from 5.81 up to 5.94) with only 2.17% of growth.

Unfortunately, the mission could not have access to Census 1993 data for an overall comparison with Census 2003 at State/ Division level, or possibly at District level. However, Census 2003 data at District level had been available and, although it provides a static image, contributing to define the final point of the process only.

Dry Zone Districts visited by the mission with the exclusion of Pokokku are characterised by a higher presence of large holdings when compared with the national averages.

The chart aside puts evidence on this peculiarity using a coefficient of concentration computed by each threshold size⁸⁵.

In the interval 5-10 acres \diamond 20-50 acres the frequency of Holdings is



significantly higher (particularly in Nyaungu District) than at national level.

In the chart, the National Average is represented by a dotted red line.

How much this current peculiarity is due to dispossession processes (happened in the past) could not be possible to be investigated by the mission. However, the mission could informally gather opinions that an increasing indebtedness of small farmers could have contributed to the current patterns.

There are evidence that the small holders are frequently obliged, compelled by debt contracted with rich farmers (moneylenders), to informally “sell” them a part of their land in repayment of the debts. According to official legal procedure, this transaction is not allowed, but in reality it exists, frequently covered by the fact that officially the land still belongs to debtor but unofficially to the creditor. For most of the time the debtors work on their “sold” land as workers under the creditors.

These opinions are confirmed by the already quoted “Myanmar Agricultural Sector Review”⁸⁶ when they wrote: *“In Myanmar, landlessness is a result of two factors: land lost due to the persistent indebtedness and lack on intergenerational transfer of equity leading to landless households producing landless future generation”*. Another quotation from the same source reveals: *“There is no legal basis for transfer of land ownership from on villager to another. However, rural land transactions are common in more densely populated areas. and are either informally mortgaged with moneylenders or are sold for cash to get out of indebtedness”*.

This polarisation is also visually evident from the strong contrast between the building of the better-off and the huts of the worse-off that can be detected in some villages.



Pokokku District shows a different pattern as noted by the mission. The District is characterised by a very high frequency of small holdings. Most of them do not allow the household survival and request an income integration through the mechanism of seasonal migration searching opportunities for casual labour (either at service of large farms, or in urban areas) if a labour demand exists. The mission observed a new flow of seasonal migration to Nay Pyi Taw, the new capital.

Up to here, the rural scenarios make reference to those parts of the rural population who more or less have access to land. However, at least in few villages where interviews were carried out by the mission found that the number of rural households without land was worryingly high. This fact is confirmed by several local surveys carried out mainly by NGOs. For instance, a survey conducted in 2001 in 7 villages near Bagan found 35.5% of landless households⁸⁷.

This fact is confirmed at District level by the availability of Agricultural Census (2003) data. It is a fact that, when applying the methodology explained in chapter 2E, the rural households classified as not-holders reach an apparently not so high percentage (24.7%). However, being these districts densely populated, the figure corresponds to more than 1 million people.

District	rur pop 2003	not-holding pop 2003	% not holders
SAGAING	548000	95994	17.52
MAGWAY	1212000	208680	17.22
PAKOKKU	1147000	505649	44.08
MYINGYAN	1271000	281474	22.15
NYAUNG-U	246000	1239 ⁸⁸	0.50
Total 5 Districts	4424000	1093034	24.71

According to MAC2003 figures, Pokokku District seems affected by an impressive percentage (44%), it is a fact that in Byin village (located in Pokokku District) when questioned by the mission, the key informants in the village declared that about 50% households were landless.

It is worth to be noted that, at least in the other five villages visited by the mission, the situation seems worse than in Byin village. The table below provides a summary and the weighted overall average of landless reaches 60.8%.

Date	Village name	Township	Division	% of HH landless	# of HHs	Population	HH' size
20.10.2006	Ye Twet	Pathneingyi	Mandalay	60-70%	250	1200	4.80
20.10.2006	Yan Kin Taung	Pathneingyi	Mandalay	70%	320	1400	4.38
20.10.2006	Yone Pin Kan	Sagaing	Sagaing	60%	170	850	5.00
21.10.2006	Byin	Pokokku	Magway	50%	130	890	6.85
22.10.2006	Kan Ywa Lay	Magway	Magway	63%	130	800	6.15
23.10.2006	Si Pin Thar	Magway	Magway	50%	158	785	4.97
	6 villages			60.8 ⁸⁹	1158	5925	5.12

All the villages, excluded those two in Pathneingyi Township have a strong dependency from seasonal migration.

Normally the men, including male youth, seasonally look for work (as casual labour most of the time) in the large cities nearby (mainly Mandalay or Yangon City). Recently, many new job opportunities are offered by the on-going constructions in the new Union Capital City (Nay Pyi Taw) that apparently due to the Government commitment to quickly move there, opportunity are there which offer better daily remuneration⁹⁰ than elsewhere.

Both in the Cities near and the far away, the main work opportunities are as carpenters or in general, in building construction related activities. In some cases, the seasonal migration to southern Myanmar can be related to harvesting activities and toddy juice collection.

Normally, these migrants come back at the occasion of the most labour-intensive period of the local crop calendars⁹¹; but in many cases, it has been observed a conflict between the need of stay outside for collecting more money and coming back for

urgent farm activities. This fact can explain the apparent lack of labour force in particular period of the growing season and the farmers cropping strategies (see next pages) are modified to find compromise between the two needs.

Job opportunities at village level are few, limited to work for the better-off during the critical period of the growing season, to provide casual labour in carpentry activities, to collect wood (not simply for household consumption) and in activities related to toddy palm cultivation and jaggery production from toddy juice.

All the interviewed households, excluding very few (living in a close proximity to urban areas and declaring a nearly one year self sufficiency of food) declared to be indebted. Although sometimes they can get loans from relatives or neighbours, they are obliged to depend from the shopkeepers (who apply monthly interest rates between 15 and 20%). This information is confirmed by the already quoted "Agricultural Sector Review...": *"borrowing money is expensive. Many households pay anywhere from 60% (with gold collateral) to 240% (without any collateral) in annual interest charges"*⁹². The other possibility is to get a loan in kind from some better-off farmer living in the same village and in this case, once harvested, they usually repay with a doubled quantity⁹³.

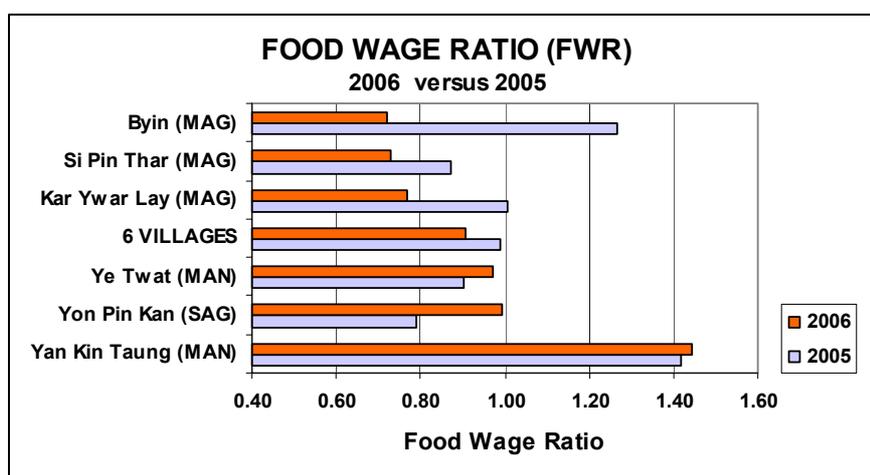
In some cases, it has been observed that an increased indebtedness led to debt repayments by an informal transfer of the land. This irreversible process had transformed small land-holders into wage-earners under the previous money (or kind) lenders. These spot observations of the mission are comforted by the already quoted HDI III 2001 document: *"The level of indebtedness is particularly high amongst farmer in Magway..... Marginal farmers are forced to sell their land to the creditor as a way of coping with outstanding debts... One of the consequences is that marginal farmers have to work as labourer on other farm or have to seasonally migrated to find alternative sources of income. Over a long-term period, after discounting the effect of variable rainfall patterns, better-off farmers generate annual surpluses. In contrast marginal farmers are trapped in an increasing spiral of debt led to poverty"*⁹⁴.

These food insecurity components are confirmed in the surveyed area by the recent trend of the Food Wage Ratios (FWR)⁹⁵.

The mission had the opportunity to collect both low quality rice prices and average daily wages of the rural casual labour. This information was provided separately and

independently by village key informants and by the interviewed households and collected by separated enquirers. Only after the mission left the village the results were compared and a satisfactory correspondence was observed.

The chart below shows the values of the FWR and their changes between 2005 and 2006 in the six surveyed villages (a weighted average is included).



Very significant evidence comes from the fact that the villages, sorted with ascending criteria according to FWR 2006 are clearly divided in two groups:

- The first three villages (belonging to Magway District) worsened their condition during the last year, compared to the 2006 (red bars) with the 2005 (cyan-grey ones).
- On the contrary, the other three villages (belonging to Mandalay and Sagaing Divisions) improved their conditions. Although Ye Twat and Yon Pin Kan still remain slightly below value 1, Yan Kin Taung shows a rather consistent advantage. In any case, the progress of this part is mainly due to a robust increase of the wages as the price of rice increased with the same pace registered in Magway backward villages. The average (six villages) increases (2005-2006) of rice price had been rather impressive and it was around 50%.

Most of the villages had no access to electricity, particularly in the Magway area. In many observed cases, medium-voltage lines cross the villages or just outside the villages: *“The electricity line is near, but we can’t afford to buy a step down transformer”* for converting the medium-voltage into a lower one appropriate for homes, a Kan Ywa Lay key informant said. But also if electricity facilities are available farmers frequently said that *“the installation fees and the monthly fees are*

not affordable” (Byin village).

Most of visited villages have benefited of water investments in the past. However, for many reasons the access to water worsened during the last years. Not surprisingly, the list of the reasons is always the same including lack of pump maintenance, increasing salinity, clogged or dried well, and so on.

“Dry Africa” conditions were found in Pokokku Township (see cover of this chapter): even at the end of the rainy season (when the mission visited the area) women collected water digging in the sand of river beds.

The same situation happens in Kan Ywa Lay (a big village of about 800 inhabitants and very near to a township center). During the rainy season, people can collect water only from an unprotected pond near the village. But in the dry season, they must go to collect water from sand creek which needs about



30 minutes walking. A tube well was dug in 2003, but having found salty water and is not used now.

However, also in case of water availability, the safe water problem still persists, due to not-hygienic techniques of collecting water. For instance, they collect water not straight from the tap (as in Yone Pin Kan, photo on the left) but from small polluted basin (Byin, photo on the right). At home, the storage containers have been found very dirty. Practice of the use of boiled water is not common.



Some villages have benefited also of installation of compound or private latrines. However, the outcomes could be defined as a “non-improvement” (see photo aside).

As a paradox, the situation is better where villagers (excluding few of them) do not have latrines (particularly, in Magway villages⁹⁶) and go to defecate in the field, contributing to fertilise the soil and avoiding hygienic complications inside the village.

Probably, the scarce attention about water and sanitation problems is one of the main reasons of poor nutritional outcomes.



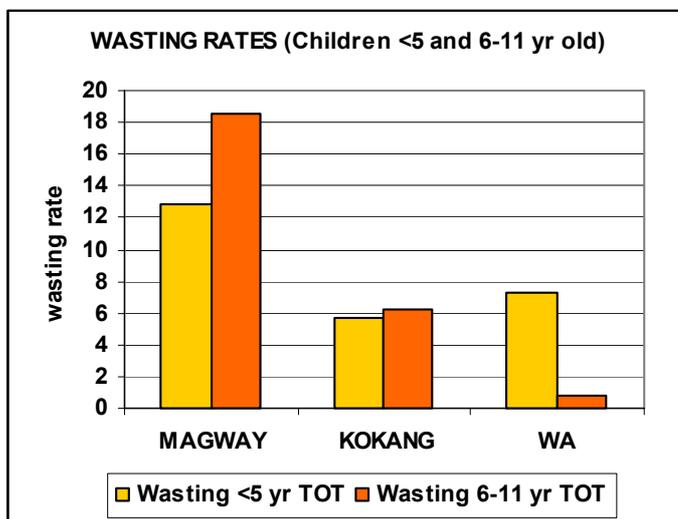
Due to time and logistical constraints, the mission could not carry out any nutritional assessment as it was done in Shan Special Regions. In Dry areas, very few children and mothers were measured and accordingly, a statistical approach is not possible. However, it may be significant to note that in Magway township amongst eight weighted children, two were found severely underweight (<math><-3SD</math>) and belonging to household headed by females. In the mean time, the rapid visit identified⁹⁷ several huts in each village where many undernourished children were found.

The above outcomes are not surprising because:

- the most recent estimations published by MICS⁹⁸ provide the following

moderately and severely undernourished rates: Magway 36.2 and 6.2; Mandalay 29.7% and 5.9; Sagaing 31.4 and 7.2, respectively⁹⁹.

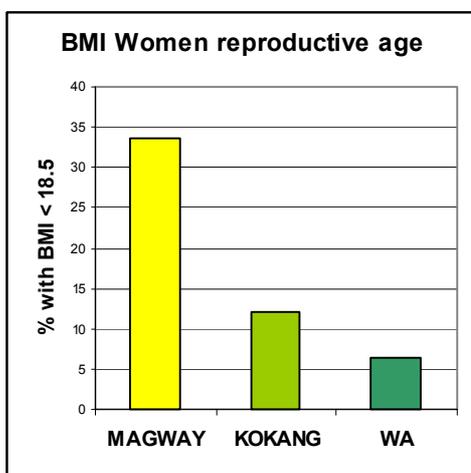
- the very recent WFP Nutrition Survey, although limited to Magway Division, as far as it is concerned, Dry Zone¹⁰⁰ has provided worrying results.



As WFP conducted its survey only in few Myanmar areas, a comparison with the national averages (MICS 2003) is very risky¹⁰¹.

However, a comparison with the other areas visited by the mission is rather significant and it emphasises how serious the situation is in Dry Zone

(see Wasting Rates chart).



It is worth to be noted that when the BMI is used¹⁰², the condition of the mothers also is rather worrying (see chart aside). In consultation with local key informants¹⁰³, the mission focused its attention on poor households. Few of them were interviewed¹⁰⁴ in-depth and most of them were found landless and headed by females.

Considerable differences amongst poor households were noted between villages of Mandalay/Sagaing and the Magway as identified by local key informants (defined in the next pages as “northern” and “southern” parts of the itinerary).

Similarities and differences of the observed consumption patterns are as follows:

- the daily per capita consumption of rice is rather similar in the two areas (about 430gr) and in all cases, people declared they would like to reach 500gr.

- In contrast, the consumption and composition of other dietary components are rather different and providing a significant contribution for understanding the different levels of poverty.
 - Apparently, in the northern part, the poor households can afford to eat meat at least once a week¹⁰⁵, while in the southern part, the consumption is not so frequent (half of the households had eaten meat since “less than one month” and the other half, it was recorded as “less than six months”). Similar differences were observed for consumption of eggs.
 - Obvious differences were always noted in term of oil consumption¹⁰⁶ amounting to 0.44 versus 0.24 viss per capita per month between northern and southern parts, respectively. It is probably more significant that the northern households had oil at home, while in contrast, most of southern households did not had oil at home¹⁰⁷ and simply declared how much it costs for them to buy oil a month.
- On the contrary, significant differences were not found on the frequency of consumption of pulses and vegetables. Iodised salt (at least 15ppm parts per million) was found in all households
- Home-gardening was frequently observed on very small plots. It seems to be more practised in the poorer southern areas and mainly for home consumption.

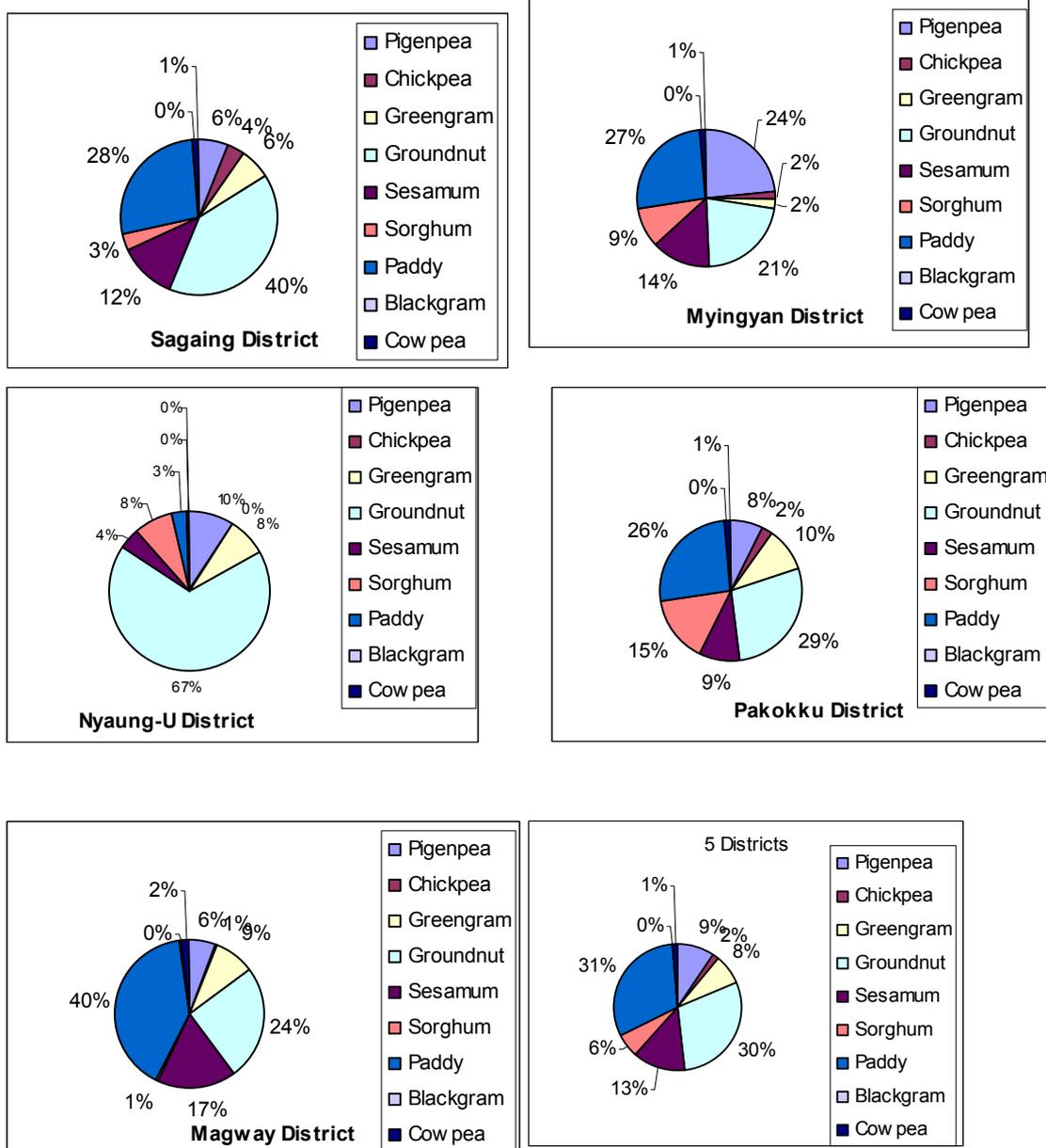
Indications towards different levels of poverty between the North and the South emerge also from quantities of clothes and shoes available¹⁰⁸.

Over a period of long time, the local inhabitants had developed the most appropriate cropping systems¹⁰⁹ for them. In order to reduce the risk of total crop failures due to uncertain & erratic rainfall and also to maintain, as far as possible, the soil fertility, mixed cropping, intercropping, and relay-planting cropping systems are practised. Cereals are always found to be combined with legumes.

The sequence and the mixture of crops also seem to be related to important components of the farming activities in controlling weeds, spreading the labour requirements throughout the growing season, reducing the total labour effort particularly when labour intensive crops are planted.

Travelling through the area, an extraordinary variety of crop mix and cropping techniques were observed confirming how much the cropping systems are the results of an “atavistic”, a very clever coping strategy in the given local conditions. The visual assessment of the mission is comforted by the crop time series provided at District level by MoAI/SDRL.

The charts below show the crop mix according to the average production 2000/01-2004/5.



The data show rather obvious differences between the visited Districts, in terms of crop mix. However, the mission observed that these differences are strictly related to level of dryness and types of soils.

The cropping patterns too are rather different from place to place and generally provide suitable answer to local environmental problems.

A variety of different intercropping practices were either observed or described by farmers include:

Pigeon Pea + Groundnut¹¹⁰

Pigeon Pea + Sesame

Pigeon Pea + green gram (4 lines green gram + 1 line pigeon pea)

Sesame + Pigeon Pea

Sesame + Green gram

Cotton + Pigeon Pea (4-5 rows cottons + 1 rows Pigeon pea)

Groundnut + Cotton

Mono-cropping is frequently practised for Sorghum (in poor soils) and sesame as a later crop. Sometimes groundnut too was found as a monocrop¹¹¹.

As declared by local farmers, the crop performances are very similar to those provided at District level by the MoAI.

As far as it concerns with the selection of cash crops (mainly Groundnut, Sesame and to a lesser extent Green Gram) the decision of the farmer is often related to market opportunities. However, during the last years, the Term of Trade (TOT) between Pulses and Rice (to be bought in the market) has worsened: it is a fact that at national level the prices of pulses and oil-seeds increases at lesser proportion than the price of low quality rice.

The table below summarises the recent increases of prices (national figures) of the main crops produced in the surveyed area (between the agricultural years 2002-03 and 2004-05 (the most recent data available).

Unfortunately, a comparison with the increase of the price of low quality rice with the price changes of other crops is limited because the last published price of rice refers to 2004.

In any case, the price of the low quality rice has increased 34%, only in one year (between 2003 and 2004) in Yangon market and 25% in the overall country¹¹².

According to non-official estimation in the next year (2004-05), the rice price increase represented an additional 30%.

Apparently, the above unfavourable trend still exists up to now. According to the data collected at the occasion of both village and household interviews, the price of low quality rice has increased about 20-25% during the last year.

PRICE OF SELECTED CROPS AT HARVEST					
TIME			Kyat (current prices)		
			2002-03	2004-05	Increase
Green gram	Pedisein	Ton	287777	241111	-16.22
Cow pea	Bocate	Ton	213111	217777	2.19
Chick pea	Gram	Ton	194784	261333	34.17
Cow pea	Pelun	Ton	210000	222222	5.82
¹¹³ Pigeon pea	Pesingon	Ton	222444	233333	4.90
Groundnut		Ton	313600	358400	14.29
Sesamum		Ton	394073	435555	10.53



6 – MAIN FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Main findings and conclusions

1.

Data or proxy data that could provide insight into food availability, access, stability and utilisation are scarce, of poor quality and sometimes contradictory. Scarcity of data refers not simply to availability of only few data sets but also to the fact that when available, they are collected at a too much aggregated geographical levels (four zones, State/Division).

Access is frequently hampered by political fears and only limited published data are available for analysis. Only if authorised, civil servants are allowed to provide even very simple and not sensitive information.

However, the most serious concern must be expressed about the reliability of these scarce data. Reasons of this poor reliability are several: underreporting, limitations in supervision for data collection, data transmission and compilation, mistakes even in official data printed without “*errata corrigere*”. Comparisons of the same or similar data collected by different institutions sometimes provide totally contradictory results.

2.

In trying to use time series data to develop a comparative approach, the poor data reliability comes out very obviously, frequently hampering to reach any conclusions. This is particularly true when using the data of the Multiple Indicators Cluster Surveys (MICS).

3.

Some key vulnerability indicators are non-accessible due to being seen as highly politically sensitive, in particular, the detailed information included in the CSO Household Income and Expenditure Surveys (HIES). Thus, it is very difficult to get a clear picture of poverty, food security and vulnerability, especially at the sub-national level.

4.

In spite of the above data constraints, few important trends have been identified and

are listed in the following points.

According to CSO consumption data, at least during the last observed period (1997-2001), Myanmar people have shown a decline in their intake both in term of quantity and quality of food. This has happened both in rural and urban areas. Within this overall trend, a more detailed analysis at sub-national level (State/ Division) has shown that the most worsening pace has characterised in the rural areas of the borders of the country and also the urban areas of the central part of the country. In addition, disavowing the most current opinions, a detailed rural-urban disaggregation analysis has shown that the level of the urban intake was not only lower than the rural level but also worsened more quickly increasing the gap from rural and urban areas. Should this trend had continued up to now there would have been an urgent need of (re)thinking about food insecurity in Myanmar, putting more emphasis on the urban side.

5.

According to the CSO, half of the population in the Union of Myanmar was still (in 2001) without having access to “a good source of water”. The problem was particularly serious in rural areas, where 60% of households had still no access. In the mean time, HIES estimation was obviously more optimistic (only one third). The gap between the two estimations amounts to slightly less than 8 million people.

6.

Due to poor reliability of data (and sometimes inconsistency) many attempts for identifying relations between poor intakes and vulnerability/food insecurity indicators have not yielded satisfactory results. However, it came out that a significant component of poor nutritional outcomes should be frequently attributed to poor hygiene conditions.

7.

Availability of sanitary excreta have been attentively analysed in relation with access to safe water, searching some relationship between the two indicators. As the results were rather unsatisfactory and assuming very poor reliability of data, the mission decided not to use them.

8.

An attentive analysis of MICS time series (1997, 2000 and 2003) have shown that the adult literacy rate has increased very slowly during the recent years (registering an

annual growth rate equal to 0.19). This pace appears very low even when compared with those of other developing countries.

The only positive aspect found within this poor performance is that the increase was more significant for women than for men, and consequently the adult literacy sex ratio was slightly reduced. Another positive result should be emphasized that higher increases of the literacy rates were registered in less literate areas.

9.

The use of “retention rates” which is an indicator of performance and of quality/efficiency of an education system and considered highly significant for vulnerability analysis, provides so uncomfortable results (due to contradictory time series data) to oblige the mission not to use it.

10.

As far as the estimation of landless is concerned, the mission using information from the recent MAC 2003 – reached the conclusion that the rural households “not having access to land (\Rightarrow 0.4 acres)” could be estimated between 35% and 53% of total rural population. This may be a very controversial and politically sensitive issue in Myanmar. These figures could be considered as a proxy of landless figures.

11.

A detailed identification of Surplus/Deficit at District level, using the overall MoAI methodology but considering the four main cereals (and not simply rice), has confirmed the dichotomy opposing Dry Zone to the Southern/Delta one. In the mean time, it has provided important insight into food availability in peripheral zones such as Chin, Shan and Tanintharyi.

12.

For demonstrative purposes, while in Myanmar, the mission produced a vulnerability/food insecurity classification of Union of Myanmar at State/Division level using a selected number of indicators. The outcome was presented in Nay Pyi Taw to Governmental Institutions dealing with food security issues. The mission insisted its dissatisfaction, considering the outcomes as an evident demonstration how much any classificatory attempt was heavily constrained both by the geographically aggregated level of the currently available data & information and by poor reliability of data.

13.

After obtaining more data from MoAI/SLRD, although limited to agriculture holdings, the mission has produced a rural vulnerability/ food insecurity classification of Union of Myanmar described in this report. However, the user should be aware that two very important components of vulnerability and food insecurity (landless and urban food insecure people) are not included in the classification due to the limitations of available data. The cluster analysis has clearly divided the rural Myanmar into nine typologies characterised by very specific patterns highlighting important implications for decision makers. Central Dry Zone emerges with evidence as the most vulnerable and food insecure area of the union.

Kokang (Special Region 1) - Main findings and conclusions

KO1. In spite of many time and logistical constraints, the appraisal carried out by the mission has provided evidences that Kokang (Special Region 1) could significantly recover after the poppy eradication ban (2002).

KO2. A significant contribution for defying how much the recent poppy ban could have affected the living standards in Kokang is provided by the answers to a question expressly included in the recent appraisal conducted by WFP in coordination with the EC/FAO mission.

To the answer: *“is life in this village better or worse than 3 years ago?”* 92% households (89% in terms of population) declared that their life was better than 3 years ago, and only a small quantity (respectively 8% and 11%) declared that the situation has worsened. It is worth to be noted that the survey was carried out during a lean period (September 2006). However, the above recovery presents many risk factors to be taken into consideration for future actions.

KO3. Land availability is the main factor limiting food availability and provoking recourse to fallow practices less frequently than in the past. In the meantime, “slash and burn” with serious environmental consequences, still continues to be the current answer to food needs.

The farmers said that rainfall is frequently inadequate at planting time. No summer crops are grown due to difficulty of irrigation. Even when water sources are available, villages cannot afford for high costs of irrigation materials.

KO4. A large diversification of crops has been observed including tea and sugarcane. Informal interviews indicated that the diversification is mainly a recent and increasing phenomenon. This new trend has been partially induced by the Chinese market demand and partially provoked by donor funded projects.

Most of the observed changes, promoted by private initiatives of Chinese merchants, implied provision of new seeds, purchase contracts, and guaranteed price. Influence of the Chinese market is very important not simply as a demand component but also as a good opportunity for transferring sustainable practices.

KO5. It has been observed throughout the agricultural year and more and more during the lean period that maize is gradually introduced into the daily intake with the increasing scarcity of rice. At the beginning, a very small quantity of maize is mixed with rice and this quantity becomes more and more important when the “lack of food” becomes a serious concern. In other words, the borderline between what is considered as “fodder” and “food” moves up and down according to the seasons and the household conditions. Probably for the same reasons, the results of an attempt to introduce buckwheat are related to this palatal attitude. In addition, home gardening which has a good potential to supplement the diet was seldom detected as a practice.

KO6. The “rice dependency syndrome” seems to be an attitude which is so deep-rooted in local people. Even when food insecurity is evident, several supported actions to assist the farmers in supplementing their crop-mix in the food intake face “palatal” constraints. Only new cash crops are well accepted in the society because they generate cash to purchase rice.

KO7. The mission found that the nutritional status of the children and their mothers is within the normal limits. However, a high infant mortality rate was observed and the reasons could be mainly related to poor hygiene conditions and habits.

KO8. As detected through an “ad hoc” question, the lack of “*awareness on nutritional concepts (role of different type of food, how to improve the food intake through complementation practices)*” represents a serious bottleneck, hampering the use or the proper use of available food resources, especially with particular reference to micronutrient components.

KO9. The observed consumption of animal proteins is very scarce, eggs are seldom consumed and in some cases, their use is hampered by nutritional taboos. The

consumption of oil and fat is rather rare and also when declared “being used” the oils were seldom found at home.

KO10. The lack of safe water and proper hygiene practices are another limiting factor. The most worrying aspect concerns with the access to the use of safe water. . Water is mainly collected from the nearby villages from frequently unprotected tanks filled by natural sources. However, during the dry period, water is fetched from far sources such as streams/ rivers. Water, once brought at home, is stored in uncovered containers and when boiling water as a practice has not been observed.

KO11. An additional concern is related to the frequently observed presence of poultry inside the dwellings of the villages. People are at the risk of Bird flu.

KO12. Normally, health facilities are located far away and have been listed as the most important “village needs” by village key informants.

Wa (Special Region 2) - Main findings and conclusions

WA1. The expected negative impact of the recent (end 2005) poppy ban on population livelihood is certainly serious, but not as remarkable as it had been foreseen. The findings of the mission appraisal although limited by time and logistical constraints, are comforted by the results of the Survey (September, 2006) conducted by WFP in coordination with the EC/FAO mission. In about 2/3 of villages visited by WFP the key informants declared that the *“village life was better than three years ago”*, while a “worse-off conditions” were declared in only 15% of the villages. The remaining households did not apparently change their conditions. It is worth to be noted that the WFF survey was carried out during a lean period.

WA2. The mission has observed that there are considerable opportunities of taking advantages from the winter season where frequently legumes and more seldom wheat are planted. The mission observed in the field that same type of crop in same growing seasons have rather different lengths of growing periods and different times for the beginning of cultivation. It is evident that different local characteristics, including the presence of particular microclimates, altitude and type of soils play an important role for these differences and offer a mosaic of solution to be further investigated.

Intercropping and crop rotation are very rarely practiced and emphasis on paddy

production and paddy development are fading away into the background with the other important food security cropping strategies.

WA3. The mission has found a large variety of vegetables that could be successfully planted and could significantly increase the quality of the food intake of households and offer opportunities even for selling. This last opportunity could be particularly interesting for those villages which are not much affected by transport problems. However, the farmers frequently claim the lack of technical advices, availability of seeds and micro-credits to start some kind of horticultural businesses.

WA4. In general, the farmers expressed the opinion that the access to marginal lands is not a problem. According to them, the problem is the lack of resources for improving cropping conditions (in particular: terracing). In any case, “slash and burn” is a very frequent practice. Apparently, every three years, the farmers (when the plots are far away from the villages) move to another place speeding the deforestation process. In the mean time, in the fields near to the villages, fallow is seldom practiced, with a consequent soil overexploitation and experiencing diminishing yields. Post harvesting losses represent a very serious matter. The farmers’ evaluation of the postharvest losses ranges between 15% and 40%, especially for upland rice production.

WA5. In the meantime, the farmers frequently complained not having benefited, of new claimed lands, suggesting that most of the benefits derived from newly reclaimed area of paddy had gone to the better-off through formal, informal and sometimes simply “illegal” procedures. The lack of a land registry is aggravating these problems.

WA6. In some cases, they declared that they had been obliged to leave their plots, under land tenure incertitude at the benefit of rubber plantations: *“Most of upland where we grow paddy has been taken for rubber. This should be stopped!”* said an angry farmer, adding: *“The situation worsened; now we need to find a job in rubber plantation”*.

WA7. Maize is an important crop and most of time, it is used as a cash crop either sold straightaway or more conveniently in the form of alcohol which is extracted from maize.

In general, farmers do not eat maize or more correctly, they do not want to eat maize. *“When [1976-79] the communist occupied this area, villages ate only maize, now they*

don't want to eat maize any more” said a key informant in Nam Pa De (Lahu village). However, during the lean period, many households are compelled to eat a mixture of rice and maize. Both in village and household interviews, this coping mechanism belongs to those more frequently quoted.

WA8. The use of maize as a cash crop is certainly a more than reasonable strategy under marked opportunity. However, this strategy includes some kind of “market related” risk and is indirectly encouraged to some extent by the fact that at least in the visited villages, the households are benefiting of food aid/ food distribution in a significant way.

WA9. At present, the villages (at least those visited both by WFP and EC/ FAO mission) are rather dependent on different types of food assistance. While in Kokang, food assistance is minimal and targeted towards special social categories, in Wa, probably due to the worries about the expected very negative effects of the recent (end 2005) poppy ban, 78% of households interviewed by WFP are found to be beneficiaries (*“during the previous thirty days”*) of some kind of food assistance.

WA10. Although part of assistance being provided as Food for Education, introducing development goals and not simply facing the poppy ban emergency, there is a risk of thwarting the various attempts to assist in diversification of the cropping systems simultaneously carried out by UN agencies and NGOs. The risk of “addiction to food assistance” is clashing with evident possibilities of locally increasing food availability. Better attention to winter season crops (both wheat and legumes) could improve the food availability significantly. These two crops could improve not simply the quantity but also the quality of the food intake.

WA11. Farmers appreciate wheat but they complain about the apparent discontinuities of seed distributions. They are also not aware of the suitable processing techniques for wheat. In summary, a lack of overall technical assistance is obvious. During the lean period, households are obliged to mix rice and wheat in a very unfair “hotchpotch”.

WA12. For legumes, the problem is mainly related to seeds, in terms of both availability and better quality. Most of seeds are imported from China through private initiatives. In any case, as in Kokang, the emphasis on paddy production and paddy development are fading into the background with the other important food security strategies.

WA13. The conversion to rubber offers a good example on the tangled play between different components of food security issues and policies in the region. The new rubber plantations, sometimes consisting in a true remodelling the hilly landscape, must be considered an interesting alternative to poppy cultivation. Being rubber a cash crop, it is intended to partially compensate for income losses due to poppy eradication policy. However, due to rubber tree characteristics (the trees become productive only after seven years) this alternative cropping strategy can be adopted only by better-off. Poor people cannot wait that long for returns. For them, in a short time, there is only the marginal advantage of offering themselves as casual labourers to find a survival mechanism.

WA14. Rubber plantations are developed under the expectation that at least during the next 20 years, the Chinese economy would express a large rubber demand and consequently import from Special Regions would be strengthened. While it is evident that only trans-border strategies would facilitate the development of these remote areas, risks of creating new dependency (from China in this case) could arise.

WA15. Tea planting seems more interesting and suitable as it can provide a quicker income. However, in the region during the last years, tea prices had stagnated at such point that many farmers declared it is not worth to plant tea. Only “organic tea” plantations are considered rentable due to an increasing Chinese demand.

WA16. The mission found that in some plantations, supported by projects, the farmers use chemical fertilisers only during the first growing year in order to protect the tea plants and then they pick the harvest at the third year. The production is passed to merchants as “organic tea” without knowing that just a minimal trace of chemical fertiliser (even if it is used only during the first growing year) can be easily detectable in a laboratory. If discovered, this practise could pose a serious threat to the investment advantages due to the rejection of the produce at the markets. To avoid this unfortunate situation, a clear definition and a better understanding of what is “organic” should be provided to the farmers.

WA17. Most of time the daily per capita rice intake was found to be exceeding 500 grams, a quantity rather surprising compared with expected and observed food insecurity conditions. It seems evident that for Wa region, the main concerns should be related more to the qualitative than the quantitative patterns of the diets.

WA18. Animal protein intake is rather rare, the consumption of eggs was denied by half of interviewed people. The recourse to vegetable proteins, that could at least partially compensate the lack of animal proteins and complement the cereal intake, was not frequently observed. This behaviour is identified as a serious concern because the agro climatic environment is suitable for pulses. The same concern should be expressed about the consumption of tubers and fruits by most people. These are not considered as “food”.

WA19. Home gardening is seldom practiced and the produce is for self-consumption. The lack of local demand and the distance from potential (urban) markets hamper the possibility of selling part of the home garden production and therefore, the expansion of the plots is not observed.

WA20. Without claiming any statistical evidence, the mission found that the overall nutritional status is worse than that of in Kokang villages. This opinion is largely confirmed by the recent (2005) WFP Nutritional Survey that provides a comparative analysis between Wa, Kokang, Lashio and Magway areas (see annex 22).

WA21. The observed diet composition for children between 2 and 5 year appears rather poor and unbalanced, particularly when compared with the Kokang.

WA22. The relatively higher under-nutrition (when compared with Kokang areas) seems mainly related to an improper use of existing water or general hygiene problems. Water, when brought at home, is not protected and never boiled. Evident lack of easy access to water, particularly during the summer period has been detected. According to verbal communications in some villages, fishing ponds are used as a source for drinking water.

WA23. Poor hygienic conditions are worsened by a very frequent lack of latrines. Serious risks of contamination exist particularly when villages are near to urban centres or in more densely populated areas.

WA24. Malaria as been declared as a very serious problem, health centres are far from villages and in addition, people do not have any knowledge on health on preventing and treating diseases.

WA25. Many households declared: *“We don’t want more children, but we don’t know how to do it”*.

WA26. As expressed at the household interviews, farmers' expectations are mainly related to availability of pigs and buffalos. Less attention for roads and electricity has been expressed.

General comments for the two Shan State Special Regions

KOWA1. Up to point where the Special Regions economy was a "poppy governed economy", the farmer attitude to sell opium and buy rice was rather understandable. However, in the present context, due to the inability to increase the rice production significantly, the only available option is to diversify the cropping systems.

The diversification of the cropping systems can be carried out according to different goals (not necessary as a total alternative) to improve the food security through a better and diversified diet composition and to identify particular cash crops to be sold allowing the purchase of staple foods.

Travelling through Kokang, watching and interpreting the agricultural landscapes, and interviewing the farmers, it was evident that both alternatives have been attempted.

KOWA2. At present, the cash crop alternative seems to be working, but is strongly dependent from the Chinese market and the influence of the Chinese traders. Travelling through Kokang and Wa Special Regions, the impression is that these areas are more or less remote rural outskirts of Yunnan. This is further verified by the primary evidence that only Yuan is used and Kyat is not recognised in these areas.

KOWA3. The farmers (tea planters) in a Kokang visited village confirmed that "*last year tea cultivation was good, but prices were too low. This year, due to "organic tea" popularity in China, Chinese merchant offer higher prices for organic tea*". Apparently, sugarcane production too is totally governed by Chinese demand. Most of the cultivated maize is also bought by Chinese merchants.

KOWA4 The second alternative, i.e. to diversify the cropping systems for improving food security through modifications of the intakes is rather important but is facing difficulties.

Myanmar Dry Zone - Main findings and conclusions

DZ1. The main concerns for this area are related to the fact that during the next decades, accordingly to FAO recent estimation, the Net Primary Production (NPP) would drastically decrease in this area. It must be considered that Dry Zone is already densely populated, most of land had already been converted to agriculture and that its intensive use has already led to a soil overexploitation, worsened by soil erosion. Somewhere a typical “African dry savannah” landscape has been identified in this area.

DZ2. From the social point of view, the observed environmental conditions are worsened by an increasing polarisation of agricultural holdings characterised by an increasing number of small/ very small holdings (becoming smaller too) and a contemporary increase of the size of the big holdings.

DZ3. The visited Districts are characterised by a very high frequency of small holdings and most of them are not large enough to allow household survival. These households expect income support through seasonal migration mechanisms.

DZ4. The mission could not investigate how much the above trend of polarisation of the holdings could be related to dispossession processes. However, the mission could informally gather opinions that an increasing indebtedness of small farmers could have contributed/ contribute to the current patterns. In some cases, it has been observed that increased indebtedness had led to debt repayments by informal transfers of land.

DZ5. At least in few villages where interviews were carried out, the mission found that the number of rural households without land was worryingly high. This fact is confirmed at District level by the recent MAC2003 data. The number of landless only in the five visited Districts could be estimated as more than 1million people.

DZ6. Normally the men, including male youth, seasonally go looking for work (most of time as casual labour) in the near big cities (mainly Mandalay or Yangon City). Recently, many new job opportunities are offered by the on-going constructions in the new Union Capital City (Nay Pyi Taw). This is apparently due to the Government commitment to quickly complete the constructions offering better daily remuneration.

DZ7. All the interviewed households, excluding very few living in close proximity

to urban areas declared to be indebted. Although sometimes getting loans from relatives or neighbours, they are compulsorily obliged to depend from moneylenders (frequently shopkeepers) who apply monthly interest rates between 15 and 20%.

DZ8. The visited area can clearly be divided into two parts. While the visited villages belonging to Magway District worsened their condition during the last year, the visited villages belonging to Mandalay and Sagaing Divisions, on the contrary, improved their conditions. Extra-agricultural job opportunities due to urban propinquities could be an explaining element. The rice price drastically increased during the last years and could be balanced only by urban-related wages increases (when available).

DZ9. Most of villages do not have access to electricity, particularly, in the Magway area. In many observed cases, medium-voltage lines cross the villages or are just located outside the villages: *“The electricity line is near, but we can’t afford to buy a step down transformer”* a key informant said. Even when electricity facilities are available, farmers frequently said that *“the installation and the monthly fees are not affordable”*.

DZ10. Most of the visited villages have benefited in the past from the investments on water. However, for many reasons, the access to water worsened during the last years. The list of the reasons, not surprisingly is always the same: lack of pump maintenance, increasing salinity, clogged or dried well, etc..

DZ11. However, also in case of water availability, the safe water problem still persists, due to non-hygienic techniques of storing water. At homes, most of the storage containers were found to be very dirty. Practice of boiling water is not common.

DZ12. Some villages have been benefited by the installation of “compound” or private” latrines. However, the observed outcomes must be defined as a “negative-improvements”, implying worsening environmental conditions in the villages due to these improper installations.

DZ13. Probably the poor attention on water and sanitation problems is one of the main reasons of the detected poor nutritional outcomes.

DZ14. Many undernourished children were identified. The mission impression is

largely supported by the very recent (2005) WFP Nutrition Survey which has provided worrying results although it was limited to Magway Division in Dry Zone.

DZ15. Major differences amongst poor households have been noted between villages of Mandalay/ Sagaing and Magway.

DZ16. Travelling through the area, an extraordinary variety of crop mix and cropping techniques were observed confirming that the cropping systems adopted are very clever coping strategies suitable for local conditions.

DZ17. Since long time ago, local inhabitants had developed the most appropriate cropping systems. To reduce the risk of crop failures due to uncertain and erratic rainfall and to maintain the soil fertility as far as possible, mixed cropping, intercropping, and relay-planting cropping systems are practised. Cereals are always combined with legumes.

DZ18. As far as it concerns the cash crops (mainly groundnut, sesame and to a lesser extent green gram) the farmers' decision is often related to market opportunities. However, during the last years the Term of Trade (TOT) between Pulses and Rice (to be bought in the market) has worsened. It is a fact that at national level the prices of pulses and oil-seeds increases less than the price of low quality rice.

DZ19. The emphasis on some crops considered essential at national level in the country's drive toward self-sufficiency continues to penalise Dry Zone. There is a need of a robust attention to local crops, not simply because they are the most suitable for its environment but also they could represent/ already represent an extremely important potential source of income.

Recommendations linked to the above findings and conclusions

(Reference to related finding(s) is shown in brackets)

To facilitate National Institution to carry out future vulnerability, food insecurity analysis data access must be liberalised. Civil servants should work in a more relaxed environment (1).

Future National activities request a radical revision of official figures, convening technical meeting for reaching proper agreements between data producers in order to avoid the situation of contradictory data (2).

If National Institutions in Myanmar intends to implement a comprehensive vulnerability, food insecurity and poverty mapping system a free access to Household Income and Expenditure Survey (HIES) data is compulsory. The same recommendation should be extended to the need for accessing more recent Integrated Household Living Condition Assessment (HILCA) data which are still monopolised by the producers (3).

The above recommendation is particularly strategic as more emphasis should be placed to urban environment and only the above sources can provide significant insight (4) to the situations.

In data collection and analysis, emphasis should be given to topics particularly significant in any food security analysis; for instance (as they are the more badly documented and contradictory) access to safe water, sanitary excreta availability, literacy rate, retention rates (5, 6, 7, 8 and 9).

Identification and estimation of quantity of landless including the “reason why” is a crucial matter for food security issues. In this regard, specific ad-hoc surveys are recommended (10 and DZ5).

The MoAI criteria for defining Surplus/ Deficit areas should be improved (11).

National Institutions dealing with vulnerability and food insecurity should be aware that a State/ Division level analysis is too coarse and should call for a more desegregated data collection system if they intend to obtain useful results (12).

It is recommended an extensive use of last Agricultural Census for investigating vulnerability and food insecurity in rural areas although it is limited to agricultural holdings. The distribution of large amount of unpublished data extracted at District level from the Agricultural Census 2003 by MoAI/ SRLD to a large set of potential users is strongly recommended (13).

Dry Zone should be attentively analysed and monitored as it came out as the most vulnerable area of the country (14). A Dry Zone Early Warning System should be established (13 and DZ1).

Specific recommendations for Shan State Special Regions

Kokang – Special Region 1

A more systematic monitoring system on nutritional consequences of the poppy eradication ban should be established. A starting point could be represented by the WFP questionnaires used on September 2006 (KO1 and KO2).

Environmental consequences of current “slash and burn” should be evaluated in view of the sustainable development. Assistance should be provided for small irrigation systems as a partial alternative (KO3).

The already existing large diversification of crops must be encouraged locally, avoiding its strong dependency from initiatives of Chinese merchants’. However, the technical role of Chinese merchants should be strengthened as it frequently introduces sustainable practices (KO4).

Production of maize should be strengthened and farmers should become aware of its nutritional value, removing palatal constraints. The same recommendation should be formulated as far as it concerns with buckwheat. Adequate solutions should be found to promote home gardening (distribution of seeds, pilot plots, nutritional education) (KO5). Farmers should receive training of organic fertilizer making (Compost, Indigenous Microorganism, etc....).

The “rice dependency syndrome” should be curtailed assisting the farmer in differentiating their crop-mix (KO6).

Reasons behind the detected high infant mortality should be identified and adequate

intervention should be defined (KO7).

It is an urgent need to develop an overall awareness on nutritional concepts in order to remove the serious local bottlenecks that hamper a proper use of available food resources (KO8).

Improper nutritional taboos should be removed (KO9).

Adequate policies for the use of save water and proper hygiene practises should be developed, including the promotion of awareness of their fundamental role in improving overall food security levels (KO10).

Attention should be given to bird flu risk, as local conditions are favourable to its propagation (KO11).

As insistently requested by farmers, access to health facilities should be found with some adequate solutions (KO12).

Wa – Special Region 2

As already recommended for Kokang Special Region 1, a more systematic monitoring system on nutritional consequences of the poppy eradication ban should be established. A starting point could be represented by the WFP questionnaires used on September 2006 (WA1).

As there are large opportunities of taking advantage from winter season, there is a need of an urgent and attentive inventory of the local agro-ecological conditions in order to assisting any current/ future poppy-substitution policy (WA2).

Intercropping and crop-mix should be encouraged with adequate assistance (WA2) and horticultural businesses should be promoted whenever possible (WA3).

Deforestation caused by an intensive “slash and burn” should be controlled improving cropping conditions in already deforested areas. In the meantime, more frequent fallow practices should be assisted near the villages to avoid soil overexploitation (WA4).

Claims about the fact that most benefits derived from newly reclaimed area of paddy

went to better-off should be attentively verified, as well as policy about new rubber plantations” and in general claims about “illegal” land transfer to guaranty social justice should be investigated (WA5, WA6 and WA13).

Production of maize should be strengthened and farmers should become aware of its nutritional value, removing palatal constraints (WA7). In the mean time, adequate solutions should be found to promote home gardening (distribution of seeds, pilot plots, nutritional education) (WA19).

It should be avoided that household benefiting of food aid/ food distribution should be implicitly encouraged not to look for sustainable cropping strategies (WA8 and WA 9). The risk of an “addiction to food assistance” should be controlled with adequate targeting and encouraging winter crops (both wheat and legumes) (WA10).

(Re)introducing wheat in Wa areas should not be assisted simply providing seeds but also offering processing technical knowledge and assistance (WA11).

Propagation of legumes should be assisted mainly providing better quality seeds, and not leaving the initiative to Chinese private merchants. There is a frequent high risk of crop failure due to different agro-ecological conditions (WA12) the area.

A risk of an emerging dependency from Chinese markets and their vagaries must be attentively evaluated before defining any new crop policy. However, a suitable trans-border strategy is fundamental for the development of these remote areas (WA14).

The production of “organic tea” should be encouraged due to international demand. However, the farmer should clearly understand the meaning of “organic” (WA15 and WA16). Farmers should receive training of organic fertilizer making (Compost, Indigenous Microorganism, etc.).

New food access policy should more concentrate on qualitative than quantitative aspects of diet composition (WA17).

Tubers and fruit as well as home gardening produce should be encouraged as component of the daily diet through establishing pilot plots (WA 18 and WA19).

The persisting problem of under-nutrition of children should be addressed by a comprehensive policy that should solve the problem of the improper use of existing

water (WA22) and lack of latrines (WA 23).

Intensive prevention policies for Malaria (WA 24) as well as birth control programmes must be introduced as requested by many farmers (WA25).

Micro-credit policies for assisting swine management will be very appreciated (WA 26).

Specific recommendations for Dry Zone

Due to many concerns about an expected Net Primary Production in Dry Zone, an Early Warning System should be established (DZ1).

There is an urgent need of monitoring local worsening conditions of the environment and understanding how much this situation is due to man-made contributions (DZ2).

A real understanding of which income generation opportunities could be identified in the area will be necessary before advancing any proposal for facing an increasing polarisation of agricultural holdings (DZ3).

Identification and estimation of quantity of landless including the “reason why” is a crucial matter for food security issues. For this, ad hoc surveys in Dry Zone are strongly recommended (DZ5). Mechanisms of indebtedness (DZ4 and DZ7) and their relationship with formal or informal transfer of land ownership must be attentively investigated. In addition, the role of seasonal migration should be studied before formulating rural food security and development policies.

Terms of Trade between rice and local crops should be investigated to identify the major components hampering the development of an area where it has high potentiality of production of well appreciated pulses (DZ9 and DZ18).

As the area has benefited in the past of important water and sanitation assistance and now the outcomes are pitifully abandoned/ obsolescent, there is an urgent need of designing and implementing locally defined recovery projects (DZ11, DZ12 and DZ13). The above interventions are strongly recommended because a poor water and sanitation environment is an important contributing factor for undernourishment of children in the area (DZ13 and DZ14).

The provision of step-down transformers could be an important action for improving overall local conditions (DZ9).

As crop mix and cropping techniques existing in the area are the result of “atavistic”, well-experimented coping strategies with environmental conditions. Therefore, the local knowledge should be enhanced and “landrace” crops should be used. On the contrary, emphasis on paddy production and paddy development are discouraging the improvement of locally very sustainable cropping systems (DZ15, DZ16, DZ17 and DZ19).

Appendix

Appropriate Strategies and Tactics for Upland Rice Cultivation in Shan States Special Regions 1 and 2

(by Ohmar Khaing, Agronomist National Consultant)

A1. Permanent field rotation with other crops: Upland rice needs to be established in areas of low risks of yield losses.

A2. Variety selection: (a) More number of cold tolerant, high yielding varieties are required. (b) If soil fertility is good and the farmer can afford high inputs, hybrid varieties are recommended whereas local and high yield (improved) varieties can be planted for low fertility land with low inputs. (c) Varieties with deep roots are desirable because the plants can use soil moisture and nutrients in deep layers resulting in high productivity.

A3. Land preparation: (a) Effective farm tool, using scientific harrow with one buffalo should be introduced. (b) SALT, especially, A frame method can give right contour bunds. (c) It is required to equip cattle bank.

A4. Nutrient management: (a) Second application of nitrogen fertilizer at 20 days before rice flowering is required. (b) Fertilizer demonstration plot (windowing method) needs to be carried out. (c) Nitrogen accumulation, biological N-fixation and grain yield effects can be obtained by planting legumes. (d) Using bio fertilizer such as Blue Green Algae may be encouraged.

A5. Plant protection: (a) Seed treatment is needed to protect from soil born disease “Rice Blast”. (b) Encouraging line sowing can be beneficial for weed control and inter cultivation. (c) Leguminous crops should interplant with rice to suppress weeds.

A6. Cultural practices: (a) Seeders should be uses to obtain systematic line sowing, good germination, and uniform plant growth vigour and desired plant population.

A7. Post harvest loss: (a) Timely harvest (b) proper construction of for paddy storage (c) seed storage methods such as **the** use of some devices to prevent destruction by rodents must be introduced.

A8. Empower people: (a) Appropriate/ new techniques for collective training to be developed. (eg. Home made organic fertilizer and pesticides).

ANNEXES

EC/FAO CO-OPERATIVE PROGRAMME
EC/FAO Facility for the Provision of Consultancy Services

Terms of Reference for EC/FAO Consultancy Mission

1. **COUNTRY** The Union of Myanmar
2. **FACILITY TYPE** Consultancy Services
3. **SYMBOL** GCP/INT/952/EC-MYA(8)

4. **TITLE OF CONSULTANCY MISSION**

Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar

5. **RECIPIENT INSTITUTION/ORGANIZATION**

Government of the Union of Myanmar, Ministry of Agriculture and Irrigation
Department of Agricultural Planning

6. **ISSUES TO BE ADDRESSED**

According to the Central Statistical Organization and the World Bank, which estimated poverty rates for the Union by using the 1997 Household Income and Expenditure Survey data, about one quarter of the population – approximately 10 million people or 23.9 % in urban, 22.4 % in rural and 22.9 % in the country – existed in conditions of severe poverty, with the proportion being almost equal in urban and rural areas. Since that time, the proportion of both urban and rural poor seems to have increased substantially, given current trends in the macro-economic environment. However, the largest number of chronically poor and food insecure people is still considered to be situated in rural areas where people's livelihoods and food security are heavily depended on the agriculture sector whose share of GDP is 33.1 percent in 2000/01, although no reliable statistics or figures are available.

There have since been a number of other attempts to measure poverty and food insecurity. For example, in 2003, a group of researchers in the Institute of Economic Research in Japan applied their own poverty line, which is equivalent to 400 kg of rice per person per year, and estimated incidence of national poverty at 42.8 % at the national level. Since per capita rice consumption per year is 200 kg, applying the estimated poverty line assumes that 50% of their income is spent on basic foods.

To reveal food insecurity situation in the country, the Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) measured local food production, physical access for food imports and the resilience of the population to periodic food shortages in 2002. The study showed that most border townships were considered to be highly or moderately vulnerable in food security terms, with Shan, northern Kachin and Chin states being the worst off. Nearly all townships in central Myanmar, by contrast, are considered to have low vulnerability (Annex).

Another study – Child Risk Index – conducted by UNICEF, which assessed the relative status of children and women in the fourteen states and divisions based on twelve socio-economic indicators for 1997-2000, indicates a similar picture: most border areas fall considerably below the national average in terms of household income, health status, and access to health care, education and safe water and sanitation. Chin, Rakhine, eastern Shan and Kayin (Karen) states are amongst high-risk areas for children, followed by southern Shan, northern Shan and Kayah states. Only Mon and Kachin states are better off than the least developed parts of central Myanmar.

Nevertheless, reliable, timely and quality information on the food insecure and vulnerable is seriously lacking in the country. Data providing insight into food availability, access, stability and utilisation are scarce, of poor quality, and sometimes contradictory. Most official data are only available at the first or second administrative level and thus provide a feeble basis for geographical targeting. A whole range of restricted data and some key vulnerability indicators are non-accessible due to being seen as highly politically sensitive. Thus, a clear picture of poverty, food security and vulnerability, especially at the subnational level, has not been known well.

Lack of information systems and poor quality, or unreliable and inconsistent data and information on the food insecure and vulnerable have hampered the effectiveness of

development assistance by international organizations and NGOs and constrained their ability to assess, monitor and evaluate the food security situation in the country and formulate and implement appropriate programmes and interventions. Both FAO Regional Office for Asia and the Pacific (RAP) and the Delegation of the European Commission (EC) in Thailand are sufficiently aware that at least collecting baseline indicators data is urgently required as the first towards effective development and humanitarian assistance, sound policy adoption and appropriate action, thus considered as priority. In addition, vulnerable groups profiles are required to make analysts, researchers, project formulators and policy makers have a comprehensive, area and population group-specific view of the state of food insecurity and vulnerability, enabling them to take a coordinated cross-sector approach, and to identify specific target areas and populations in need of assistance.

Of particular interest to FAO, the EC, UN and international organization, and NGOs concerned with poverty and food insecurity is conducting a case study on the alarming situation of poor, food insecure and vulnerable populations in the Special Regions in northern and eastern Shan states where about 90% of country's opium is grown. These areas are the home for ethnic minority groups – including *Kokang*, *Shan* and *Wa* – and experience a high prevalence of HIV/AIDS, increased human trafficking, and increased health problems, making the regions more vulnerability to food insecurity, poverty and undernutrition. Yet, some argue that various efforts to eradicate opium have caused many households in the regions to chronic poverty and negatively affected their food security. In addition, according to surveys conducted jointly by UNODC and the government's Central Committee for Drug Abuse Control, a majority of the people in the regions believe that food security and adequate food supply can be achieved by growing and cultivating opium. It is in this context that a case study will be carried out in selected Special Regions in the Shan states – namely *Kokang* Special Region 1, *Wa* Special Region 2, and *Shan/Akha* Special Region 4 – to better understand key factors leading the vulnerable populations to poverty and food insecurity as well as their coping mechanisms and capacity. The outcome is expected to contribute to improved targeting and programme and policy development, and to effective and timely interventions by the Government and other national and international stakeholders concerned.

To contribute to solving the problems described above, the proposed mission will *inter alia*:

- (1) assess existing data and information related to poverty, food insecurity and

vulnerability, information users' needs, and gaps in information and information systems/databases;

- (2) identify and profile poor, food insecure and vulnerable populations illustrating their geographical locations as well as the extent and causes of their poverty and vulnerability by collecting and analysing baseline indicator data at the subnational level, including a case study for *Kokang* Special Region 1, *Wa* Special Region 2, and *Shan/Akha* Special Region 4 in northern and eastern Shan states.

Information produced by the mission will improve an understanding of the poor, food insecure and vulnerable, their characteristics and the causes (e.g. shocks; stresses) of the plight by the donor community, international organizations and NGOs. It will also help make effective and timely interventions and targeting in humanitarian and development assistance in the country.

7. OUTPUTS EXPECTED

Envisaged outputs of the mission will include:

- (1) an inventory of existing data and information as well as planned and ongoing information system and database activities relevant to poverty, food insecurity and vulnerability;
- (2) assessment on the quality of data and information, information users' needs and gaps in information and information systems and databases;
- (3) baseline food insecurity and vulnerability indicators data set (if possible in time-series); and
- (4) profiles of poor, food insecure and vulnerable populations illustrating their geographic locations and detailing the extent and causes of their poverty, food insecurity and vulnerability with recommendations on possible interventions to reduce the predicament.
- (5) a case study on the poor, food insecure and vulnerable in northern and eastern Shan states, especially *Kokang* Special Region 1, *Wa* Special

Region 2, and *Shan/Akha* Special Region 4.

The outputs of the mission will be used by the donor community, international organizations and NGOs such as the EC, FAO, UNDP, WFP, UNODC and the Food Security Working Group to programme development and humanitarian assistance or targeted interventions. They will also complement vulnerability assessment recently conducted by UNDP and WFP and the MyaInfo initiative – a database system to monitor MDGs indicators and progress.

One of the immediate information users will be the EC Delegation in Thailand which can render assistance to ongoing, planned and follow up food security programmes and projects in the country. The FIVIMS programme will also determine the extent and level of assistance to Myanmar based on the information to be produced by the mission. Ultimately, however, it is expected that the Government of the Union of Myanmar will build a national FIVIMS on the outputs of the mission, for which FAO together with international FIVIMS partners will provide guidance and necessary technical advice as necessary.

8. COMPOSITION OF THE MISSION

The mission team will consist of:

- Food Security Analysis Expert (Mission Leader)
- Vulnerability Information Expert
- National Consultant (Nutritionist)

The proposed mission will commence on 19th August and conclude on 14th November, or 88 days. The total durations for the Food Security Analysis Expert/Mission Leader, the Vulnerability Information Expert and the National Consultant are 88, 85 and 79 days, respectively. For more detailed time allocation, see the section 10-Work Plan.

9. TERMS OF REFERNECE

9.1. Food Security Analysis Expert / Mission Leader

DUTIES AND RESPONSIBILITIES:

Under the overall supervision of the FAO Representative (FAOR) in the Union of Myanmar, the direct supervision of a senior officer in the Agriculture Department Group (RAPG) of the FAO Regional Office for Asia and the Pacific (RAP), and the guidance of the designated technical and operations officers at RAP, the Food Security Analysis Expert / Mission Leader will lead a mission entitled *Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar*. The Consultant will work in close collaboration with other mission members and the RAP technical officers in Bangkok, who have expertise in food insecurity, vulnerability, poverty reduction, nutrition and health in the country. Specifically the Consultant will:

1. conduct necessary preparatory work prior to the mission in Myanmar, which will include:
 - existing and available literature review;
 - preliminary data and information collection;
 - arrangement of meetings with key informants through the FAOR office in Yangon and the National Consultant;
 - elaboration of a more detailed mission work plan based on the work plan included in this mission TOR and in consultation with other mission team members, the RAP officers and the FAOR.
2. review previous works and studies related to the subject of the mission, which were conducted by national and international organizations and NGOs, in particular FIVIMS, WFP/VAM, UNDP, UNICEF, the national MDGs initiative, the Ministry of Agriculture and Irrigation, the Ministry of Livestock and Fisheries, the Central Statistical Organization, and the Food Security Working Group;
3. assess the methodologies and data sets used by the previous FIVIMS mission – Vulnerable Townships on page 13 – to explore possibilities to refine the former and update the later n the field;
4. assess the current state of government structures and information systems dealing with poverty, food insecurity and vulnerability in Myanmar, and gauge the level of support at the national and local levels with a view to establishing a national FIVIMS in the future;

5. meet and discuss with all potential stakeholders in national and international organizations and NGOs responsible for operational and planned information and data systems relevant to FIVIMS and those concerned with poverty, food insecurity and vulnerability, noting data availability for FIVIMS and information gaps and overlaps; particularly, meet with key informants or representatives from the Ministry of Agriculture and Irrigation, the Ministry of Livestock and Fisheries, the Central Statistical Organization, UNDP, UNICEF and NGOs involved in the Food Security Working Group, aiming to obtain required information and data, solicit cooperation and support for the mission, and ensure that mission outputs will meet information users' needs and contribute to a greater understanding of the causes of poverty, food insecurity and vulnerability in the country;
6. obtain, collect and produce a baseline food insecurity and vulnerability indicators data set;
7. define and propose methodologies to identify the locations and characteristics of poor, food insecure and vulnerable populations;
8. identify and profile poor, food insecure and vulnerable populations illustrating their geographical locations as well as the extent and causes of their poverty, food insecurity and vulnerability by processing and combining the indicators data collected during the mission;
9. determine the scope of and conduct a case study on the poor, food insecure and vulnerable in northern and eastern Shan states with special emphasis on *Kokang* Special Region 1, *Wa* Special Region 2, and *Shan/Akha* Special Region 4.;
10. supervise the works to be performed by the Vulnerability Information Expert and the National Consultant and provide them with sound guidance and instructions to effectively complete the mission;
11. at the end of the field mission in Myanmar, provide a presentation for all potential stakeholders summarising the methodologies developed and used for the assessment of the poor, food insecure and vulnerable, information users' needs, existing information gaps and weaknesses, possible solutions and priorities for action, and other mission outputs produced and works conducted, which are useful for follow up action by the EC, FAO, other international organizations, NGOs and

donors as well as provide a basis for effective and targeted interventions; and

12. participate in briefings at FAO RAP and the Delegation of the European Commission in Thailand, and provide debriefings to them upon completion of the field mission in Myanmar.

REPORTING REQUIREMENTS:

- The Consultant, in collaboration with other mission members, prepares a technical report (or Consultancy Mission report) presenting the findings, results, conclusions and recommendations of the mission. The first draft report will be prepared before departure from Myanmar for review by designated technical officers at RAP and finalised within two week of completion of the mission by incorporating comments and suggestions from FAO, the European Commission and others concerned with the mission as appropriate.
- The final report will be forwarded to the Budget Holder (FAO Representative in Myanmar), Facility Manager in FAO in Rome and concerned technical offices at RAP within 2 weeks from the termination of the mission.
- A Concluding Letter must be drafted and submitted with the final technical report to the Budget Holder (FAO Representative in Myanmar) and Facility Manager in FAO in Rome.

QUALIFICATIONS AND EXPERIENCE

A minimum MSc degree in agricultural economics or related fields and at least 15 years experience in cross-sectoral data analysis with a proven track record in supervision of a number of development programmes and projects associated with poverty, food insecurity and vulnerability. Preferably he/she should have a broad working experience in Southeast Asia. The Consultant should be an excellent networker. Experience in collaborating with government officials, representatives of bilateral aid agencies, UN agencies, and other international institutions. Working knowledge of English. Knowledge of FAO, the UN System and the FIVIMS initiative as well as country experiences in related fields are assets.

WORKING LANGUAGE:

- English

DUTY STATION:

- Yangon, Myanmar (briefing and debriefing in Bangkok, Thailand)

DURATION:

- From 19th August to 14th November 2006 (88 days)

9.2. Vulnerability Information Expert

DUTIES AND RESPONSIBILITIES:

Under the overall supervision of the FAO Representative (FAOR) in the Union of Myanmar, the direct supervision of the Mission Leader and a senior officer in the Agriculture Department Group (RAPG) of the FAO Regional Office for Asia and the Pacific (RAP), and the guidance of the designated technical and operations officers at RAP, the Vulnerability Information Expert will provide technical support to the Mission Leader for planning/coordinating the mission, identifying information users' needs and data and information gaps, data processing, and selecting critical indicators data to identify and assess the poor, food insecure and vulnerable at the subnational level. Specifically the Consultant will:

1. assist the mission with necessary technical preparatory work prior to the mission in the field and during the briefing period in Bangkok, including acquiring data relevant to the mission in digital form (e.g., digital boundary maps and crop data for Myanmar; agro-meteorology, biophysical and remotely sensed data, if applicable);
2. in coordination with the National Consultant and the FAOR office, identify and meet with representatives and experts from national and international organizations and NGOs responsible for operational and planned information and data systems relevant to the mission;
3. assist the Mission Leader to assess the state of information systems dealing with poverty, food insecurity and vulnerability in Myanmar by carrying out rapid assessments of existing data, database and information systems, taking into consideration data formats, compatibility and availability, as well as by gauging the level of their applicability for food insecurity and vulnerability analyses at the sub-national level;
4. assess food insecurity and vulnerability information needed by users, such as policy makers and planners, how it was used, the existing gaps and weaknesses, possible solutions and priorities for action;
5. based on the findings during the mission and the previous work carried out by international and national organizations and NGOs, provide technical support

to the Mission Leader in identifying and/or defining critical (indicators) data required to identify the locations of the poor, food insecure and vulnerable at the subnational level as well as causes of their poverty, food insecurity and vulnerability;

6. Obtain map, image and tabular data required for food insecurity and vulnerability assessments from national and international organizations and NGOs in Myanmar, and assist the mission team with data processing to produce vulnerable groups' profiles and an outcome vulnerability map with appropriate symbols, labels, legends and scale factors.
7. assist the mission to obtain, collect and produce a baseline food insecurity and vulnerability indicators data set;
8. where appropriate, perform data conversion, including digital map and image translation, for use by the mission team;
9. support the Mission Leader for defining suitable methodologies to produce vulnerable populations profiles and an outcome vulnerability map;
10. also assist the Mission Leader to conduct a case study on the poor, food insecure and vulnerable in northern and eastern Shan states, in particular in *Kokang* Special Region 1, *Wa* Special Region 2, and *Shan/Akha* Special Region 4;
11. provide a presentation on the outcome of the mission for stakeholders and those concerned with the mission subject at the end of the mission;
12. assist the Mission Leader to produce a mission report summarising the work conducted and outputs produced as well as elaborate rationales, concepts and methodologies underlying the selection of the indicators and the production of a final vulnerability map at the subnational level; and
13. participate in briefings at FAO RAP and the Delegation of the European Commission in Thailand, and provide debriefings to them upon completion of the field mission in Myanmar.

REPORTING REQUIREMENTS:

- The Consultant, in collaboration with other mission members, prepares a technical report presenting the findings, results, conclusions and recommendations of the mission. A draft report will be prepared before departure from Myanmar for review by designated technical officers at RAP and finalised within two week of completion of the mission by incorporating comments and suggestions from FAO, the European Commission and others concerned with the mission as appropriate.
- The final report will be forwarded to the Budget Holder (FAO Representative in Myanmar), Facility Manager in FAO in Rome and concerned technical offices at RAP.

QUALIFICATIONS AND EXPERIENCE

Advanced university degree in agriculture economics or related fields with background of data processing with use of advanced statistical analysis techniques, geo-spatial data applications and/or GIS. At least 7 years relevant work experience in the field of poverty, food insecurity and vulnerability information processing and data analysis. Preferably he/she should have a working experience in Southeast Asia. The Consultant should be an excellent networker. Experience in collaborating with government officials, representatives of bilateral aid agencies, UN agencies, and other international institutions. Working knowledge of English. Knowledge of FAO, the UN System and the FIVIMS initiative as well as country experiences in related fields are assets.

WORKING LANGUAGE:

- English

DUTY STATION:

- Yangon, Myanmar (briefing and debriefing in Bangkok, Thailand)

DURATION:

- From 19th August to 11th November 2006 (85 days)

9.3. National Consultant – Nutritionist

DUTIES AND RESPONSIBILITIES:

Under the overall supervision of the FAO Representative (FAOR) in the Union of Myanmar, the direct supervision of the Mission Leader and the Senior Food and Nutrition Officer, RAP, and the guidance of the designated technical and operations officers at RAP, the National Consultant (Nutritionist) will assist the mission team with the implementation of mission activities to ensure the effective and efficient achievement of the mission objectives and expected outputs. The following include the specific responsibilities:

1. prepare a detailed programme of work and activity plans for the duration of the assignment in close consultation with other mission members.
2. assist the mission to plan, arrange and coordinate meetings with key informants to obtain necessary information and data and to solicit their assistance and understanding of the importance of the mission;
3. prepare an in-depth inventory of the existing information systems related to health and nutrition and related vulnerability;
4. assist the mission team to identify a set of core indicators to be used in analysing the poverty, food insecurity and vulnerability situation of the country and incorporate nutrition data into baseline information for the mission;
5. assist the mission team to conduct statistically integrated cross-sectoral analysis as the team is to identify and characterize poor, food insecure and vulnerable populations;
6. assist in the collation, analysis and presentation of food insecurity and vulnerability data;
7. coordinate closely with the FAO Representative in Myanmar, UN and international organizations concerned, and ministries and national agencies to arrange the mission schedule including field visits: e.g. carrying out a case study in northern and eastern Shan states;

8. provide a presentation on the outcome of the mission for stakeholders and those concerned with the mission subject at the end of the mission; and
9. assist the Mission Leader to produce a mission report summarising the work conducted and outputs produced as well as elaborate rationales, concepts and methodologies underlying the selection of the nutrition and health indicators; and
10. undertake any other related activities as deemed necessary.

REPORTING REQUIREMENTS:

- The National Consultant, in collaboration with other mission members, prepares a technical report presenting the findings, results, conclusions and recommendations of the mission. A draft report will be prepared before departure of the mission team from Myanmar for review by designated technical officers at RAP and finalised within two week of completion of the mission by incorporating comments and suggestions from FAO, the European Commission and others concerned with the mission as appropriate.
- The final report will be forwarded to the Budget Holder (FAO Representative in Myanmar), Facility Manager in FAO in Rome and concerned technical offices at RAP.

QUALIFICATIONS AND EXPERIENCE

The national consultant should possess at least a BSc degree in Nutrition and a minimum of 5- 10 years experience in data analysis in food security and nutrition related fields, preferably with experience in collaborating with government officials, representatives of bilateral aid agencies, UN agencies, and other international institutions. Working knowledge of English. Knowledge of FAO, the UN System and the FIVIMS initiative as well as country experiences in related fields are assets. The National Consultant will be recruited through the Office of the FAO Representation in Yangon.

WORKING LANGUAGE:

- English

DUTY STATION:

- Yangon, Myanmar

DURATION:

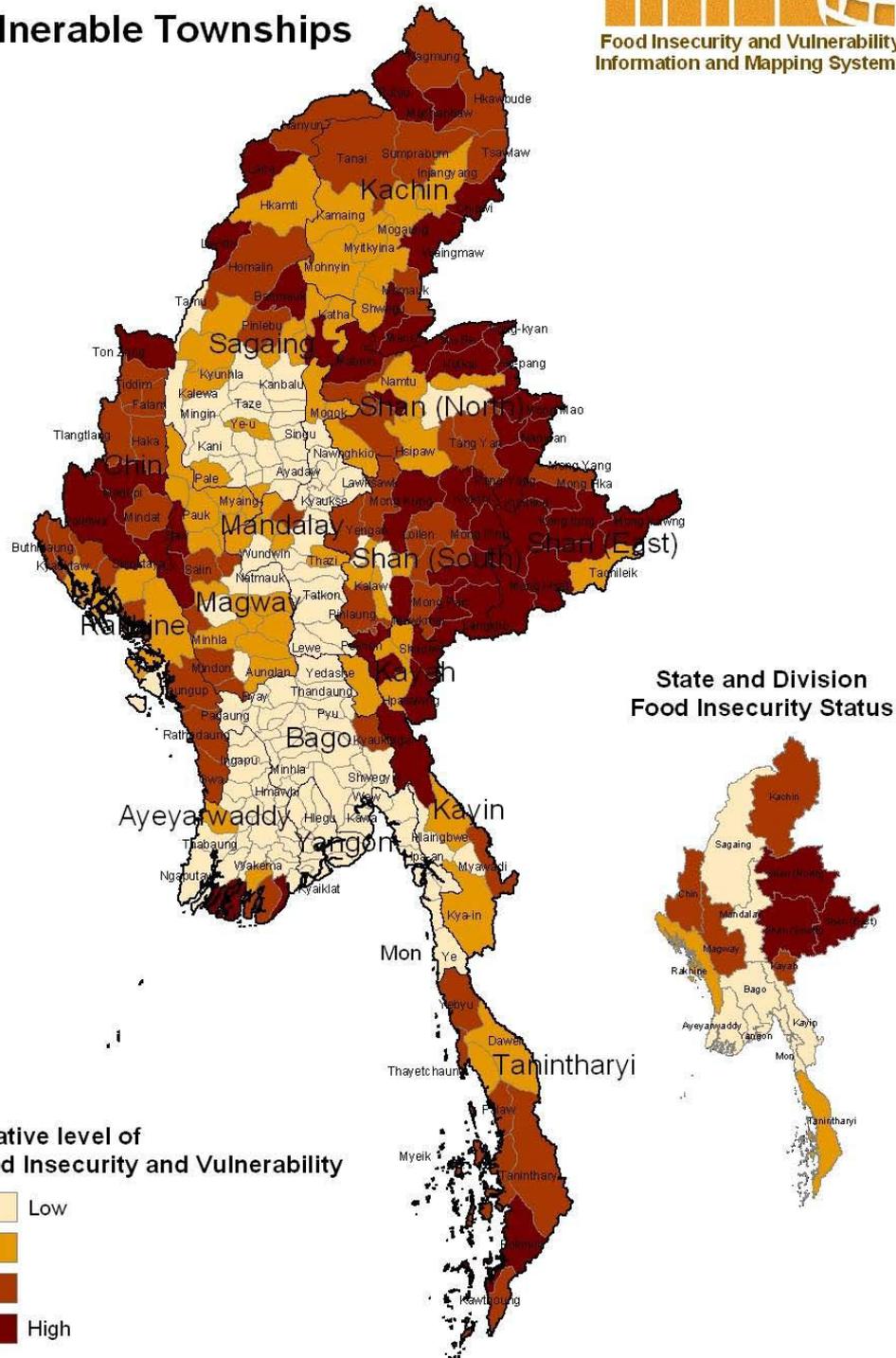
- From 21st August to 9th November 2006 (81 days)

Union of Myanmar

Vulnerable Townships



Food Insecurity and Vulnerability Information and Mapping Systems



August 2002

ANNEX 2 – OVERALL ITINERARY

19th August 2006 - 12th November 2006

20.08.2006	Arrival in Bangkok (Santacroce and De Silva)
20-24.08.2006	Bangkok (Briefing)
24.08.2006	flying to Yangon
24-27.08.2006	Yangon (Aye Aye Taw included in the mission team)
27.08.2006	transfer to Nay Pyi Taw by car (with Nandi and Minamiguchi)
27-29.08.2006	first mission to Nay Pyi Taw
29.08.2006	Flying back to Yangon
29.08-18.09.2006	Yangon
18.09.2006	Flying to Nay Pyi Taw (only Santacroce and Aye Aye Taw) (De Silva in Yangon)
18-21.09.2006	second mission to Nay Pyi Taw
21.09.2006	Flying back to Yangon
21.09-08.10.2006	Yangon
08.10.2006	Flying to Mandalay and by car to Maymeo (due to fly cancellation to Lashio) (with Fedele and Minamiguchi)
09.10-18.10.2006	Field assessment Special Region 1, 2 and 4 (Shan State) by car (see annex 3 for detailed itinerary) (with Fedele and Minamiguchi)

18.10.2006	arrival in Kiang Tong (Special region 4)
19.10.2006	Flying to Mandalay (De Silva, Fedele and Minamiguchi to Yangon)
19-23.10.2006	Field assessment Dry Zone (only Santacroce and Aye Aye Taw) by car
23.10-07.11.2006	Yangon (only Santacroce and De Silva)
07.11-11.11.2006	Bangkok (debriefing)
10.11.2006	De Silva leaving Bangkok
11.11.2006	Santacroce leaving Bangkok

ANNEX 3 – DETAILED ITINERARY AND MAIN ACTIVITIES

Field assessment Shan State Special Region 1, 2 and 4

Oct 08, 2006	Left Yangon for Lashio on Air Bagan flight W9 743 but due to bad weather flight was cancelled in Mandalay. Hired a vehicle to Maymeo and stayed overnight at Royal Park View Hotel.
Oct 09, 2006	Left 6.00 am from Maymeo to Lashio in UNODC and WFP vehicles, rerouted on the way due to heavy floods and landslides and reached Lashio at 2.30 pm. Met Mr. Sai Lone of UNODC. Discussion on route planning and enumerator briefing was held at WFP office in Lashio and night halt was at Ya Htaik Hotel in Lashio.
Oct 10, 2006	Left for Laukkai at 6.00 am from Lashio and arrived in Laukkai around 12.00 noon. Visited Nyan Kwan village in the afternoon, interviewed village teacher and one household and returned for overnight stay at Yin Feng International Hotel in Laukkai.
Oct 11, 2006	Left for Chin Su Zai village at 5.00 am and reached the village at 10.45. Very difficult road conditions due to heavy rain. Interviewed two school teachers who are BA graduates from Magway Division. Completed one village checklist and one household questionnaire. Returned to Yin Feng International Hotel in Laukkai for overnight stay.
Oct 12, 2006	A meeting was held with District Secretary of Mong Maw at his residence at 9.00 am to seek permission to visit villages. Although he agreed the district police chief refused permission for us. Changed the itinerary and decided to proceed to Pang Kham Visited WFP office and UNODC office in Pang Kham. Had a meeting with Foreign Minister of Wa Authority and dinner was hosted by the Minister at May Zin Hotel and night halt was also at May Zin hotel in Pang Kham.
Oct 13, 2006	Left for Mai Hai village at 6.00 am from the hotel. Reached the village at 9.30 and completed the village checklist and one household questionnaire. On the way back, a visit was made to Nam Pa De village where one village checklist and household questionnaire were completed. Returned to May Zin Hotel for night halt.
Oct 14, 2006	Pang Kham
Oct 15, 2006	Visit to Yong Kong Wa where one village checklist and household questionnaire were completed. Night halt at May Zin Hotel.
Oct 16, 2006	Left for Mong Pawk at 6.00 am and reached the UNODC compound by 9.00 a.m. A meeting was held with the district Wa authorities at the Wa administrative

	office. Visited Nuan Mu village located near Mong Ka. This visit was accompanied by Vice Chairman of the district Wa authority with 4 armed security personnel. One checklist and one questionnaire were completed. Dinner was hosted by Wa district authorities. Night halt was at UNODC Guest House.
Oct 17, 2006	Left 7.30 to reach Khu Law village of Wa ethnic group. Checklist and questionnaire were completed. Also visited a relocated village of Nam No New after lunch at UNODC restaurant. Completed a village checklist and a questionnaire. Night halt was at UNODC Guest House at Mong Pawk.
Oct 18, 2006	Visited Tea Plantation and Nursery at Ke Ke Lar on route from Mong Pawk to Kiang Tong. Lunch at Mong La and visited a village in Region 4 and arrived in Kiang Tong UNODC office at 5.00 pm. Night Halt was at Kiang Tong New Hotel.
Oct 19, 2006	Visited few important places in Kiang Tong in the morning including the market to understand the situation. Return from Kiang Tong to Yangon by Air Bagan via Heho, Mandalay. Night Halt was at Nadi Myanmar Hotel. Dr. De Silva, Mr. Minamiguchi and Mr Fedele continue to Yangon

Summary provided by Aye Aye Taw

ANNEX 4 – VISITED VILLAGES

Field assessment Shan State Special Regions (SP) 1, 2 and 4 and Dry Zone

Shan State Visited Villages					
	date	Village name	Village Tract	Township	Region
1	10.10.2006	Nyan Kwan	Manglaw	Laukkai	Kokang SR1
2	11.10.2006	Chin Zu Sai	Tarhwehtar	Konkyan	Kokang SR1
3	14.10.2006	MawHai	Deng Aw	Pang Kham	WA SR2 SR2
4	14.10.2007	Nam Pa De	Nar Lo	Pang Kham	WA SR2 SR2
5	15.10.2006	Ta Lar	Sa Lu	Naung Khit	WA SR2 SR2
6	15.10.2007	Yong Kon Wa	Wein Kaung	Naung Khit	WA SR2 SR2
7	16.10.2006	Nuang Mu	Mong Kar	Wadp/ Mong Kar	WA SR2 SR2
8	17.10.2007	Nam No New	Nam Eu	Wadp/ Mong Pawk	WA SR2 SR2
9	17.10.2006	Khu Law	Mong Pawk	Wadp/ Mong Pawk	WA SR2 SR2
	18.10.2006	name not available			Special Region4

Dry Zone Visited Villages				
	date	Village name	Township	Division
10	20.10.2006	Ye Twet	Pathneingyi	Mandalay
11	20.10.2006	Yan Kin Taung	Pathneingyi	Mandalay
12	20.10.2006	Yone Pin Kan	Sagaing	Sagaing
13	21.10.2006	Byin	Pakokku	Magway
14	22.10.2006	Kan Ywa Lay	Magway	Magway
15	23.10.2006	Si Pin Thar ?	Magway	Magway
	23.10.2006	Titut San Pya	Pyay	Bago (Wet)

ANNEX 5 – LIST of PERSONS MET and INSTITUTIONS VISITED

24th August ,2006 (THURSDAY)

11.00 am

- Mr. Tang Zhengping (FAOR), FAOR Myanmar
- Mr. Saw Ler Wah, Assistant, FAOR
- Mr. Maung Muang Yi, PLO
- Dr. Aye Aye Thaw, National Consultant(Nutritionist)

02:00 pm

Introduction to UN agencies and NGO in Myanmar

- Mr. Bhim Udas, WFP Country Head at WFP/UN
- Mr. Hakan Tongul, Deputy Country Director, WFP, Myanmar
- UN Thematic Group on Food Security and UNASIA
- Mr. Stefano Fedele, Consultant (WFP, Myanmar)

04.00 pm

UNODC

- Chief Mr. Shariq Bin Raza
- Mr. Renard Ronald

25th August ,2006 (FRIDAY)

- Mr. Umesh Ghimire, Vulnerabilty Advisor, Vulnerability Unit, UNDP, Myanmar.
- Daw Nyunt Nyunt Win ,Data Coordinator, UNDP, Myanmar
- Mr.Lawson Sein Tun, Consultant, Vulnerability Project, UNDP, Myanmar

11:00 pm

Capacity Building Initiative (CBI)

- Dr. U Tin Htun Win ,Representative from ACF
- Daw Lwin Lwin Aung, Deputy Coordinator, GRET,
- Mr.Jan Vidlee, representative from World Concern(Myanmar)
- Mr. R. Gust Frenga, German Agro Action (GAA)
- Representative form Meltesa,
- Representative form ADRA
- Representative form Swiss AID
- Debbie Aung Din, Country Director, IDE/M
- U Hla Tun, Manager, IDE/M
- Phyo Wai Kyaw, Information Officer, CBI (Capacity Building Initiative)

2.00 pm

Fisheries Ministry DG and Officials

- U Nyi Nyi Lwin, Advisor, Ministry of Live Stock and Fisheries
- U Khin Ko Lay, Deputy Director General, Department of Fisheries. MoLSF
- U Khin Maun Soe, Deputy Director, Department of Fisheries. MoLSF
- Dr. Than Daing, Deputy Director General, Livestock Breeding and Veterinary Dep, MoLSF.
- Dr. Ohn Kyaw, Livestock Breeding and Veterinary Department, MoLSF.
- Dr. Zaw Myint, Deputy General Manager, Livestock Foodstuff and Milk Products Enterprise

4: 00 pm

- U Tin Htut Oo, Director General, Department of Agriculture Planning (DAP), MoAI
- U Oh Than, Managing Director, Myanmar Agricultural Service(MAS), MpAI
- U Win Myat, Assistant Director, Minister's Office, MoAI
- U Win Tun Ni, Deputy Director General, Settlements and Land Records Department (SLRD), Chairman, National Technical Team for FIVIMS Mission
- U Myint Swe, Director, (SLRD), MoAI.
- U Saw Hlaing, Deputy Director, Deputy Director (SLRD), MoAI. Secretary of National Technical Team for FIVIMS Mission

26th August, 2006 Saturday. (9:00am to 6:00pm)

Field Visit to Shrimp and Inland Fisheries Farm,

- Counterpart, U Aye Maung Sein, Deputy Director

27th August, 2006 Sunday

Departure for Na Pi Taw, Night Halt in Na Pi Taw (Myat Taw Win Hotel)

28th August, 2006. Monday

- Meeting with Agriculture Development and Planning
 - U Myint Swe, Deputy Director, DAP, MoAI.
 - U Hla Kyaw, Director DAP, MoAI
 - U Saw Hlaing, Deputy Director, SLRD, MoAI
- Central Statistical Organization, Ministry of National Planning and Economic Development
 - U Thein Tun, Deputy Director General, CSO, MoNPED
 - U Ngwe Thein, Director, CSO, MoNPED
 - U Thaug Hlaing, Director, CSO, MoNPED
 - Daw Khin Thant Zin, Deputy Director, CSO, MoNPED

- Daw Marlar Aung, Deputy Director, CSO, MoNPED

29th August, 2006. Monday

- Meeting with Agriculture Development and Planning
 - Dr. Tin Win Maung, Director General, Department of Health, MoH
 - Dr. San Shwe Win (Public Health), Deputy Director General, Department of Health, MoH
 - Dr. Myint Myint Zin, Deputy Director(Nutrition) Department of Health, MoH
 - U Aung Kyaing, Director General, Department of Health Planning, MoH

30th August, 2006, Tuesday

- U Aung Myint, Consultant, Union of Myanmar Federation of Chambers of Commerce & Industry (UMFCCI)
- U Myint Aung, Union of Myanmar Federation of Chambers of Commerce & Industry (UMFCCI)
- Dr. Myo Aung, Myanmar Rice and Paddy Traders' Association
- U Zaw Min Aung, Vice president , UMFCCI, Vice-Chairman, Myanmar Industries Association
- U Tun Aung, Executive Director, Myanmar Nyunt Co. LTD

18 th September, 2006

- U Tin Htut Oo, Director General, DAP, MoAI
- U Thein Tun, Deputy Director General, CSO, MoNPED
- U Thaung Hlaing, Director, CSO, MoNPED
- Daw Marlar Aung, Deputy Director, CSO, MoNPED

19th September, 2006 (10:00 – 14:00 hrs.)

- Dr. Thein Thein Htay Director(Public Health) ,DOH, MoH.
- Dr. Myint Myint Zin, Deputy Director (Nutrition), DOH, MoH.
- Dr.Kyawt San Lwin, . Deputy Director (Research), Dept.Health Planning, MoH
- Dr. Swe Swe Hlaing, Medical Officer (Nutrition) DOH, MoH.
- Dr. May Khin Than, Medical Officer (Nutrition) DOH, MoH.

19th September, 2006 (14:00 – 16:00 hrs.)

- U Bo Win, Director General, Dept. of Education Planning, MoEdu.
- Daw Mu Mu Aung, Dept. of Education Planning, MoEdu.

20th September, 2006 (14:00 – 16:00 hrs.)

- U Hla Kyaw, Director, (DAP) Department of Agricultural Planning, MoAI
- U Soe Win Maung, Assistant Director, (DAP) Department of Agricultural Planning
- Dr. Tin Htut, Assistant Director, Department of Agricultural Research, MoAI
- Other Officials from DAP, MoAI.
- Daw Khin May Aung, Dept. of Population., Ministry of Immigration and Population at Yangon Office, met by National Consultant.

SHAN STATE

(Special Region 1, Special Region 2, Special Region 4)

Lashio WFP

- Daw Ohnmar Khaing, Agronomist, WFP, Lashio.
- Ma Thazin Aung, Field enumerator, WFP, Lashio.
- Ko Tun Tun, Field enumerator, WFP, Lashio.

Lauk Kai Township WFP

- Ms. Mai Yue, Head of Kokang Office

Mong Maw

Mr. Trevor Gibson, **UNODC**

- Mr xxxxxxxx, Deputy Foreign Minister. Wa Authority
- Mr Xiao Ming Laing, Vice-Chairman of the Wa District Authority
- Mr. Bao You Qiang., Secretary of Wa District Authority

Pam Kham Township WFP

- Mr. Liu Dageng, Head of Sub Office
- Mr xxxxxxx., Foreign Minister, Wa Authority

Mong Pawk

- Dr. Thant Zin, UNODC Office

Kyaing Tone

- Staff of UNODC Office

DRY ZONE

- Officials from Myanmar Agricultural Service of Mandalay, Patheingyi Township, Sagaing Township, Pokokku Township, Magway Township and Pyay Township.
- Farmers from above Townships
- Villagers and mothers of under five year old children of above mentioned townships
- MR.OKAMURA IKUO, Project Director, OISCA- Myanmar
- MR.TSUTOMU YOSHIDA, Technical ADVISOR, OISCA- Myanmar
- Mr. FUJII KEISUKE, OISCA- Myanmar

List compiled by Aye Aye Taw

ANNEX 6 – Member of National Technical Team

1. U Win Tun Ni, Deputy Director General, SLRD.
2. U Hla Kyaw, Director, DAP (Department of Agriculture Planning)
3. U Than Aye, General Manager Planning), Myanmar Agriculture service
4. Daw Malar Aung, Dy. Director, CSO.
5. Dr. Ohn Kyaw, Dy. Director, Livestock Breeding and Veterinary Dept
6. U Khin MAung Soe, Dy. Director, Fishery Department.
7. Dr. Myint Oo, Assistant Director, Forestry Department.
8. Dr. Myint Myint Zin, Dy. Director, Nutrition, Ministry of Health
9. U Aung Kyi, Assistant Director, DAP.
10. U Saw Hlaing, Dy. Director, Settlement and Land Record Department
11. U Soe Win Maung, Assistant Director, DAP.

ANNEX 7 – Informal meeting with the FIVIMS National Technical Team

Informal meeting held in Yangon on November 6th with the FIVIMS National Technical Team

Brief Report on Data received and collated for the FIVIMIS Assessment

Agriculture data for a detailed analysis at district level were derived from two different sources.

1. Ministry of Agriculture Census (MAC) 2003
2. SLRD (Survey and Land Records Department) crop statistics

Data from MAC 2003 were obtained in cross tabulation forms as per the following.

These data were collected from Mr. Aung Kyaw Lin, Assistant Director, SLRD, 48th Street, Mahabandoola Street, Botanaung Township, Yangon. All the tables have been provided by holding size thresholds and gender of the holder (if not specified otherwise)

a). by Marital Status
b). Area of Temporary or Annual Crops Planted (1st, 2nd and 3rd Season) (not by gender)
c). By Education
d). Number of Holdings Raising Livestock (not by gender)
e). Main Source of Income (not by gender)
f) by Age Group
g) by Purpose of Agricultural Production

The time series data on crops were obtained from Mr. Myint Thien through the secretary of the technical committee Mr. Saw Hlaing for the period from 2000/01 to 2004/05. The files are received in text delimited format or MS Excel format. In addition, information on how the crop cutting surveys were conducted to estimate average yield was provided by the Secretary of the National Technical Committee at SLRD.

The list of the crops for which sown extent, harvested extension, production and yield information was obtained is given below:

List of Crops (irrigated and non -irrigated together) by District from 2000/01 up to 2004/05

- | |
|---|
| <ol style="list-style-type: none">1. Paddy (Winter and summer)2. Wheat |
|---|

3. Maize (seed)
4. Sorghum
5. Groundnut (Total seasons)
6. Sesame (Total season)
7. Sunflower
8. Oil Palm
9. Garden pea
10. Pigeon pea
11. Soya bean
12. Green gram
13. Cowpea
14. Chickpea
15. Black gram
16. Onion
17. Tea
18. Sugarcane
19. Potato (Total seasons)
20. Cotton (Total season)
21. Rubber
22. Coconut

It is understood that the data received from the MAC 2003 have been derived from 20% of the above Census data. Based on the assumption that the 20% sample is representative of the Census, these data covers only agricultural households. The information on landless people who are obviously more vulnerable is not included in these data.

In order to get information on the rural landless and the urban population, it is compulsory necessary to use either the Household Income and Expenditure Survey 2001 (involving 30000 households) or the most recent Integrated Household Living Conditions Assessment (IHLCA, involving 18900 households and already completed in its first two stages).

An official request has been submitted to the CSO, specifying that the mission does not require any data which allow the identification of individual households or any individuals and therefore, the release of these data would not breach the confidentiality of individual privacy or violate the accepted norms of data sharing. The list of the required data is attached as Appendix 01.

The mission has also done a large use of data at State/Division level either collated from different official sources or ad-hoc received from national institutions, grace to their collaboration.

A preliminary assessment on the data consistency and quality has been done and sectoral cluster analyses have been carried out. The main outcomes will be included in the draft report.

The table here below indicates the main data sources used for the preliminary assessment.

1. Household Income and Expenditure Survey 1997 and 2001
2. Multiple Indicators Cluster Survey 1997, 2000 and 2003
3. Myanmar Agricultural Statistics (1992-93 to 2004-2005)
4. Statistical Yearbook (various years up to 2004)
5. Basic information extracted from the MyaInfo CD based on DevInfo.
6. Annual report on public health statistics, 2003 and 2004.
7. Haemoglobin Survey, 2000 and 2002
8. National BMI Survey, 2004
9. Under five Mortality Survey, 2003
10. National Nutritional Survey 1997 (under 3yr undernourished children)
11. Iodized Salt consumption Survey 2001, 2003
12. Myanmar Agriculture Atlas 2001
13. DoP, Population estimation 1997, 2001, 2003 and 2004 (unpublished data)
14. MoE, Net primary enrolment and retention (unpublished data)
15. FAO, SEA Hot Spot Analysis, unpublished report
16. Advance Report on Myanmar Census of Agriculture 2003 (MCA 2003)
17. FIVIMS Mission Report 2002

Document prepared by De Silva

ANNEX 8 – Data requested and received from SLRD

(Agricultural Census – 2003)

All the tables had been requested by District, Gender and Holding Size (if not specified else way)

1. *Agricultural Holders by Age Group*
2. *Area of holding by Purpose of Agricultural Production*
3. *Agricultural Holders by Education*
4. *Agricultural Holders by Marital Status*
5. *Agricultural Holders by Main Source of Income (not yet received by gender)*
6. *Area of Temporary or Annual Crops Planted During the 1st, 2nd and 3rd Cropping Season (three separated tables, not requested by Gender)*
7. *Agricultural Holders Raising Livestock (not yet received by gender)*

Updated 29.01.2007

ANNEX 9 – FIVIMS mission - Village Checklist

FIVIMS Mission on Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar

GCP/INT/952/EC-MYA(8)

VILLAGE CHECKLIST

compiled by

on

ATTENTION: This is a checklist to facilitate information gathering, IT IS NOT A QUESTIONNAIRE !

Comments from both the key informants and the enumerators should be added as far as possible

				Comments from	
GENERAL INFORMATION			key informantsenumerators
Interviewed persons (specify institutional role)	1	2	3		
Estimated number of HHs and total population	N.of HHs	Tot. Population			
Approximate average size of households					
Is it a recent Village? If recent: when established	Y/N	Year			
During the last five years the number of HHs increased or decreased (a Few, Much...) or no changes?	Increased F/M	Decreased F/M	no changes		
ACCESSIBILITY					
Access by car during all the year (Y/N) If not: month of not accessibility	Y/N	if NOT: months			
Access to water by type (i.e. Covered well,...	type 1	type 2	type 3		
How far (minutes) by type	how far type 1	hao far type 2	how far type 3		

Main factors limiting the access to safe drinking water	factor 1	factor 2			
Distance to health centre (in minutes)	minutes	by			
When the last immunisation activity was carried out in the village ?	year	month			
Delivery is assisted by a trained person? (Y/N)	Y/N				
Main constraints for accessing to market (for selling), (specify in words)	constraint 1	constraint 2	constraint 3		
	constraint 4	constraint 5	constraint 6		
Job opportunities in the village as temporary labour	Y/N				
Job opportunities in the village as casual labour	Y/N				
Estimated % of landless HHs in the village	%				
Is the number of landless HHs increasing)(Y/N)	Y/N				
Seasonal out-migration existing ?	Y/N				
Specify non agricultural activities in the village	activity 1	activity 2	activity 3		

FOOD SECURITY					
	<4 months	4-6 months	nearly one year		
% HH food autosufficient for: (use piling)	%	%	%		
% HH that could save a part of their crops for the next year	%				
Inter-HH and community strategies during shortage of food (in words)	strategy 1	strategy 2	strategy 3		
	strategy 4	strategy 5	strategy 6		
Food-aid received per HH during last leaning period (how much, in unit) and from who	how much	from who			
	how much	from who			

PRICES AND WAGES/SALARIES					
----------------------------------	--	--	--	--	--

Market prices of RICE (low quality)	this year	unit	currency	value		
	last year	unit	currency	value		
Reason for increase/decrease or no change this year		reason 1	reason 2			
Daily earning of an agricultural labourer		currency	this year	last year		
Reason for increase/decrease or no change this year		reason 1	reason 2			

VILLAGE MAIN NEEDS					
expressed by key informant 1	need 1	need 2	need 3		
expressed by key informant 2	need 1	need 2	need 3		
expressed by key informant 3	need 1	need 2	need 3		

ANNEX 10 – FIVIMS mission - Agriculture Checklist

FIVIMS Mission on Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar

GCP/INT/952/EC-MYA(8)

VILLAGE CHECKLIST

compiled by

on

ATTENTION: This is a checklist to facilitate information gathering, IT IS NOT A QUESTIONNAIRE !

Comments from both the key informants and the enumerators should be added as far as possible

AGRICULTURE

Comments from

....key

(questions to be repeated if visiting the crop fields)

informants

....enumerators

Main crops (in order of priorities)	crop1	crop2	crop3		
	crop4	crop5	crop6		
Define crop calendar (month or half a month) during the previous year by crop in order of importance	crop1 - sowing	crop1 - flowering	crop1 - harvesting	-	
	crop2 - sowing	crop2 - flowering	crop2 - harvesting	-	
	crop3 - sowing	crop3 - flowering	crop3 - harvesting	-	
	crop4 - sowing	crop4 - flowering	crop4 - harvesting	-	
	crop5 - sowing	crop5 - flowering	crop5 - harvesting	-	
	crop6 - sowing	crop6 - flowering	crop6 - harvesting	-	

			harvesting		
--	--	--	------------	--	--

Land use practices F(requent), S(eldom), N(ever)	slash and burn F/S/N	fallow practices F/S/N	intercropping F/S/N		
	organic fertiliser F/S/N	inorganic fertiliser F/S/N			

Problems limiting crop performances (Y/N)	climate Y/N	land accessibility Y/N	lack of labour Y/N		
	lack of resources Y/N	no technical assistance Y/N	other specify		

Autoassessment of crop performances during the last two agricultural years Good, Normal, Low, Failure)	current monsoon	last summer	last winter		
	previous monsoon write : G/N/L/F	previous summer	previous winter		

When was the last crop failure (year) and reasons	year	reason 1	reason 2		
--	------	----------	----------	--	--

What people do in case of shortage of food (coping strategies) in words and order of priority	coping 1	coping 2	coping 3		
	coping 4	coping 5	coping 6		

If during food shortages some wild food is collected, specify the type	Y/N	if Yes specify	if Yes specify (2)		
---	-----	----------------	--------------------	--	--

		(1)			
Are there problems in accessing wild food ?	Y/N				
Cropping systems were changed during the last years?	Y/N				
If YES: What are the NEW CROPS ?	new crop 1	new crop 2	new crop 3		
If YES: Which are the ABANDONED CROPS ?	abandoned crop 1	abandoned crop 2	abandoned crop 3		
If yes: Which is the main reasons for changing? (Specify)	reason 1	reason 2	reason 3		
Are they MAINLY induced by the poppy eradication policy or the market? P(oppy) / M(arket)	P / M				
Home gardening existing Y/N for consumption/selling purposes	Y/N	if YES for hhconsumption or sales	if YES for sales		
Source of crop seeds: from...	previous year Y/N	improved seeds Y/N	hybrids Y/N		
Post-harvesting losses are important Y/N	Y/N				

ANNEX 11 – FIVIMS mission - Household Checklist

FIVIMS Mission on Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar

GCP/INT/952/EC-

MYA(8)

Village Name:

HOUSEHOLD CHECKLIST

compiled by

on

ATTENTION: This is a checklist to facilitate information gathering, IT IS NOT A QUESTIONNAIRE !

Comments from both the key informants and the enumerators should be added as far as possible

Household head	Age	Male/Female	Marital status		
If the household head is a female and she was married ask her ...	reason for the absence of the husband				
Children (dead/alive) (age, sex)	total	dead	<5 years dead	alive males	alive females
Children under 5 year old	number				
Other persons usually living in HH (relatives and not relat.)	Y/N	how many			

				Comments from	
CONSUMPTION AND INCOME			key informantsenumerators
Estimation of main annual crop production	crop1	unit	quantity		
	crop2	unit	quantity		
	crop3	unit	quantity		
	crop4	unit	quantity		

Location of the crop fields and parcelisation (Near/Far from the house), acreage, number of parcels	N/F	acrage	# of parcels		
Existence of remittances (NOT, Occasional, Regular)	N/O/R				
Food-aid received per HH during the last year (how much, in unit) and from whom	how much	from whom			
	how much	from whom			
Existence of home gardening: (NOT, mainly for Consumption, for Selling)	N/C/S				
Self_assessment of food self-sufficiency in terms of months		4-6 months	nearly one year		
	<4 months %	%	%		
Can you save a part of your crops for the next year?	Y/N				
Is some crop sold? Specify type	Y/N	crop 1	crop 2		
Ownership of large and small animals; poultry (heads) and aqua (Y/N)	large	small	poultry	acqua (Y/N)	
Small animals sold last here? Y/N, if YES: value	Y/N	currency	price		
Poultry sold last here? Y/N, if YES: value	Y/N	currency	price		
How often visit a market outside the village: Less than weekly, Weekly, Monthly)	L/W/M				
Items bought outside the village	item 1	item 2	item 3		
	item 4	item 5	item 6		
Self-assess if the current situation is better or worse than the previous year one (Better/No Change/ Worse)	B/N/W				
Main Reasons for Worsening or Improving (specify)	reason 1	reason 2	reason 3		
Ask what they intend to do if the situation will worse (specific coping mechanisms)	coping 1	coping 2	coping 3		

Ask what they intend to do if the situation will improve (specify intention)	intention 1	intention 2	intention 3		
---	-------------	-------------	-------------	--	--

NUTRITION					
Quantity of cereals (by type) eaten yesterday by the household	cereal 1	unit	quantity		
	cereal 2	unit	quantity		
	cereal 3	unit	quantity		
Before yesterday the same) (Yes, Less, More)	Y/L/M				
Specify if the current food consumption is Normal (as compared with the yearly average) consumption), Lower or Higher)	N/L/H				
Specify if they are collecting wild food in this moment: Yes/No - If Yes: since how many months	Y/N	if Yes: months			
Last consumption of meat or fish	less 1 week	less 1 month	less 6 months		
Last consumption of pulses	less 1 week	less 1 month	less 6 months		
Last consumption of eggs	less 1 week	less 1 month	less 6 months		
Consumption of vegetables (Regular, Seldom, Never)	R/S/N				
Consumption of fruits (Regular, Seldom, Never)	R/S/N				
Consumption of oil (specify kind, quantity used during the last month)	kind of oil	unit	quantity		
Verify if presently at home Y/N	Y/N				

Are other kind of fat used? Y/N, if Yes:specifiy	Y/N	if yes: kind 1	if yes: kind 2		
Consumption of salt (specifiy type, verify if iodized, ad if presently at home)	type	iodised: Y/N	at home now? Y/N		

HEALTH AND HYGIENE					
Breast-feeding (usual duration, on course)	months	on course Y/N			
When the weaning begins (in which month) and with what	at which months	with what 1	with what 2		
Awareness of nutritional concepts (role of different type of food, how to improve the food intake through complementation practices)	Y/N				
Habit of boiling drinking water	Y/N				

EDUCATION					
Father/mother educational level (how many years of schooling)	Father (years)	Mother (years)			
How many children in primary school age (5-9) and attending school by gender	boys school age	boys attending			
	girls school age	girls attending			
Ask if they go to primary school regularly (if not specify why)	boys)Y/N)	if Not: Why ?			
	girls (Y/N)	if Not: Why?			

FIXED ASSETS AND HOUSING CONDITIONS

Type of roof (Corrugated, Wood, Straw) and type of floor (Wood, Soil, Other) (observe !)	roof: C/W/S	floor: W/S/O			
Type of latrine (Inside, Outside, Not existing) (observe !)	I/O/N				
Are livestock and/or poultry inside the house? (observe !)	Y/N				
Water storage on covered containers verifies!	Y/N				
Fixed assets related to income (observed during the interview) specify	item 1	item 2	item 3		
Possession (average) of shoes (by HH' members)	father	mother	children		
Possession (average) of clothes (by HH' members)	father	mother	children		

CONFIDENTIAL QUESTIONS

Use of family planning (any method to prevent or delay pregnancy)	Y/N				
Being indebted	Y/N				
Getting loans from relatives or neighbours (in kind or cash)	Y/N				
Habits of saving money	Y/N				

ADDITIONAL ISSUES

Expectation from the government and the NGOs/international agencies	expectation 1	expectation 2	expectation 3		
Local nutritional taboos related to local traditions, beliefs and any religious constraints	Y/N	taboo 2	taboo 3		
Observe the use of natural remedies and/or recourse to traditional healer	remedy 1	remedy 2	remedy 3		

FIVIMS Mission on Identification and Assessment of the Poor, Food Insecure and Vulnerable in the Union of Myanmar
GCP/INT/952/EC-MYA(8)

MEASUREMENT SHEET

Date		Village name										pg.		
<u>Mother</u>		(name)												
Household s.n.	Education level			Comments							SEX Breastfed Age (years) Age (months) MUAC Height Weight Clothes Y/N Shoes Y/N WASTING (W/H) < 2 SD Bitof's spots Dermatitis Signature of the facilitator	Write Y or N in any box. All the boxes should be filled!		
	WEIGHT kg/hg	HEIGHT cm	AGE	Pregnant Y/N	Since how many months	Infant < 1 year Y/N	Normal duration of breastfeeding	Visible goitre Y/N	Anemia Y/N	Other comments				
	<u>Father</u> (name)			< 16	16 - 17	17 - 18.5	18.5 - 25	25 - 30	> 30	Y/N				
	Education level			Other information on household								B/G	Cm mm	cm
												1		

ANNEX 13 – Nutrient requirement table MOH

Nutrient Requirement / person / day

Age(yrs)	body weight	KCal	Protein(G)	Calcium(G)	Iron	Vitamin A	B1	B2	Niacin	Vit C
Child	kgm				mgm	microgm	mgm	mgm	mgm	mgm
<1	7.3	850	19	0.5	10	300	0.3	0.5	5.4	20
1 -3yrs	12.50	1260	25	0.4	10	250	0.5	0.7	8.3	20
4-6yrs	18.4	1670	31	0.4	10	300	0.6	0.9	11	20
7-9yrs	25.00	1800	37	0.4	10	400	0.7	1	11.8	20
Young Male										
10_12	33.6	2400	45	0.6	10	575	1	1.3	15.8	20
13_15	48.8	2500	58	0.6	18	725	1	1.4	16.5	30
16_19	61.9	3000	62	0.5	9	750	1.2	1.8	19.8	30
Young Female										
10_12	35.5	2200	45	0.6	10	575	0.9	1.3	14.5	20
13_15	50	2600	53	0.6	24	725	1	1.4	17.2	30
16_19	56.4	2500	51	0.5	28	750	1	1.4	16.5	30
Male (moderate activity)										
Adult	60	2800	57	0.4	9	750	0.1	1.5	18.5	30
Female (moderate activity)										

Adult	50	2000	43	0.4	28	750	0.8	1.1	13.2	30
Pregnant		2350	58	1	28	750	0.9	1.3	15.5	30
Lactating mother		2550	63	1	28	1200	1	1.5	16.7	30
source: National Nutrition Centre, Department of Health, MoH										

ANNEX 14 – WFP Community Questionnaire

WFP - Food Security Assessment,
Northern Shan State – Kokang Special Region 1 and Wa Special Region 2
 (17th and 24th September, 2006)

COMMUNITY (Village) QUESTIONNAIRE

Community Food Security Profiling ____/____ 2006
(Key Informants Questionnaire)

Preferred Key Informants (at least one woman):	M	F	Township:	
Village head			Village Tract:	
Teacher			Village:	
Midwife			100 Number of households in this village	
Shop keeper			101 Number of people living in this village	

"The purpose of the survey is to assess a general food security condition of this community. There is no direct benefit to you in participating to this assessment. However, we hope that the information collected will benefit your area by helping us understand what people need. Do you have any questions regarding this assessment?"

Comments by Group Leader:

102	<p><i>(Do not read this question).</i></p> <p><i>Ask what other accesses lead to this community and note the type of main access.</i></p>	<p>1 = Tarmac road 2 = dirt track motor-able (normal car)</p> <p>3 = track motor-able (4x4 car only) 4 = track non motor-able</p> <p>5 = water 6 = Other (Specify) _____</p> _
------------	--	---	--------

103	Is there a functioning primary school in this village?	0 = No 1 = Yes (skip to 105)	_
104	If there is no primary school, how far is the nearest?	<i>(Total time there and back if less than 1 hour, write 0 and if unknown write 999)</i> Walking Hours.....	_ _I
105	Is there a functioning middle school in this village?	0 = No 1 = Yes (skip to 107) _
106	If there is no functioning middle school, how far is the nearest?	<i>(Total time there and back if less than 1 hour, write 0 and if unknown write 999)</i> Walking Hours.....	_ _I
107	Is there a permanent health facility (define) in this village?	0 = No 1 = Yes (skip to 109) _
108	If there is no health facility, how far is the nearest?	<i>(Total time there and back if less than 1 hour, write 0 and if unknown write 999)</i> Walking Hours.....	. _ _I

109	Is there a daily food market in this village?	0 = No 1 = Yes (skip to 112) _
110	Is there a periodic food market in this village?	0 = No 1 = Yes (skip to 112) _
111	If there is no market, how far is the nearest market?	<i>(Total time there and back if less than 1 hour, write 0 and if unknown write 999)</i> Walking Hours..... _

<i>Conversion of weights should be done after the end of interview</i>		Kyat-Yuan / (unit)	Kyat-Yuan / 1kg	Major reason for change (if known)
112	What is the price of low quality rice now?	/	_____ / 1Kg	
113	What is the price of low quality rice last year this season?	/	_____ / 1Kg	
114	How much does an agricultural laborer earn in a day now?			
115	How much did an agricultural laborer earned per day, last year this season?			

	<i>(use proportional piling)</i> What proportion of households in this community, at present, has to take the following actions because they do not have enough food?	(A) Proportion who do	(B) Proportion who do not
201	Rely on less preferred and less expensive foods?		
202	Rely on food gift from a friend, relative or food aid?		
203	Purchase food on credit or borrow money to buy food?		
204	Gather wild food, hunt, or harvest immature crops?		
205	Ration the money they have to buy or prepare food?		
206	Limit portion size at mealtimes?		
207	Reduce number of meals eaten in a day?		
208	Skip entire days without eating?		

300	Is the population of this village increased or decreased in the last 3 years?	1 = Increased 2 = Decreased 3 = No change	... _
Main reason why, if known:			
301	Is life in this village better or worse than 3 years ago?	1 = Better 2 = Worse 3 = No change	... _
Main reason why, if known:			

ANNEX 15 – WFP Household Questionnaire

WFP - Food Security Assessment,
Northern Shan State – Kokang Special Region 1 and Wa Special Region 2
(17th and 24th September, 2006)

HOUSEHOLD QUESTIONNAIRE

Household Food Security Profiling

Township: _____ **V.T. :** _____ **Village:** _____ **Questionnaire No.** _____ **Ethnicity** _____

Surveyor's nameSignature..... (/
/2006)

Group Leader's name (GL)Signature..... (/
/2006)

Comments (if any) by Surveyor or by GL:

--

(Preferably conduct the interview with the most senior female member of the household)

My name is... and I work for... I would like to ask you to participate in a private interview with only the members of your household present and if you agree to participate, please answer all the questions truthfully. There are no wrong answers to the questions that will be asked. We will keep your responses confidential and there will be no way to identify you. Only researchers involved in this study will view the discussion notes. There is no direct benefit to you in participating to this study. However, we hope that the information collected will benefit your area by helping us to better understand what people need. Your participation is voluntary. You may refuse to answer any question and you may choose to stop the discussion at any time. Refusing to participate will not affect you or your family in any way. Do you have any questions for us? You may ask questions

about this interview at any time.

May I begin the interview now? Yes I__I No I__I

You are answering questions on behalf of the whole household. When we talk about “household” we mean only those of you that sleep under the same roof (or in the same compound) and take meals together at least 4 days a week. If a member is currently away from the household for 4 days or more per week, they should not be counted even if they are contributing to the household in different ways.

100	Who is the head of this household? <i>(please note if it is a male or female)</i>	1 = Male 2 = Female	__
101	How many members does your household have right now?		I I I
102	How many children under 5 years of age live in your household?		I I I
103	Does any members of your household have a long term illness, requiring medical assistance or medications for more than two months or is permanently disabled? How many?		I__I

<i>(A) First make a list of all sources of income (including cash and in-kind) and use proportional piling to establish ranking and percentage of contribution to total HH income in the last 30 days for all activities, then write down the main three in order of importance.</i>			(B) Code	(C) % of contribution to total HH income
104	Primary source of income.	1 = Farming / agriculture 2 = Casual Labour 3 = Livestock breeding 4 = Wood / bamboo cutting 5 = Small trade 6 = Artisan 7 = Fishing/hunting 8 = Remittance 9 = Salary Job 10 = Other.....2 = Wages	__	__ __
105	Secondary source of income.	1 = Farming / agriculture 2 = Casual Labour 3 = Livestock breeding 4 = Wood / bamboo cutting 5 = Small trade 6 = Artisan 7 = Fishing/hunting 8 = Remittance 9 = Salary Job 10 = Other.....	__	__ __
106	Tertiary source of income.	1 = Farming / agriculture 2 = Casual Labour 3 = Livestock breeding 4 = Wood / bamboo cutting 5 = Small trade 6 = Artisan 7 = Fishing/hunting 8 = Remittance 9 = Salary Job 10 = Other.....	__	__ __

107	Did you have access to agricultural land?	0 = No (skip to 111) 1=Yes	__
108	How big is this land?	1 = a small garden for household's consumption 2 = smaller than 1 acre or 6 Mu	__

		2 = 1 to 3 acres or 6 to 18 Mu 3 = more than 3 acres or 18Mu	
109	Does the land have access to some irrigation system?	0 = No 1=Yes	<input type="checkbox"/>
110	Where do you get your drinking water from?	1 = Piped 2 = borehole with pump 3 = Protected well or source 4 = Unprotected sources (river, pond....) 5 = Other(specify)	<input type="checkbox"/>

200	In the last 30 days where has most of the rice consumed in this household come from?	1 = Own production 3 = Borrow, credit or advance 5 = Exchange work for food 7 = Food aid	2 = Purchase 4 = Exchange items for food 6 = Gift from family or friends 8 = Other source:	<input type="checkbox"/>
-----	--	---	---	--------------------------

In answering each of the following questions, please respond according to your situation in the past 30 days.			
201	In the last 30 days has your household benefited from WFP's Food for Education program? <i>(provide example)</i>	0 = No 1=Yes	<input type="checkbox"/>
202	In the last 30 days has your household benefited from WFP's Food for Work program? <i>(provide example)</i>	0 = No 1=Yes	<input type="checkbox"/>
203	In the last 30 days has your household benefited from WFP's Food for Training program? <i>(provide example)</i>	0 = No 1=Yes	<input type="checkbox"/>
204	In the last 30 days has your household benefited from WFP's Vulnerable Group Feeding program? <i>(provide example)</i>	0 = No 1=Yes	<input type="checkbox"/>
205	In the last 30 days has your household benefited from WFP's Mother and Child Nutrition program? <i>(provide example)</i>	0 = No 1=Yes	<input type="checkbox"/>
206	In the last 30 days has your household benefited from any other food aid programs? <i>(provide example)</i>	0 = No 1=Yes	<input type="checkbox"/>

In answering each of the following questions, please respond according to your situation in the past 30 days.			
300	Did you worry that your household would not have enough food in the last 30 days?	0 = No (skip to 302) 1=Yes	<input type="checkbox"/>
301	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="checkbox"/>
302	Were you or any household member not able to eat some preferred foods like high quality rice or meat, because you did not have enough money or you were not able to grow or	0 = No (skip to 304) 1=Yes	<input type="checkbox"/>

	trade for these foods?		
303	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>
304	Did you or any household member eat just a few type of food like only rice and greens because you did not have enough money or you were not able to grow or trade for other preferred foods?	0 = No (skip to 306) 1 = Yes	<input type="text"/>
305	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>
306	Did you or any household member eat any vegetables or other food that people would not normally want to eat because there was not enough food?	0 = No (skip to 308) 1 = Yes	<input type="text"/>
307	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>
308	Did you or any household member eat less in any main meals, than you felt you needed, because there was not enough food?	0 = No (skip to 310) 1 = Yes	<input type="text"/>
309	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>
310	Did you or any other household member eat fewer meals in a day, because there was not enough food?	0 = No (skip to 312) 1 = Yes	<input type="text"/>
311	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>
312	Was there ever any day when no food at all was available in your household and there was no way of getting more by buying or from the garden or field or from storage?	0 = No (skip to 314) 1 = Yes	<input type="text"/>
313	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>
314	Did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to 316) 1 = Yes	<input type="text"/>

315	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>
316	Did you or any household member go a whole day without eating anything because there was not enough food?	0 = No (skip to 401) 1 = Yes	<input type="text"/>
317	How many times did this happen in the last 30 days?	1 = once or twice 2 = three to ten times 3 = more than ten times	<input type="text"/>

In answering each of the following questions, please respond according to your situation in the past 30 days.			
400	Did your household have to purchase food on credit or borrow money to buy food in the last 30 days?	0 = No (skip to 402) 1=Yes	<input type="text"/>
401	How often did this happen in the last 30 days?	1 = Once or twice 2 = 3 to 10 times 3 = more than 10 times	<input type="text"/>
402	Were you not able to send your children to school because they needed to work at home or outside or you did not have enough money?	0 = No (skip to 404) 1 = Yes	<input type="text"/>
403	How often did this happen in the last 30 days?	1 = Once or twice 2 = 3 to 10 times 3 = more than 10 times	<input type="text"/>
404	Had to get an advance for next harvest or labor because you had no money at all?	0 = No (skip to 406) 1 = Yes	<input type="text"/>
405	How often did this happen in the last 30 days?	1 = Once 2 = twice 3 = three or more times	<input type="text"/>
406	Has a household member been working and spending the night away from the village because there was not enough money available locally?	0 = No 3 = Yes	<input type="text"/>
407	How often did this happen in the last 30 days?	1 = Once or twice 2 = 3 to 10 times 3 = more than 10 times	<input type="text"/>

500	Are there any children aged between 2 and 5 in this household?	0 = No (end questionnaire) 1=Yes	<input type="text"/>
-----	--	-------------------------------------	----------------------

<i>(Ask these questions only relating to children between the age of 2 and 5)</i>			
With regards to the children between the age of 2 and 5 did they consume the following foods yesterday ?			
501	Cereals, Roots, Tubers	Rice, Wheat, Maize, Potatoes, Taro...	0 = No <input type="text"/>

			1 = Yes	
502	<i>Vitamin A rich vegetables and fruits</i>	Any pumpkin, carrots, sweet potatoes, carrots, ripe mangoes or papaya or other fruit and vegetables that are bright yellow or orange inside?	0 = No 1 = Yes	<input type="checkbox"/>
503	<i>Other Fruit or Vegetables</i>	Any other fruit or vegetables?	0 = No 1 = Yes	<input type="checkbox"/>
504	<i>Meat / poultry / Fish / Seafood</i>	Beef, Goat, Chicken, Duck, fish, shrimps...	0 = No 1 = Yes	<input type="checkbox"/>
505	<i>Eggs</i>	Eggs	0 = No 1 = Yes	<input type="checkbox"/>
506	<i>Milk and milk product</i>	Milk, butter, yoghurt	0 = No 1 = Yes	<input type="checkbox"/>
507	<i>Pulses /Legumes /Nuts /seeds</i>	Grams, beans, lentil, cashew, Groundnuts, seeds	0 = No 1 = Yes	<input type="checkbox"/>
508	<i>Oils and Fats</i>	Foods cooked in Oil or fat	0 = No 1 = Yes	<input type="checkbox"/>

ANNEX 16 – Conversion Factors

CONVERSION FACTORS (used by MoAI, Myanmar)			
ITEMS	MYANMAR MEASUREMNT	ENGLISH wt in lbs	equivalent to Kg
Paddy	1 basket	46	20.884
Maize (seed)	1 basket	55	24.97
Sorghum	1 basket	62	28.148
Green Gram	1 basket	72	32.688
Paenut	1 basket	25 (with pod)	
Sesame	1 basket	54	24.516
Sunflower	1 basket	32	14.528
Wheat	1 basket	72	32.688
Black Gram	1 basket	72	32.688
Chick Pea	1 basket	69	31.326
Millet	2 basket	62	28.148
Niger (Panhnan)	3 basket	55	24.97
Mustard (seeds)	4 basket	57.6	26.1504
Cow Pea	5 basket	72	32.688
Soy Bean	6 basket	72	32.688
Pigeon Pea	7 basket	72	32.688
Rice Pea	8 basket	72	32.688
Garden Pea	9 basket	72	32.688
Lentia	10 basket	72	32.688
others bean	11 basket	72	32.688
Butter Bean	12 basket	69	31.326
Sultani	13 basket	69	31.326
Sultapya	14 basket	69	31.326
Duffin Bean	15 basket	69	31.326
Lablab Bean	16 basket	69	31.326
Lima Bean	17 basket	69	31.326
		1 lb = 0.454 kg	0.454
Paddy to rice milling loss= 45-60% 80 basket of paddy= 1 metric ton of rice			

ANNEX 17 – Livestock Unit, Conversion Factors

LIVESTOCK UNIT

Conversion factors

	Cattle	Buffalo	Sheep	Goats	Pigs	Horses	Camels	Chickens	Ducks Turkeys Geese	Rabbits
North Africa	0.70	0.70	0.10	0.10	0.20	0.8	1.1	0.01	0.03	0.02
Sub Saharan Africa	0.50	0.50	0.10	0.10	0.20	0.8	1.1	0.01	0.03	0.02
South Africa	0.70	0.70	0.10	0.10	0.20	0.8	1.1	0.01	0.03	0.02
North America	1.00	1.00	0.15	0.10	0.25	0.8	1.1	0.01	0.03	0.02
Central America	0.70	0.70	0.10	0.10	0.25	0.8	1.1	0.01	0.03	0.02
South America	0.70	0.70	0.10	0.10	0.25	0.8	1.1	0.01	0.03	0.02
Asia	0.50	0.50	0.10	0.10	0.25	0.8	1.1	0.01	0.03	0.02
Eastern Europe	0.70	0.70	0.10	0.10	0.25	0.8	1.1	0.01	0.03	0.02
Oceania Developing	0.50	0.50	0.10	0.10	0.25	0.8	1.1	0.01	0.03	0.02
USSR	0.60	0.60	0.10	0.10	0.25	0.8	1.1	0.01	0.03	0.02
OECD	0.90	0.90	0.10	0.10	0.25	0.8	1.1	0.01	0.03	0.02

Source: FAO, Compendium of agriculture, 2003 (Annex 2, Definitions)

“The livestock unit is a standardised animal unit obtained by multiplying total number of animals with a conversion factor that takes into account “feed requirement” for the animal”.

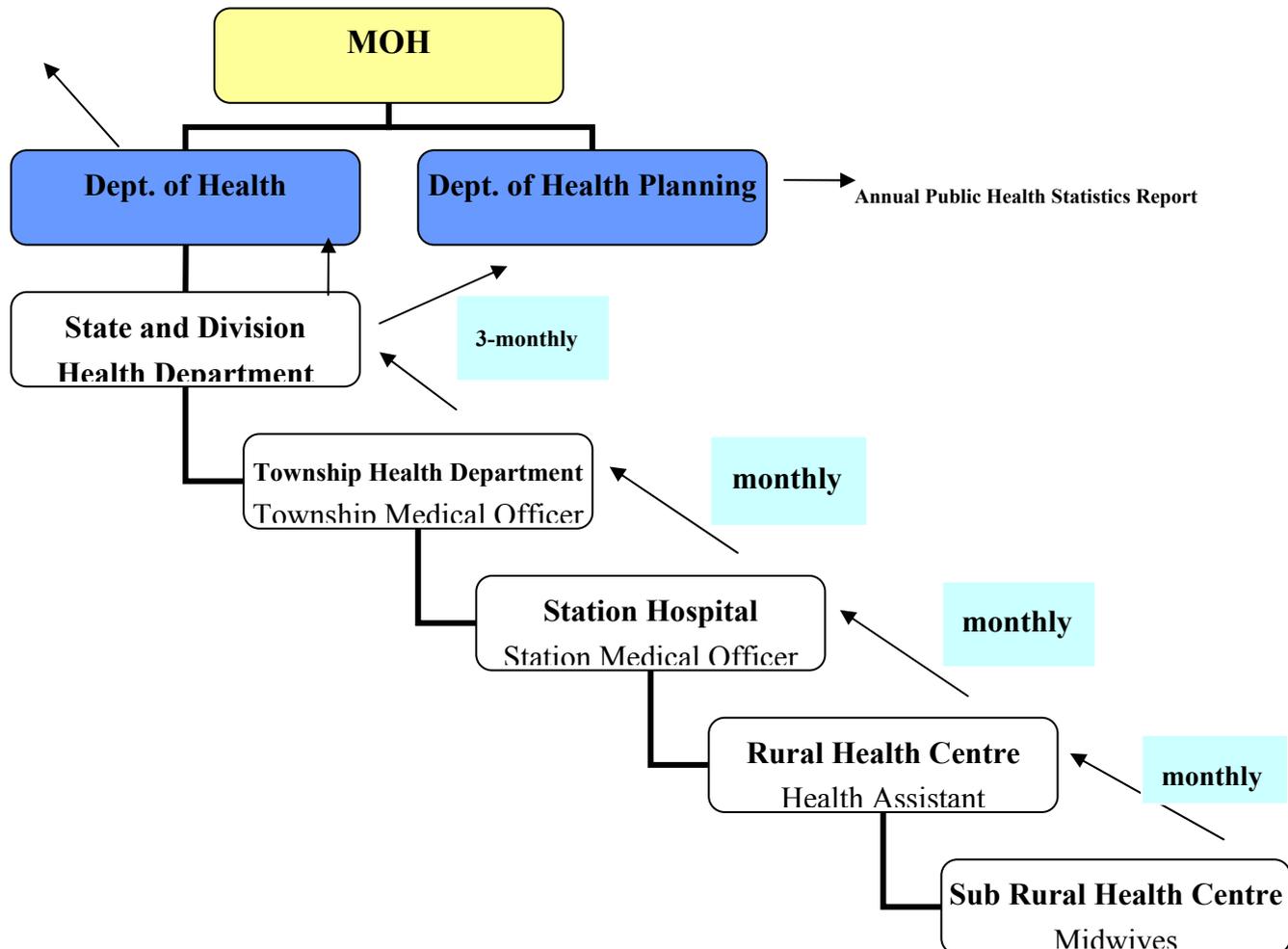
ANNEX 18 – Routine Health Activities Data Flow

Nutritional care activity: Growth monitoring and promotion (GM/P) for children below three years of age.

Nutrition surveillance area: Area where each midwife or AMW registers around one hundred children below three years of age to monitor growth regularly (Every month for children below one year old; every three months for children between 1 year and 3 years old)

The surveillance area may either be the resident village of the midwife (or) some villages within her jurisdiction. In urban areas it should be a part or whole of a selected ward or wards, depending upon the population size. It is better to choose the resident village of the midwife for proper implementation of the activity

Organizational Set Up



For the vital stats data midwives (**MW**) have to note down all the births and death of all age in the vital register form (Pwa Thay form (1) and Pwa Thay form (2) in Myanmar language.

These forms and all health activities (e.g. Nut, Immunization, ANcare, Delivery) implemented by MWs should be reported to **RHC**.

At RHC, the Health Assistant (**HA**) compiles the reports of all MWs under his/her administration with the help of Lady Health Visitor (**LHV**). The compiled report is sent to the Township Medical Officer (**TMO**) every month.

All the reports from RHCs (normally 4-7 RHCs under one township, when compiled by the Township Medical Officer, are sent to the State and Division Health Department and to the **HMIS section of Department of Health Planning**.

compiled by Aye Aye Taw

ANNEX 19 – Plant Dictionary

PLANT DICTIONARY

(seasonal and perennial crops observed by the mission)

Plant dictionary for Northern Shan Mission (10th -17th October, 2006)

collected by Ohnmar

English name	Myanmar	Kokkant	Wa	Shan	Lahu	Palong
						-
Upland Rice (Paddy)	Yar sapa	Shang Di Gu	Kau hai	Kau hai	Hae	-
Lowland Rice (Paddy)	Lae sapa	Gu Zhi	Kau nar	Kau nar	Tonye	-
Maize (Corn)	Pyang	Bao Gu	Kau kab	Kau kab	Sha ma	-
Wheat	Jone	Xiao mai	Ma ku	Ma ku	Za	Kau jan
Cassava	Pi law pi nam	Bai Zhu	Mang chak	Mang chak	Sout mu	-
Sugarcane	Kyan	Gang Zi	Oit	Oit	Tou te	-
Peanut/groundnut	Myae pae	Hua Sheng	Tune dae	Tune dae	Tune dae	-
Sesame	Namg	Zhi Ma	Nga	Nga	ngu shi	-
Niger	Pannam	Qiao Mai	Kwa su	-	Japan nyo	-
Pigeon pea	Paesaengwn	Si Ji Dou	Tout mae	Tout mae	Kao sana	-
Soybean	Paepout	Huang Dou	Tout	Tout	Nau khe	-
Sweet pea	Sartawpae	Wang Dou	Tou kham	Tou kham	Nar shae	Eat plume
Long bean	Pae taunt shae	Chang dou	Tou myan kyi	Tou myan kyi	Ei kya ka nae	-
Onion	Kywt thon ni	La swan	Phat me lion	Hae moe lian	Shu phu nyi	-
Garlic	Kywt thon phyu	La Suan	Phat me khan	Hae moe khan	Hae me phuk	-
Ginger	Gine	Jiang	Khin	Khin		-
Cabbage	Gawphitout	Bao Cai	Phat kha pee	Phat kha pee	Wor kya tit	-
Mustard	Mongnyan	Qing Cai	Phat kha	Phat kha	Wou kya	-
Radish	Monglaruphyu	Luo Bo	Phat phu	Phat phu	Wou mar phae	-
Chilli	Ngayoutthi	La Zhi	Ma phat	Ma phat		-
Pumpkin	Shwe pha young thi	Ming Gua	Ma pak	Ma pak	Phue mae shae	-
Carrot	Monglaruni	Hong Luo Bo	-	-	Woh nor nyi	-
Cucumber	Thakwa	Huang Gua	Tian	Tian	Ar phae shae	Tian
Stone pumpkin	Kuauk pha yong thi	Dong Gua	Ma pak moh	Ma pak moh	-	-
Tomato	Khayanchin thi	Swang Que	-	-	Kau shi nyi	-

Papaya	Thinbawthi	Ma Shang Paw	Ma cha pha	Ma cha pha	Phushi	Ka tar
Banana	Ngat pyau thi	Par Kyauk	Kwe	Kwe	Ar par shi	Kwe
Jack fruit	Pane nae thi	Niu Du Zhi Guo	Pane nae thi	Pane nae thi	Mar lar shi	Malk lam
Guava	Marlarkarhi	Be Guo	Maca	Maca	Mau khu shi	Pyin ma kai
Pear	Thit taw thi	Li Zhi (wild type)	Mar ko kab	Mar ko kab	Ar phu kyi shi	Mamu
Mango	Mamu	Ma Mong Guo	Mar mum	Mar mum	Marmushi	-
Hibiscus	Chin paung	-	Pak sum pa	Pak sum pa	-	-
Litchi	Lichi	Lizhi	Lin chi	Lin chi	Lisu shi	-
Egg plant	Kha yan thi	Que zhi	Makae	Makae	Ma kwa	-
Chyote	Gaw ya kha thi	Yang Gua	Gaw jone	Gaw jone	Kalama nue	-
Tarrot	Paneoo	Yu tou	Hoe phyt	Hoe phyt	Paechi	-
Orange	Lane maw thi	Jue Zhi	Mang chuk	Mang chuk	Makyu	-
Cauliflower	Pane pwint	Cai Hua	Mar kyot	Mar kyot	Wor kya vit	-
Water green	Kang sone yeut	Kong Qing Chai	Phat kan zne	Phat kan zne	Ma nyit ta	-
Grape seed	See mone nyin	You Cai	Nam mdn	Nam mdn	Woh kya na ma	-
Pineapple	Nar nat thii	Bo Law	-	-	Ma Khi	-
Potato	Ar lu	Yam Yu	Phat ye	Phat ye	yarye	-
Chinese Cabbage	Tayot gawphitout	Bao Cai	Khapee	Phat kh kan	War kya tee	-
Celery	Tayot nan nan	Ying Shui]-	-	-	-
Bug wheat	Pane jone	Xiao Mai	Chauk	Kou chant	Gar	-

compiled by Ohmar Khaing

ANNEX 20 – Myanmar Census for Agriculture 2003

MYANMAR CENSUS FOR AGRICULTURE 2003 AREAS EXCLUDED FOR ENUMERATION

Entirely excluded area from enumeration

SR No.	State/ Division	District	Township	Ward	Village Tract
1	01 KACHIN	02 MYITKYINA	Injyangyang		8
2	03 KAYIN	06 HPA-AN	Hpapun		33
3		07 MYAWADDY	Myawaddy		15
4		08 KAWKAREIK	Kyain-seikgyi		52
5	05 SAGAING	12 HKAMTI	Layshi		22
6			Lahe		35
7			Nanyun		68
8	07 BAGO(E)	22 TAUNGOO	Kyaukkyi		33
9	13 YANGON	44 YANGON(EAST)	Yankin	15	
10			Botahtaung	10	
11			Pazundaung	10	
12			Mingalartaungnyunt	20	
13			Tamwe	20	
14			Thaketa	19	
15			Dawbon	14	
16			North Okkalapa	19	
17			South Okkalapa	13	
18			Thingankyun	39	
19		45 YANGON(WEST)	Mayangone	10	
20			Kamaryut	10	
21			Hlaing	16	
22			Kyeemyindain	21	
23			Sanchaung	18	
24			Ahlonge	11	
25			Lanmadaw	12	
26			Latha	10	

27			Pabedan	11	
28			Kyauktada	9	
29			Bahan	22	
30			Dagon	5	
31			Seikkan	3	
32		46 YANGON(SOUTH)	Seik Gyi Kha Naung Do	9	
33			Dala	23	
34			Cocokyun	2	
35	15 SHAN(NORTH)	50 LASHIO	Man-hpan		43
36			Pangyan		31
37			Namphan		34
38			Pangwaun		19
39			Mongmao		40
40		54 LAUK KAING	Konkyan		25
41			Laukkaing		37
			Total	371	495

Partially excluded area from enumeration

SR No.	State/ Division	District	Township	PARTIALLY EXCLUDED AREAS
1	01 KACHIN	01 BHAMO	Momauk	19 v t
2			Mansi	19 vt
3		02 MYITKYINA	Waingmaw	7 vt
4			Hpakan	8 vt
5			Tanai	5 vt
6			Chipwi	25 vt
7			Tsawlaw	21 vt
8		03 PUTA-O	Machanbaw	4 vt
9			Kawnglanghpu	16 vt
10			Nogmung	8 vt
11			Sumprabum	16 vt
12	02 KAYAH	04 LOIKAW	Loikaw	5 vt
13			Demoso	9 vt
14			Hpruso	14 vt
15			Shadaw	4 vt
16		05 BAWLAKHE	Hpasawng	5 vt
17			Bawlakhe	7 vt
18			Mese	3 vt
19	03 KAYIN	06 HPA-AN	Hpa-an	6 vt
20			Hlaingbwe	51 vt
21			Thandaung	53 vt
22		08 KAWKAREIK	Kawkareik	40 vt
23	05 SAGAING	12 HKAMTI	Hkamti	13vt
24	06 TANINTHARYI	19 DAWEI	Dawei	10 vt
25			Thayetchaung	13 vt
26			Yebyu	7 vt
27		20 MYEIK	Myeik	3 vt
28	06 TANINTHARYI	20 MYEIK	Tanintharyi	4 vt
29		21 KAWTHOUNG	Kawthoung	1 vt
30			Bokpyin	2 vt
31	07 BAGO(E)	22 TAUNGOO	Taungoo	1 vt
32			Tantabin	13vt

33	07 BAGO(E)	23 BAGO	Shwegyin	13vt
34	10 MANDALAY	36 YAMETHIN	Pyinmana	9vt
35	11 MON	38 MAWLAMYINE	Ye	15vt
36		39 THATON	Thaton	9vt
37			Kyaikto	4vt
38			Bilin	19vt
39	12 RAKHINE	40 SITTWE	Minbya	1vt
40	12 RAKHINE	41 MAUNGDAW	Buthidaung	4vt
41	14 SHAN(SOUTH)	48 TAUNGGYI	Taunggyi	1vt
42			Hopong	16 vt
43			Nyaungshwe	7 vt
44			Hsihseng	2 vt
45			Lawksawk	3vt
46			Pinlaung	1 vt
47			Pekon	3 vt
48		49 LOILEN	Loilen	18 vt
49			Lai-hka	14 vt
50			Nansang	7 vt
51			Kunhing	13 vt
52			Mongnai	10 vt
53			Langkhe	5 vt
54			Mawkmai	6 vt
55			Mongpan	6 vt
56			Kye-Thi	31 vt
57			Mong Kaung	21 vt
58			Mong Hsu	9 vt
59	15 SHAN(NORTH)	50 LASHIO	Mong Yai	2vt
60		51 MUSE	Kutkai	1vt
61		52 KYAUKME	Hsipaw	39vt
62	16 SHAN(EAST)	55 KENG TUNG	Keng Tung	28 vt
63			Mongyang	15 vt
64			Mong Khet	13 vt
65		56 MONGHSAT	Monghsat	21 vt
66			Mongton	11 vt
67			Mongping	16 vt
68		57 MONG HPAYAK	Mongyawng	16 vt
69			Mong Hpayak	14 vt

70		58 TACHILEIK	Tachileik	4 vt
			TOTAL	839 vt

ANNEX 21 – Geo Code used

GEO CODES used by the mission

S.N.	DIS_CODE	MAP ID	Name
1	101	101	MYITKYINA DISTRICT
3	102	102	BHAMO DISTRICT
4	103	103	PUTAO DISTRICT
5	201	201	LOIKAW DISTRICT
6	202	202	BAWLAKHE DISTRICT
7	301	301	HPA AN DISTRICT
9	303	303	KAWKAREIK DISTRICT
10	401	401	FALAM DISTRICT
11	402	402	MINDAT DISTRICT
12	501	501	SAGAING DISTRICT
13	502	502	SHWEBO DISTRICT
14	503	503	MONYWA DISTRICT
15	504	504	KATHA DISTRICT
16	505	505	KALE DISTRICT
17	506	506	TAMU DISTRICT
18	507	507	MAWLAIK DISTRICT
19	508	508	HKAMTI DISTRICT
20	601	601	DAWEI DISTRICT
21	602	602	MYEIK DISTRICT
22	603	603	KAWTHOUNG DISTRICT
23	701	701	BAGO DISTRICT
24	702	702	TAUNGOO DISTRICT
25	801	801	PYAY DISTRICT
26	802	802	THARYARWADY DISTRICT
27	901	901	MAGAWAY DISTRICT
28	902	902	MINBU DISTRICT
29	903	903	THAYET DISTRICT
30	904	904	PAKOKKU DISTRICT
31	905	905	GANGAW DISTRICT
32	1001	1001	MANDALAY DISTRICT
33	1002	1002	PYIN_OO_LWIN DISTRICT
34	1003	1003	KYAUKSE DISTRICT

35	1004	1004	MYINGYAN DISTRICT
36	1005	1005	NYAUNG-U DISTRICT
37	1006	1006	YAMETHIN DISTRICT
38	1007	1007	MEIKTILA DISTRICT
39	1101	1101	MAWLAMYINE DISTRICT
40	1102	1102	THATON DISTRICT
41	1201	1201	SITTWE DISTRICT
42	1202	1202	MAUNGBAW DISTRICT
43	1203	1203	KYAUKPYU DISTRICT
44	1204	1204	THANDWE DISTRICT
45	1301	1301	YANGON(NORTH) DISTRICT
46	1302	1302	YANGON(EAST) DISTRICT
47	1303	1303	YANGON(SOUTH) DISTRICT
49	1401	1401	TAUNGGYI DISTRICT
50	1402	1402	LOILEM DISTRICT
52	1501	1501	LASHIO DISTRICT
53	1502	1502	MUSE DISTRICT
54	1503	1503	KYAUKME DISTRICT
55	1504	1504	KUNLONG DISTRICT
58	1601	1601	KENGTUNG DISTRICT
59	1602	1602	MONGHSAT DISTRICT
60	1603	1603	TACHILEIK DISTRICT
61	1604	1604	MONGHPYAK DISTRICT
62	1701	1701	PATHEIN DISTRICT
63	1702	1702	HINTHADA DISTRICT
64	1703	1703	MYAUNGMYA DISTRICT
65	1704	1704	MAUBIN DISTRICT
66	1705	1705	PYAPON DISTRICT

S.N.	DIS_CODE	MAP ID	Name
data not existing in MAC2003			
8	302	302	MYAWADI DISTRICT
48	1304	1304	WEST DISTRICT
56	1505	1505	LAWWKAING DISTRICT
polygons not existing in maps (shp or bna)			
2	104	101.5	MOGNYIN DISTRICT
51	1403	1402.5	LINKHE DISTRICT
57	1506	1505.5	WA REGION

ANNEX 22 – Excerpts from WFP Nutritional Survey 2005

EXCERPTS from:

“Nutrition Survey in WFP Project Areas in Magway, Lashio, Kokang and Wa”,
WFP, April-June 2005

(with technical support from National Nutrition Centre, Ministry of Health).

ACCESS TO FOOD

Rice Storage

MAGWAY

Average days per year of rice storage	29 days
Percent of households that can not store at all	38%
Percent of households that can store 1-20 days/yr	40%
Percent of household that can store more than 6 months per year	11%

KOKANG

Average days per year of rice storage	63 days
Percent of households that can not store at all	29%
Percent of households that can store 1-20 days/yr	7%
Percent of household that can store more than 6 months per year	12%

WA

Average days per year of rice storage	200 days
Percent of households that can not store at all	3%
Percent of household that can store more than 6 months per year	47%

N.B. The percentage of households that can store 1-20 days/yr is omitted in the report (FIVIMS comment)

BELOW FIVE YEARS

Table 33. The Prevalence of Malnutrition in Children aged less than 60 months by gender - Magway

Anthropometric Indicator	Boys		Girls		Total		
	Percent <- 2Z {95% CI*}	No. Boys	Percent <- 2Z {95% CI*}	No. Girls	Percent <- 2Z {95% CI*}	Total Number	Design Effect
<i>Underweight</i> (Low Weight for Age)	40 31.2 48.8	180	39.8 31.2 48.4	216	39.9 32.6 47.2	396	2.2
<i>Stunting</i> (Low Height for Age)	39.0 32.1 45.8	172	34.9 28.4 41.4	212	36.7 30.8 42.6	384	1.5
<i>Wasting</i> (Low Weight for Height)	11.6 7.3 16.0	172	13.7 9.2 18.3	211	12.8 9.5 16.1	383	1

* Confidence Interval

Table 35. The Prevalence of Malnutrition in Children aged less than 60 months by gender in Kokang

Anthropometric Indicator	Boys		Girls		Total		
	Percent <- 2Z {95% CI*}	No. Boys	Percent <- 2Z {95% CI*}	No. Girls	Percent <- 2Z {95% CI*}	Total Number	Design Effect
<i>Underweight</i> (Low Weight for Age)	46.3 36.8 55.8	218	38.4 30.6 46.2	918	42.5 35.6 49.5	416	2
<i>Stunting</i> (Low Height for Age)	59.5 49.6 69.5	210	64.4 54.5 74.3	191	61.8 53.2 70.5	401	2.3
<i>Wasting</i> (Low Weight for Height)	6.6 2.2 11.0	212	4.7 1.7 7.7	191	5.7 2.6 8.8	403	1.8

* Confidence Interval

Table 36 The Prevalence of Malnutrition in Children aged less than 60 months by gender in Wa

Anthropometric Indicator	Boys		Girls		Total		
	Percent <- 2Z {95% CI*}	Number Boys	Percent <- 2Z {95% CI*}	Number Girls	Percent <- 2Z {95% CI*}	Total Number	Design Effect
<i>Underweight</i> (Low Weight for Age)	37.6 30.5 44.7	226	42.1 37.8 46.4	202	39.7 34.9 44.6	428	1
<i>Stunting</i> (Low Height for Age)	59.5 54.8 64.1	222	55.8 51.4 60.1	199	57.7 54.5 60.9	421	0.5
<i>Wasting</i> (Low Weight for Height)	6.8 2.7 10.8	222	8.0 4.2 11.8	200	7.3 4.2 10.5	422	1.6

* Confidence Interval

NUTRITIONAL STATUS OF PRIMARY SCHOOL AGE CHILDREN (6-11 YEAR AGE GROUP)

MAGWAY

Table 37. The Prevalence of Malnutrition in Primary School Age Children

Anthropometric Indicator	Boys		Girls		Total		
	Percent <-2Z {95% CI*}	Number examined Boys	Percent <-2Z {95% CI*}	Number examined Girls	Percent <-2Z {95% CI*}	Total Number examined	Design Effect
<i>Underweight</i> (Low Weight for Age)	55.6 68.5 42.6	81	40.4 48.3 40.4	94	47.4 56 38.8	175	1.4
<i>Stunting</i> (Low Height for Age)	46.3 58.6 33.9	80	33.3 45.4 21.3	90	39.4 48.3 30.5	170	1.5
<i>Wasting</i> (Low Weight for Height)	22.5 30.5 14.5	80	13.8 22.8 4.9	65	18.6 26.5 10.7	145	1.5

* Confidence Interval

KOKANG

Table 41. The Prevalence of Malnutrition in Primary School Age Children - Kokang

Anthropometric Indicator	Boys		Girls		Total		
	Percent <- 2Z {95% CI*}	Number Boys	Percent <- 2Z {95% CI*}	Number Girls	Percent <- 2Z {95% CI*}	Total No.	Design Effect
<i>Underweight</i> (Low Weight for Age)	67.2 60.7 73.6	160	49.4 39.3 59.4	129	57.4 50.8 64.1	289	1.3
<i>Stunting</i> (Low Height for Age)	84.7 79.4 90.1	159	73.0 65.1 81.0	113	78.7 74.0 83.4	272	1.0
<i>Wasting</i> (Low Weight for Height)	7.6 2.9 12.4	131	4.5 0.1 8.9	110	6.2 2.7 9.7	241	1.3

* Confidence Interval

Table 43. The Prevalence of Malnutrition in Primary School Age Children – Wa area

Anthropometric Indicator	Boys		Girls		Total		
	Percent <- 2Z {95% CI*}	Number Boys	Percent <- 2Z {95% CI*}	Number Girls	Percent <- 2Z {95% CI*}	Total Number	Design Effect
<i>Underweight</i> (Low Weight for Age)	29.8 20.3 39.3	131	17.3 12.1 22.4	162	22.9 17.0 28.8	293	1.5
<i>Stunting</i> (Low Height for Age)	55.8 44.6 67.1	129	42.5 34.6 50.4	160	48.4 40.3 56.5	289	2
<i>Wasting</i> (Low Weight for Height)	0.8	127	0.7	139	0.8	266	1

* Confidence Interval

BMI - WOMEN REPRODUCTIVE AGE

BMI by age group - Magway

Age Group	Thinness Prevalence% BMI<18.5
15-20 years	41
21-25 years	41
26-30 years	34.9
31-35 years	30.7
36-40 years	27.7
41-49 years	25.6

	Frequency	Percent
<i>Underweight</i>	118	33.6 40.7 26.5*
Total	351	100.0
Mean BMI	19.7	

* 95% Confident Interval

BMI by age group - Lashio

BMI by age group - Kokang

Age Group	Thinness Prevalence% BMI<18.5
15-20 years	26.8
21-25 years	7.5
26-30 years	10.5
31-35 years	7.8
36-40 years	14.3
41-49 years	7.3

	Frequency	Percent
<i>Underweight</i>	32	12 7.7 16.5
Total	265	100
Mean BMI	21.3	

* 95% Confident Interval

BMI by age group – Wa

Age Group	Thinness Prevalence% BMI<18.5
15-20 years	5.7
21-25 years	5.7
26-30 years	7.1
31-35 years	6.8
36-40 years	6.7
41-49 years	4.8

	Frequency	Percent
<i>Underweight</i>	18	6.4
Total	283	100
Mean BMI	21.7	

* 95% Confident Interval

Food Availability from Local Agriculture and Livestock

Magway

Food Item	Yield Annual Metric Ton	Yield g/person*/day	Requirement** g/person/day	Yield % of requirement
Rice	464.97	30.75	400	7.69
Rice, other cereals, tubers	743.89	49.2	400	12.3
Pulses	597.63	39.53	60	65.88
Various meats	58	3.84	10	38.37

* Estimated total population in sampled villages 41424

** Adequate Full Rations, Food and Nutrition Needs in Emergency (UNHCR, UNICEF, WFP, WHO), Food and Nutrition hand Book, World Food Programme

Kokang

Food Item	Yield Annual Metric Ton	Yield g/person*/day	Requirement** g/person/day	Yield % of requirement
Rice	310	85	400	21%
Rice, other cereals, tubers	1589	331	400	82%
Pulses	10	2	60	3%
Various meats (Livestock)	25	5.2	10	52%

* Estimated total population in sampled villages 13136

** Adequate Full Rations, Food and Nutrition Needs in Emergency (UNHCR, UNICEF, WFP, WHO), Food and Nutrition hand Book, World Food Programme

Wa

Food Item	Yield Annual Metric Ton	Yield g/person*/day	Requirement** g/person/day	Yield % of requirement
Rice	785	286	400	71%
Rice, other cereals, tubers	1054	384	400	95%
Pulses	32	11.6	60	19%
Various meats (Livestock)	13	4.6	10	46%

* Estimated total population in sample villages 7530

** Adequate Full Rations, Food and Nutrition Needs in Emergency (UNHCR, UNICEF, WFP, WHO), Food and Nutrition hand Book, World Food Programme

Market Price of Food

MAGWAY

Food Item	Market Price Kyats	Average Daily Wage per person, Kyats	Food Cost as % of average wage
Rice 400 g	60.75	442.50	16%
Rice, pulses & oil	190.78		43%

WFP report comment: "...very low level of access to food"

KOKANG

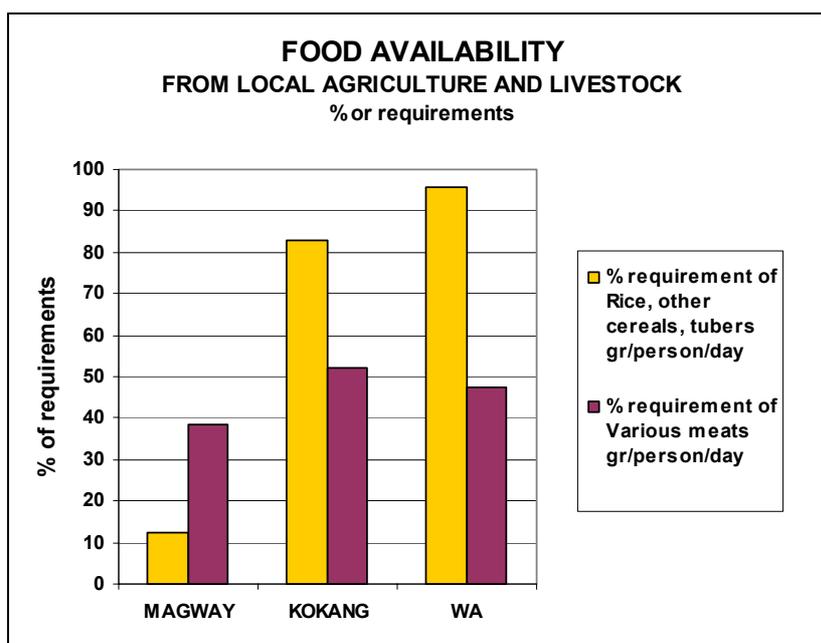
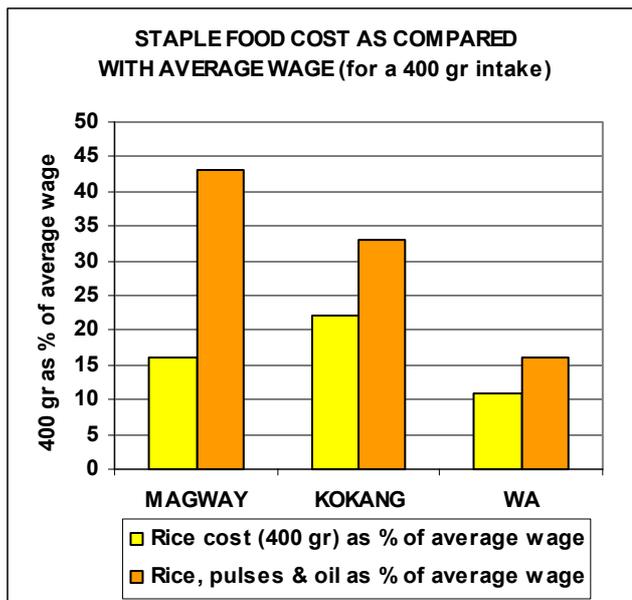
Food Item	Market Price Ywan	Average Daily Wage per person Ywan	Food Cost as % of average wage
Rice 400 g	1.25	5.64	22%
Rice, pulses & oil	1.55		33%

WFP report comment: *"Rice from WFP assistance programme may play a part in lowering the market cost of rice. Still households have low access to food at the market price in Kokang"*

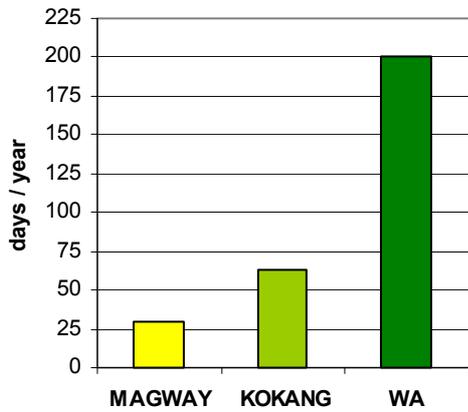
WA

Food Item	Market Price Ywan	Average Daily Wage per person Ywan	Food Cost as % of average wage
Rice 400 g	0.89	7.85	11%
Rice, pulses & oil	1.24		16%

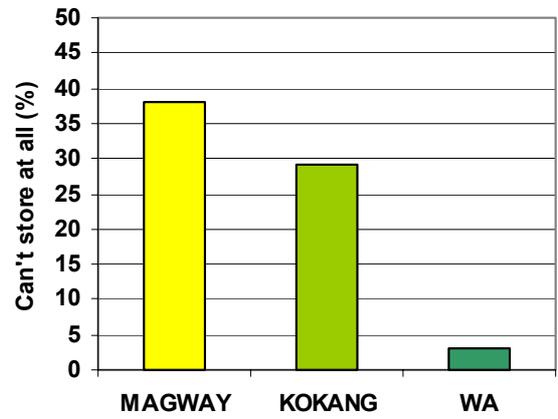
WFP report comment: *"Households have fair access to food at the market price in Wa. Rice from WFP assistance programme may play a part in lowering the market cost of rice"*



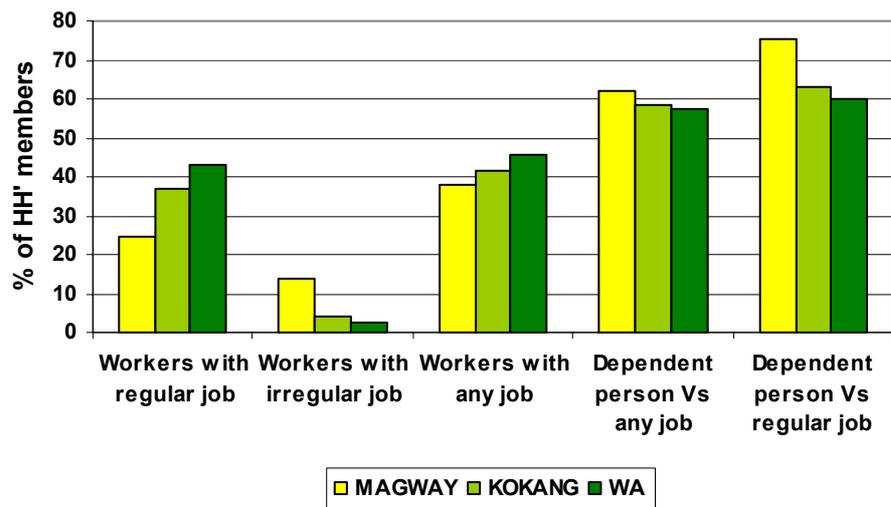
HOUSEHOLD AVERAGE NUMBER OF DAYS/YR OF RICE STORAGE



% HHs that can't store at all



HH' percentage of workers and dependency rates by type of job



ANNEX 23 – List of data sources quoted and/or utilised by the mission

CSO, Household Income and Expenditure Survey 1989, 1997 and 2001, Ministry of National Planning and Economic Development.

CSO, Livestock and Fisheries Statistics: 2002-2003, Ministry of National Planning and Economic Development.

CSO, Myanmar Agricultural Statistics: 1992-93 to 2004-2005 (2006), Ministry of National Planning and Economic Development & Department of Agricultural Planning, MAoI.

CSO, Report of the 1997 Household Income and Expenditure Survey, Yangon, Myanmar, 1999.

CSO, Statistical Yearbook: most recent years up to 2004, Ministry of National Planning and Economic Development.

CSO/UNDP, Integrated Household Living Conditions Assessment (HILCA) Survey 2004/5,

Directorate of Health Services, The Nutritive Value of Burmese Foods, Rangoon 1967.

EC, 2006 NGOs Food Security Programme in Burma Myanmar, (EuropeAid/124282/L/ACT/MM).

FANTA Project, Household Food Insecurity Access Scale (HFIAS) for Measurement for Food Access: Indicator Guide, Version 2, by Coates, J, Swindale, A and Bilonsky, P, Academy for Educational development, Washington DC, 2006.

FAO, Myanmar Agricultural Sector Review and Investment Strategy Formulating Project, phase I, Interim Report (Draft) (undated).

FAO, SEA Hotpots (provisional title), unpublished.

FAO/GOM/UNPD, Agricultural Atlas of the Union of Myanmar, by Gulliver A and Latham J, 2005.

FAO/UNDP. Report on Rural Rapid Appraisal in Bogalay, Mawlamyinegyun and Laputta Townships of Ayeyarwady Division in Myanmar, by U Kyaw Ngwe and Morris H, Yangon,

February 2003.

Glantz M H, Guidelines for Establishing Audits of Agricultural-Environmental Hotspots, FAO, Rome, 2003.

Griguolo S, “*ADDWIN*”, a software package developed for multi-factorial/ variate analysis of territorial data by Prof. S. Griguolo, Planning Department, University IUAV of Venice (Italy)

Downloadable from: http://cidoc.iuav.it/~silvio/addawin_en.html

MAS/FAO, Agriculture Development and Environmental Rehabilitation in the Dry Zone Project: MYA/93/004, Consultant Report by Karlyn Eckman, 1995

MAS/FAO, Agriculture Development and Environmental Rehabilitation in the Dry Zone Project, by Karlyn Eckman, Field Document 2. February 1995.

MoAI/Dept of Agriculture Planning, Myanmar: Country Update of FIVIMS-related Activities, by Soe Win Maung, Assistant Director, mimeo, undated.

MoAI/SRLD, Advance Report on Myanmar Census of Agriculture 2003

MoAI-SLRD and Macro International, HDI Baseline Survey Myanmar, 1996

MoH, Annual Public Health Statistics Report, 2003 and 2004

MoH/Department of Health Planning, HMIS 1999, 2003 and 2004

MoH/Department of Health Planning, Multiple Indicator Cluster Surveys (MICSs) 1995, 1997, 2000

MoH/Unicef, Overall and Cause Specific Under Five Mortality Survey 2002-03

MoL, Department of Labour/UNFPA, Handbook on Human Resources Development Indicators 2004, Yangon January 2005

NGO FSWG, Food Security in Myanmar: a review of issues, Final report, not for citation, for internal use only, Yangon, May 2004.

NNC/MoH, A Study on Haemoglobin Status and Food Practices of Myanmar Women, Yangon 2001

NNC/MoH, BMI survey 2004

UNDP, Report of the Independent Assessment Mission of the Human Development Initiative Myanmar, July 2006

UNDP/UNOPS, An Analysis of Socio-Economic Trends of Rural Myanmar, May 1998 (Draft)

UNODC, Northern Wa Region: Report on Opium Poppy Survey with Socio-Economic Findings, Supplementary report under the Illicit Crop Monitoring Project, by Milsom J D, June 2002.

UNODC, Union of Myanmar 2004 – 2007, Strategic Programme Framework, Draft report, by Lemahieu, J L., Myint, N W. and Pedersen, L, 2004.

UN/OHRLLS, Country Assessment Report

Downloadable from <http://www.un.org/special-rep/ohrlls/ldc/MTR/Myanmar.pdf>

UNDP/FAO, HDI-III, Dry Zone Farming System Study, by D Kahan, Yangon November 2001

WFP, Food Security Bulletin, Northern Shan State – Wa Special Region 2, September 2006, dated: Yangon, 23rd October 2006.

WFP, Food Security Briefing, Northern Shan State – Kokang Special Region 1, September 2006 , dated: Yangon, 16th October 2006.

WFP, Nutrition Survey in WFP Project Areas in Magway, Lashio, Kokang and Wa, April-June 2005, with technical support from National Nutrition Centre, Ministry of Health.

WHO, Promoting Household Food and Nutrition Security in Myanmar, undated.

WHO, Multicountry Study on Improving Household Food and Nutrition Security for the Vulnerable, undated.

Endnotes

¹ see in this Report: Annex 1.

² with the participation of Dr B Nandi (Senior Officer and Nutrition Officer and Lead Technical Unit Officer for GCP/INT/952/EC-MYA(8), FAORAP Bangkok) and N Minamiguchi (Vulnerability Analysis Coordinator, Asia FIVIMS Project, FAO Bangkok).

³ with the participation of Dr N Minamiguchi and Dr S Fedele (WFP International Consultant, as WFP Myanmar officially jointed the mission during the Shan Special Regions field assessment). In Kokang and Wa Special Region the mission was assisted by PhD. Ohmar Khaing (WFP National Consultant, Agronomist).

⁴ The Dry Zone assessment was not expected according to TOR, but the Government informally made clear that a clearance of 10 days (instead of the 20 originally requested by the mission) for visiting Shan State Special Regions could had been provided under the condition that another vulnerable and food insecure area (i.e. the Central Myanmar Dry Zone) should had been included in the itinerary. Accordingly, the Dry Zone assessment was carried out by the mission team Leader and the National Consultant.

⁵ The contents of the last three Statistical Yearbooks (2002,2003 and 2004) is theoretically available in an electronic version, as indicated in the first page of each printed issue. However CSO provided FIVIMS team only the last (2004) digital version, denying the availability of previous electronic versions (meeting in May Pyi Taw on 28th and 29th August 2006), and consequently, in order to carry out most of the analysis described in the following pages, the mission was obliged to a new data-entry from the published hard copies.

Only in a further stage the mission could, with a patient investigation in Yangon, identify the availability of an electronic version for the years 2002 and 2003 and by them on the private market.

⁶ see Report of the 1997 Household Income and Expenditure Survey, CSO, Yangon, Myanmar, 1999, page108

⁷ Personal communication at the occasion of a meeting with CSO high level staff, held in Nay Pyi Taw on 28th August 2006.

⁸ see SY 2004, page 431

⁹ The same 13.6% was observed in 1997

¹⁰ At the meantime the mission analysis has demonstrated how much, when speaking about food insecurity in general (and in particular in Myanmar) the definitions defining the borders between urban and rural environments and related behaviours are ambiguous.

Apparently the CSO defines as “urban” any city (or township) with more than 2,000 inhabitants

(informal communication collected in Myanmar) The ambiguity of the above definition is demonstrated by the fact that in many case urban areas of States/Divisions are more similar to rural areas of other States/Divisions.

¹¹ see for instance “2006 NGOs Food Security Programme in Burma Myanmar” (EuropeAid/124282/L/ACT/MM).

¹² The FIVIMS mission was compelled to re-compute the Union overall figures of the “monthly per capita consumption of rice” for 1997 as a macroscopic typing error is contained both in the related published tables (see “Report of the 1997 Household Income and Expenditure Survey”, CSO, Yangon, Myanmar, 1999, Table 4.13.1, page 185; and “S.Y. 2002, table 22.05 page 423) and in the CSO 2002 CD version.

¹³ The population figures have been kindly provided by the Department of Population, Ministry of Immigration and Population, Union of Myanmar

¹⁴ See: M H Glantz, Guidelines for Establishing Audits of Agricultural-Environmental Hotspots, FAO, Rome, 2003.

¹⁵ for instance: MOH/Unicef, Overall and Cause Specific Under Five Mortality Survey 2002-03; NNC/MOH, BMI survey 2004; NNC/MOH, A Study on Haemoglobin Status and Food Practices of Myanmar Women, Yangon 2001

¹⁶ quoted from the Executive Summary of MICS 1997, page 5

¹⁷ see: MICS 2000, MOH/UNICEF, page 6.

¹⁸ see MICS 2003, Foreword and Acknowledgments.

¹⁹ for details see: Annex 18, “Routine Health Activities data flow”

²⁰ the most recent outcomes have been published in: MoH, “*Annual Public Health Statistics Report*”, 2003, pages 77-81 and “*Annual Public Health Statistics Report*”, 2004, pages 103-106.

²¹ For instance “*from the area covered by health services and collected as reported by Basic Health Staff... Population Growth Rate [was] 1.34% for the year 2003. According to CSO (2002-2003) population growth rate is 2.02%*”, quoted from MoH, “*Annual Public Health Statistics Report*”, 2003, page 77.

Namely the midwives collect information only in the village where they reside.

Other worried comments: “[Infant Mortality Rate (IMR) in routine HMIS 2002 was 23.0/1000LB, while] *figure reported by CSO for 2002 was 59.77/1000 LB, which is much higher than the data from routine HMIS in 2002*” and “*according to CSO in 2002, U5MR is 77.77/1000 LB which is more than two times higher than that found in routine HMIS (2003)*” (quoted from the same source, page 79)

Finally in 2004 they wrote: “IMR from HMIS source **may be** under reporting” MoH, “*Annual Public Health Statistics Report*”, 2004, page 105.

Having note that also Maternal Mortality Rate (MMR) estimated by HMIS and CSO are rather different, the quoted report wrote: “although MMR from routine HMIS is different from other survey data, trend of MMR from routine HMIS and CSO are more or less the same. It is stationary in nature from 1998 to 2003”. It seems a meagre consolation!

²³ The decision of using “safe water” data from MICS and not from HIES is due for not introducing into the analysis an additional source, collected with different sampling criteria.

However in the next chapter (hygiene and facilities data) a clear opinion about a HIES better quality has been expressed

²⁴ In general the technical staff working on Health and Nutrition in Myanmar considers Rakhine a poor area. However the “pole position” of Rakhine, in terms of Infant Mortality Rate has been reconfirmed by MoH/HMIS 2004 (only 1.3% versus 2.4% (national average) and 3.6% (Yangon, the worst one !!).

The HMIS 2003 report don’t spend a word on these figures, that – at least for the mission – are absolutely unreliable, and simply depend from a heavy underreporting in remote areas when compared with the more accessible. The 2004 report simply identifies between the Weakness : “*Shortage of human resources, overburden of workload of BHS, Geographical and territorial situation such as remote areas, Insufficient cooperation and coordination with other sectors, Inadequate public awareness of how much importance of these data, Inefficient supervision and monitoring at various level*” and comments: “*There is much more room for improvement*”, quoted from MoH, “*Annual Public Health Statistics Report*”, 2004, page 106 and 103 respectively.

²⁵ The figures provided by CSO (HIES 2001) for Chin call for some concerns about their reliability. Chin state is the only one where in 2001 the rural population had more access to safe water than the rural one (96.52% versus 71.03% !). According to CSO/HIES the rural population increased its access to safe water from 48.67% (1997) up to the above figure (96.52%); the urban only from 47.88% to 71.03%. The mission could not receive, when in Myanmar, any explanation of this rural “extraordinary” performance.

²⁶ The number of HH surveyed by MICSs had been rather similar to the HIES one: 35,000 in 1997, 25,600 in 2000 and 27,200 in 2003, while the HIES interviewed 25,470 households in 1997 and 30,000 in 2001.

²⁷ see: <http://www.un.org/special-rep/ohrlls/lcd/MTR/Myanmar.pdf>, page 14.

²⁸ Data on enrolment and retention are collected from Township Education Departments, and from there sent to State and Division Education Departments still manually compiled. From there,

depending on the location of the States/Divisions the data are sent (still not in digital format but either by fax or telephone communications or simply mailing, to: a) either the Department of Education No 1. (for Lower Myanmar) or b) to the Department of Education No 2. (for Upper Myanmar) or c) to the Department of Education No 3. (only for Yangon division)

Lower Myanmar includes: Ayarwaddy, Bago(E+W), Kayin, Kayah, Mon, Tanintharyi, Rakhine; while Upper Myanmar includes: Mandalay, Sagaing, Magway, Chin, Kachin, Shan (E, S, N).

From the three Departments of Education the data are sent to the Department of Education Planning (Central level) where the data are processed, stored and (when possible)... released.

The MoE data reporting system can't – intrinsically - provide data at District level as the data (see previous comments) move straight from Township to the Department of Education in Upper or Lower Myanmar. It means that a data compilation at intermediate (State or Division) level doesn't exist.

²⁹ The MoE data reporting system can't – intrinsically - provide data at District level as the data (see previous comments) move straight from Township to the Department of Education in Upper or Lower Myanmar. It means that a data compilation at intermediate (State or Division) level doesn't exist.

³⁰ “*Net primary enrolment rates represent the number of primary school-aged children, that is those aged (5-9) who are enrolled in primary schools expressed as a percentage of the total number of primary school-aged children in the population*”, quoted from “Handbook on Human Resources Development Indicators, 2004”, Ministry of Labour, Department of Labour/UNFPA, January 2005, Yangon.

³¹ “*Retention Rate is the percentage (ratio) of enrolment in last grade of a certain level and enrolment in first grade X year ago (where X is the duration of certain level minus one)*”, quoted from: “Handbook on Human Resources Development Indicators, 2004”, Ministry of Labour, Department of Labour/UNFPA, January 2005, Yangon.

³² See for instance NGO FSWG, Food Security in Myanmar: a review of issues (Final report, not for citation, for internal use only), Yangon, May 2004.

³³ included in the table: “Number of Households and Landholding Distribution in Myanmar, 2003” of FAO, Myanmar, Agricultural Sector Review and Investment Strategy Formulation Project, Phase I Interim Report, Draft (without date), page 30.

³⁴ quoting: MoAI-SLRD and Macro International: HDI Baseline Survey Myanmar, 1996; and from where they assume, using the table (page 21) on “farm operation and size of landholding”; that the percent of landless should be equal to the percent printed in the column titled ‘*does not operate*’ farms.

³⁵ See again the NGO FSWG report (May 2004) with the related references: UNDP/UNOPS, An

Analysis of Socio-Economic Trends of Rural Myanmar, May 1998 (Draft); MAS/FAO, Consultant Report by Dr. Karlyn Eckman, Agriculture Development and Environmental Rehabilitation in the Dry Zone Project, Field Document 2. February 1995.

³⁶ FAO/UNDP. Report on Rural Rapid Appraisal in Bogalay, Mawlamyinegyun and Laputta Townships of Ayeyarwady Division in Myanmar, by U Kyaw Ngwe and Heather Morris. Yangon (?), February 2003.

³⁷ The agricultural holding is defined as a productive unit raising crops in at least 1/10 (0.10) acre of land (approximately 4,356 sq. ft), or raising at least 4 heads of small livestock, or 2 heads of large livestock, or at least 30 heads of chicken or ducks, regardless of the area of the land. A combination of large and small livestock together with poultry may still be considered as a holding using the minimum number as benchmark (see MCA report, 2003, appendix C, page 5). Accordingly, 10,919 holdings without having the threshold farm size of 0.1 acre have been included in the Census because they are involved in livestock or aquaculture.

³⁸ see again: MoAI/SLRD, Advance Report on Myanmar Census of Agriculture 2003, Yangon 2005, table D1.1 (page 67<9 and table A1.1 (page 12).

³⁹ These figure has been obtained in the following way using the District figures provided by SLRD: $Tot\ Pop = \sum_j (1..68) = (N. \text{ of Agricultural Holdings }_j \times \text{ Holding size }_j)$

⁴⁰ See Myanmar Agricultural Statistics (1992-93 to 2004-2005), tables 137-400, pages 160-163. Due to MoAI definition of “surplus/deficit” the Import/Export balance was not included. However, according to the same source, in 2002-2004 rice (not paddy) export was equal to 203 thousand MT, i.e. only 3.5% of the estimated surplus of the same year.

⁴¹ Verbal information collected from MAS. A confirmation comes also from: Myanmar, Agricultural Sector Review and Investment Strategy – Formulation Project, Phase I Interim Report (Draft): “Average milling recovery ranges from 45-65 percent, depending on the type of milling and quality of paddy... MAS statistics indicate that recovery rates average nearly 60 percent” (page 78).

⁴² see for instance: WFP, “*Food Security Bulletin, Northern Shan State – Wa Special Region 2, September 2006*” (dated: Yangon, 23rd October 2006) and “*Food Security Briefing, Northern Shan State – Kokang Special Region 1, September 2006*”, (dated: Yangon, 16th October 2006)

⁴³ As explained in other part of this report : “Due to the fact that for cereals CSO has published figures only for rice, some adjusted coefficient has been applied for States/Divisions where other cereals are grown (in particular maize and wheat). The above coefficient has taken into account the average 1996-2002 sown acreage for each crop”.

⁴⁴ In Myanmar Sorghum (*Sorghum Vulgare*) is sometime called (improperly) Millet (*Pennisetum*

typhoides). Sorghum and Millet, according to MoAI, apparently define the same crop. However, as a paradox, MoAI provided two separated dataset with the same contents! When requested, the MAS staff said that a simple translation (from Burmese to English) mistake happened. Other sources quote Sorghum and Millet as different crops (see for instance: UNDP/FAO, HDI-III, Dry Zone Farming System Study, by D Kahan, Yangon November 2001, page 20.

⁴⁵ The re-scaling of paddy (using the recovery rate) is necessary when aggregating the four crops and computing the intakes in terms of Calories. When using a simple “paddy approach” it could be enough to apply different Kcal contents.

⁴⁶ Their importance has been minimised by the FAO/GOM/UNPD, “Agricultural Atlas of the Union of Myanmar”, in which only two cereals (paddy and maize) has been considered and mapped.

⁴⁷ The mission would like to mark again that the map titled “Union of Myanmar, Vulnerable Townships, dated August 2002; largely distributed in Myanmar under the FIVIMS logo and attached to mission TOR doesn’t have any methodological consistence and should be definitively considered a distorted one.

At the occasion of the first meeting in Yangon with the National Technical Team for FIVIMS the participants questioned why a mission had been sent to Myanmar looking for desegregated data **when a vulnerable townships (sic !) map** had already been produce by FIVIMS on 2002.

An intensive reading of the related document (“Myanmar: Country Update of FIVIMS-related Activities”, by Soe Win Maung, Assistant Director, Dept of Agriculture Planning, MoAI, mimeo, without data) and subsequent investigations about the methodology used to produce the above map have demonstrated that most of the reference indicators used for producing the “composite index” did not existed at Township and even at District level (in particular the proxy indicators related to poverty). The producer of the map, once met in Nay Pyi Taw and requested about the data sources, answered with a large smile.

⁴⁸ *Note: Cluster analyses* were carried out using “*ADDWIN*” software package developed for multi-factorial/ivariate analysis of territorial data (by Prof. S. Griguolo, Planning Department, University of Venice). The indicator data set was processed firstly through “*principal component analyses*,” followed by “*non-hierarchical cluster analyses*.” For documentation and downloading the last version of the package, go to: http://cidoc.iuav.it/~silvio/addawin_en.html

⁴⁹ Also in this case the *Cluster analyses* has been carried out using “*ADDWIN*”, a software package developed for multi-factorial/ivariate analysis of territorial data by Prof. S. Griguolo, Department Planning Department, University IUAV of Venice (Italy).

⁵⁰ see Chapter 2E for the estimation applied methodology

⁵¹ see Chapter 2F for definition and MoAI methodology

⁵² for criteria of conversion from paddy to rice see again Chapter 2F

⁵³ Yangon East too is statistically included in this Cluster, but its importance is not relevant.

⁵⁴ Also Hkamti and Gangaw Districts belong to this cluster.

⁵⁵ Namely: Nyan Kwan and Chin Zu Sai in Kokang Special Region 1; Maw Hai, Nam Pa De, Tala, Young Khong, Naung Mu, Khu Law and Nan Naw in Wa Special Region 2.

⁵⁶ The Village and Household information have been collected by the Mission Team and with the participation of Dr. Naoki Minamiguchi (FIVIMS Regional Coordinator, Bangkok), Dr Stefano Fedele (WFP/Myanmar International Consultant) and Mr Mi Mi Moi (Field appraisal national counterpart). The field support by WFP and UNODC personnel, by an agronomist local consultant (PhD Ohnmar Khaing) and by local languages translators have been highly appreciated. Without the overall assistance and logistical support provided by UNDOC and WFP (both in Yangon and locally) the mission could not have properly performed its duty.

⁵⁷ see WFP, *“Food Security Bulletin, Northern Shan State – Wa Special Region 2, September 2006”* (dated: Yangon, 23rd October 2006) and *“Food Security Briefing, Northern Shan State – Kokang Special Region 1, September 2006”*, (dated: Yangon, 16th October 2006)

⁵⁸ Namely: Kyin Kyu Lain, Kyone Shan, Tauk Shwe, Wa Chu Kyine, Nyan Kwan, Pan Chone, Chin Ma Lain, Shine Kyine, Par Kyuak Lin, Jin Chan Zhai in Kokang Special Region 1; Yaung Khaung, Ah Yaw De, Maw Hai, Nan Par Dae, Baw Kwe, Kue Law, Hwe Lon, Nam Naw New, Nye Thet, Yong Palone, Sop Mar, Yong Phan, Kong Pi in Wa Special Region 2.

⁵⁹ “The closer the ratio comes to the value 1 the more difficult it is for the poorer households to procure enough food” (WFP definition).

⁶⁰ The frequency of households with children under 5 years old reaches 60% in the total of the surveyed villages. The frequency is higher in Wa (65%) than in Kokang (52%). This unbalanced situation is strengthened when only the households headed by females are considered: in Kokang 40% of households headed by female had been found having at list one child less than 5 years old while in Wa the percentage is 69%.

⁶¹ The order of importance was identified in the following way: *“First make a list of all sources of income (including cash and in-kind) and use proportional piling to establish ranking and percentage of contribution to total HH income **in the last 30 days** for all activities, then write down the main three in order of importance”* (from WFP: HHQ_HFIS questionnaire).

⁶² As already explained, and if not specify otherwise, the FWP questions make reference to the last 30 days.

⁶⁴ WFP, “*Nutrition Survey in WFP Project Areas in Magway, Lashio, Kokang and Wa*”, April-June 2005, with technical support from National Nutrition Centre, Ministry of Health).

⁶⁵ It is worth to emphasise the additional importance of the second (winter) season crops play in protecting the slopes against landslides. Reference can be made, in particular, to buckwheat (introduced by Japanese assistance as a cash-crop poppy-substitute) that plays a very positive role in soil protection. Buckwheat is planted once the monsoon crops have been harvested, i.e. during the so called “winter season”.

⁶⁶ In this case the averages (of the last eight years) of each deKadal (ten days) observation have been used for the computation. The locations of the villages have been identified using a GPS when visiting the villages. A time lag between the arrival of the first rains and the effects in terms of increase of the vegetation index should be considered.

⁶⁷ The Standard Deviation has been weighted according to the variance. The mission thanks Prof. Silvio Griguolo, Department of Planning, University IUAV of Venice (Italy) for providing smoothed VGT time series and routines for computing the SD.

⁶⁸ The WFP Wage to Food Ratio “*is based on the reported daily wage of a casual agricultural labourer and the cost of low quality rice (wage/rice-price). Household’s rice needs are calculated using WFP’s needs estimation of 180kg per person per year*”. (“*An average household size of 5.6 has [been] found*” in Kokang by WFP. The above quotation are from: WFP, “Food Security Briefing, Northern Shan State – Kokang Special Region 1, September 2006”, (dated: Yangon, 16th October 2006), Draft Copy.)

⁶⁹ because notably “*The closer the ratio comes to the value 1 the more difficult it is for the poorer households to procure enough food*”

⁷⁰ For measuring weight Salter Scales (Spring Balance) and Bathroom Scales have been used; for measuring length and height Rolmeter and Microtoisse Height measuring instrument have been used.

⁷¹ Only one mother (22 years old) has been found underweight. She had only one 18 months old child, and she was still breastfeeding him. Only one child was found moderately undernourished (wasting rate <2SD) and with MUAC = 11.5), the parents were illiterate and the mother could not take care of him. These spotty observations should be put in relation with the recent (2005) WFP Nutritional Survey that estimated for Kokang a wasting rate (of children under 5 years old) in Kokang equal to 5.7%. WFP estimated too that 12% of Kokang women in reproductive age were thin (i.e. with a BMI <18.5) while, according to the most recent (2004) estimations provided by MoH, the national average was equal to 20.1%.

⁷² The appraisal was complicated by the fact that any question had to be translated from English to

Myanmar and from Myanmar to local language. Sometimes the household interviews had been facilitated by their own elder children as going to the school and able to understand the Myanmar language.

⁷³ Corresponding to 61% in terms of overall population (13 villages).

⁷⁴ Corresponding to 13% of the over population (13 villages); while “no change” had been declared in 24% of the villages, corresponding to 26% of the overall population (13 villages).

⁷⁵ See: WFP, “Food Security Bulletin, Northern Shan State – Wa Special Region 2, September 2006 (dated: Yangon, 23rd October 2006) Draft Copy.

⁷⁶ This skill/knowledge impoverishment is a quick process; to gauge its speed the example of Kurdistan agriculture during the “Food for oil” period is very exemplifying. In Kurdish Iraq the food ratio covered at least the needs of 20 days; the farmers stopped to plant their traditional crops (particularly barley and high value legumes) and now – in the post Saddam era – they are facing a lot of difficulties with an increasing dependency from remittance. .

⁷⁷ In principle to produce organic tea, as already noted for Kokang, is a feasible strategy as the farmers, in general, doesn’t use other type of fertilisers.

⁷⁹ This misunderstanding is evident when “medical herbs for selling” are included in the wild food. Namely the wild food, in a strictly “food security” approach, is what you don’t plant and you simply can gather around. You don’t like to eat it and normally you don’t consider it as a “food”; however when the “real” food is scarce, you are obliged to gather and eat it for surviving..

⁸⁰ According to WFP survey the situation in Wa seems better than in Kokang. In Wa 60% of households in the surveyed villages had access to piped or borehole with pump water; while 40% were still fetching from unprotected sources (rivers, ponds ...). As in Kokang the households headed by female had less opportunity to collect water from safe sources and were more depending from unprotected sources (46% against 38% of household headed by males).

⁸¹ The Dry Zone quick crossing has been carried out only by the mission team leader and the National Consultant, assisted by the National Counterpart, Mr U Mg Mg Yi of DAP. Transport facilities were provided by MoAI.

⁸² See WFP: “Nutrition Survey in WFP Project Areas in Magway, Lashio, Kokang and Wa”, April-June 2005” (with technical support from National Nutrition Centre, Ministry of Health). A CD version is available too. The above survey is rather relevant because allows a comparison of nutritional status between the two areas (Shan Special Region border areas and Dry Zone) visited by the mission. For some significant excerpt, see annex 22.

⁸³ FAO unpublished estimations to be included in a forthcoming volume on SEA Hotpots

(provisional title).

⁸⁴ It doesn't mean that the NPP per capita will improve, also in this country, at national level, the NPP per capita will worsen, particularly in presence of high population growth rates.

⁸⁵ Notably the coefficient of concentration (or specialisation) is computed as

Number of Holding with threshold size x in District j / Total number of Holdings in the same District

Number of Holding with threshold size x in Myanmar / Total number of Holdings in Myanmar

(Where x varies from 1 to 7)

⁸⁶ FAO, "Myanmar Agricultural Sector Review and Investment Strategy Formulation Project, Phase I Interim Report", Draft (without date), quotation from page 36 and 30 respectively.

⁸⁷ see the already quoted: NGO FSWP, Food Security in Myanmar, a Review of Issues, Appendix, page 6).

⁸⁸ The MAC 2003 figures provide for Nyaung-U an extremely high number of holders when compared with the total population provided by the Department of Population. Difficult to say which figure is more unreliable: in any case the estimation of the not-holdings is certainly underestimated.

⁸⁹ Weighted average

⁹⁰ Information informally collected by FIVIMS mission, when visiting Nay Pyi Taw for official meetings. The daily remuneration for casual labour, is similar to or sometimes higher than in Yangon City.

⁹¹ This time scheduled strategy is confirmed by a larger assessment (1302 surveyed households) carried out by NGOs and summarised in the already quoted NGO SFWG document. According to their results: "*Normally 30 % of the labor-active population (male youth and adults, plus some women) in the poor villages in the Dry Zone migrate to cities (Yangon and Mandalay) or mining areas during the summer, and come back to their villages around June when water and agricultural employment is more available*" (Appendix, page 8).

⁹² See "Agricultural Sector Review..." page 36.

⁹³ Also in this case the mission assessment is confirmed by NGOs previous assessments (see again the quoted NGO SFWG document)

⁹⁴ HDI III 2001, page 68.

⁹⁵ As in the case of Shan State Special Regions chapter, the "*Wage to Food Ratio (WFR) is based on the reported daily wage of a casual agricultural labourer and the cost of low quality rice (wage/rice-price)*". Household's rice needs has been calculated according to the WFP needs (180kg per person per year), and the different villages household sizes has been used (according to

the data collected by FIVIMS mission from village Key informants). The closer the ratio (if positive) comes to the value 1 the more difficult it is for the poorer households to procure enough food. If the ratio is already negative it means that there are difficulties in meeting daily subsistence needs.

⁹⁶ For instance In Byin village only 10-15 household (out of 130 HHs) have a latrine facility, in Kan Ywa Lay “only few”.

⁹⁷ A visual assessment has been carried out by the Mission team leader, frequently using rapid MUAC measurements. The same approach has been used also in Shan border areas when anthropometric measurements were not possible; but there very few cases were identified.

⁹⁸ Department of Health Planning, MoE, with the collaboration of UNICEF, Multiple Indicators Cluster Survey 2000 and 2003.

⁹⁹ Cautions should be used, as already explained in a previous chapter, when using MICS figures due to unexpected and unexplainable discrepancies between 2000 and 2003 for some specific District. Consequently also the figures used in this chapter are the average 2000-2003.

¹⁰⁰ WFP, “Nutrition Survey in WFP Project Areas in Magway, Lashio, Kokang and Wa”, April-June 2005 (with technical support from National Nutrition Centre, Ministry of Health).

¹⁰¹ For pure information these are the results for the Children under 5 years old:

Magway Division (WFP 2005)	National Average (MICS 2003)	
Moderately Underweight	39.9	31.8
Moderately Wasting	12.8	8.

¹⁰² In this case a rough comparison could be done with the MoH, BMI Survey 2004

BMI <18.5 (Low) of Women in reproductive age:

Magway Division (WFP 2005)	National Average (BMI Survey 2004)	
33.6	22.7	

¹⁰³ Poor Households to be interviewed had been identified by key informants when arriving in the village and briefing them on the purpose of the mission.

¹⁰⁴ The same Checklist used in Shan Special Regions, although a bit simplified due to time constraints, was used. It was possible to interview only 11 households, in general two in each visited village. Since the beginning, due to the interview limited number, a statistical approach had been excluded.

¹⁰⁵ The household was requested to identify the last consumption of different food items in the following ways: less than one week, one month, and six months.

¹⁰⁶ The question was answered in term of “quantity used during the last month”.

¹⁰⁷ Presence of oil and salt (including testing if iodised) has been verified in each visited household.

¹⁰⁸ in the northern areas: fathers and mothers declared between 3 and 7 clothes for each of them, and near 2 for each child; in the southern the quantities were between 1 and 4 for the adults , and rarely more than 1 for the children

¹⁰⁹ Very similar to those practiced in similar Africa “dry savannah “areas.

¹¹⁰ Groundnut is also cultivated as a way for regenerating the soil

¹¹¹ However, when possible, intercropping is the most frequent (and best) practice. This strategy is confirmed by more detailed information on Magway Division: “75% of the cropping studied are double cropped”. (see HDI III 2001, page 27). According to this source the most relevant intercropping is sesame-green gram, pigeon pea – sesame/green gram, sesame-sorghum. The above document emphasize the high crop intensity (Between 128 and 200): “In Magway the average cropping intensity at township level has fluctuated over the period 1996 to 2000 from 196 to 230 percent... The higher cropping intensity in certain villages is a result of the widespread use of sequential cropping patterns (double cropping)” (see page 28). Namely Myanmar crop intensity in the same period increased from 132 to 147. Most recently (from 2000 to 200) the Crop intensity with a slow rate: from 174 up to 153 (see CSO/MoAI, Myanmar Agricultural Statistics (1992-93 to 2004-05), Yangon 2006, page 63.

¹¹² National estimation has been done by mission using the CPI figures published in the last CSO Statistical Yearbook (2004).