

## **Working Paper # 12 (Kertas Kerja # 12)**

### **A Brief Review on The Persistent of Food Insecurity and Malnutrition Problems in East Nusa Tenggara Province, Indonesia**

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**Working Papers 2 (November 2007). Lexand Ofong (Menuju Ketahanan Pangan Berkelanjutan Di NTT). 27 Pages.**

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**Working Papers 11 (January 2009) Ragalawa et. al. “Malnutrisi As Maldevelopment. Breaking the Chain of Malnutrition: Learning from 50 Years of Development in NTT.”**

## **Executive Summary**

As defined in World Food Summit (1996), food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food, which meets their dietary needs and food preferences for an active and healthy life. The definition covers availability, accessibility and utilization aspects of food at global, national, household and individual levels.

NTT Province is still marked as one of the poorest province in Indonesia. Several indicators constructed the poverty situation, and it differs along different area, community and household. The average per capita income of only IDR 2.2 million per month or only USD 0.67 per day income indicates low purchasing power. It is then worsened by increasing basic food prices within the last decade. As of physical accessibility, bad transport facilities, both of sea transport (given islands character of the province) and road transport has created another barrier to food accessibility. Therefore, small isolated islands and remote rural people are among the most vulnerable to food physical accessibility, which then impacted to higher price of food in comparison to better accessible areas (i.e. cities). Moreover, data shows that in 2006, approximately 85% of poor people living in rural areas.

Disparity of income distribution created different level of purchasing power along different households and community. As such, disparity become wider within the province indicating less people are getting advantage of current economic growth, and in turn decreasing capacities to access sufficient food economically. At community level, economic ability is determined by ownership of agriculture related assets (as almost 80% of the people are farmers), access to market and access to secondary livelihood other than agriculture. Therefore, those with less land and livelihood options also have less income. They are more susceptible to shocks on accessibility component, namely sudden increase of food price, or fluctuation of their agriculture commodity price. Women, despite of their significant roles in agriculture and secondary livelihood strategies, are more vulnerable to the shocks given their lack of access to decision making and lower wage they receive during normal situation.

Response from government, albeit of goodwill and concept, is facing significant constraints with respect to ineffective management, bad practices and low commitment in terms of budget allocation. Difficulty in cross sector coordination remains the main issues, in addition to dependency on national budget which affected to inability to address local specific problems. On the other hand, response from NGOs and UN Agencies are focusing more on West Timor, and left gaps on other areas especially western part of Flores. There's also question about NGOs and UN Agencies approach to food security, which tends to address more on short-term or acute problems.

At community level, coping strategies are changing and moving towards exploitative mechanisms. Prolonged and recurrent crisis reduce their ability to cope in decent and sustainable ways. To some extent, people prefer to abandon their livelihood assets to fulfill prompt food needs.

The problem of food insecurity is manifested in the high prevalence of undernutrition, including micronutrient deficiencies problem. The problem of undernutrition is in chronic condition and starts early in life. The causes of undernutrition are low food intake – both in quantity and quality including low intake of animal foods – and high prevalence of diseases. The prevailing high nutritional problems are also related with relatively poor basic services of the households; such as low educational level, low basic sanitation and clean water services, as well as low access to electricity. Despite the availability of routine and appropriate nutritional interventions, the programming quality and coverage might not reach the level to exert high impact.

It is therefore recommended that interventions addressing nutrition or have positive effects on nutrition shall be focused on the earliest period of life – prenatal, infancy and early childhood (*or pregnancy through 24 months of age*) in order to prevent further deterioration of chronic undernutrition. Improving the quality of the delivery of basic and effective nutrition interventions is imperative, particularly on (a) Breastfeeding promotion and counseling, (b) Growth monitoring and promotion, (c) Vitamin A capsule supplementation and (d) Prenatal iron-folate supplementation. It may also be necessary to include wider stakeholders in nutrition program. Considering its multidimensional features, the nutrition problems shall be tackled using interdisciplinary and intersectoral approaches as there is no instant solution for food, nutrition, and income insecurity problems.

It is now urgent to re-strategizing intervention on food security, to adopt wider perspective, integrate different sectors and skills. This can only be reached by encouraging meaningful coordination to address chronic situation – in a sustainable way - and agreed upon clear and local based monitoring system and indicators in deciding response to acute situation.

# Chapter I.

## I n t r o d u c t i o n

### 1.1. General Description about the Province

East Nusa Tenggara province is known to be a drought-prone area and in the last few years has been reported affected by delayed monsoon and protracted dryness. The problems of food insecurity, harvest failure, and high cases of severe malnutrition are reported every year. Various organisations, local, national, and international, have put their efforts to respond the situation by implementing many assessments and programmes. Nevertheless, the problems seem have not been yet sorted out.

The East Nusa Tenggara province has a population of about 4 millions people who occupying 42 islands out of the total 566 islands in the province. The four major islands are: Flores, Sumba, Timor and Alor and collectively is called Flobamora. The total area mass is about 47,350 km<sup>2</sup> (2.49% of Indonesia area), mostly are mountainous and hilly areas and very few flatlands. Administratively, this province is divided into 16 districts.

The East Nusa Tenggara is one of the poorest provinces in Indonesia with about 30% of its population are living under poverty line. Majority (>80%) of the population depends on farming, mostly subsistence. Life expectancy is 63 years, which considered as the lowest among Indonesians. Illiteracy is high compared with the rest of Indonesia at 16%. Women's illiteracy is an average of 18%, but in certain places, such as Sumba Island it is as high as 30%. The infant mortality rate is 54 per 1000, compared with 44 in the whole of Indonesia. Almost 39% of children are malnourished, on average but in some areas 50% are malnourished. There is a seasonal malnutrition (*musim lapar*) driven by annual rainfall patterns. Maternal mortality rates are 3.1/1000 births nationally whereas in NTT they are 3.7/1000. Culturally women are responsible for household work and childcare and a lack of basic services makes their situation more vulnerable.

Dependency to the central government is very high in term of its sources of annual budget (82% comes from the central budget), of which only 20% spending on basic services. The already poor communities are facing additional pressures from the influx of 250,000 refugees from Timor Leste, following independence after a bloody conflict, in 1999.

Thin and infertile soil and lack of rainfall lead to low agricultural production. Soils are made up of coral and rock and are unsuitable for many crops except cassava and

corn. NTT is west of the Wallace line, with weather similar to Australia with one long hot dry season from March to November and a short wet season. During the dry season rivers typically run dry and most water comes from hand dug wells and springs. The lack of access to clean water is a major problem. Annual droughts and regular flash floods during the rainy season, which have got worse in recent years, affect agricultural productivity. NTT is located on the Indonesian “ring of fire” which makes it vulnerable to volcanic eruptions, earthquakes and tsunamis.<sup>1</sup>

## **1.2. Work of Oxfam GB in the Province**

Oxfam GB has been working in NTT province for decades mostly working in partnership with local organizations, especially in sustainable livelihood sector. Oxfam started its direct presence in the province, initially through a humanitarian project office in 2002 in response to the East Timorese refugee crisis, and later on became an area programme office since 2005.

There are various programmes and projects currently are running in this area:

- a. ATUP Projects - now in its second phase - is to facilitate the integration of the East Timorese displaced people into the local communities. The projects target displacement problems in Belu and Kupang districts.
- b. West Timor Food Security & Malnutrition Project - now under phase 2 - is to support vulnerable communities to develop a sustainable livelihood, through the introduction of Farmers Field School (FFS) approach to home gardens. The project is being piloted in Belu and TTU districts.
- c. Driving Change Programme managed from the Makassar Area Office and working with 2 Partners in West Timor and Flores is striving to achieve a government who is responsive and accountable to the poor.
- d. PRIME, managed from the Yogyakarta Humanitarian office, working to increase the capacities of local governments, communities and local civil society organizations in disaster prone districts (Belu, TTU, TTS, Lembata, Ende, Manggarai) in disaster management and preparedness (current progress is leading to a wider disaster risk reduction approach using Hyogo Framework as its working framework but limit itself in achieving short-term objectives).

All these projects have food security and livelihood components, in various forms and designs. They acknowledge the existence of the food insecurity among the populations and it fed into the project/programme design. However these projects/programmes are running independently from each other. They are not yet integrated or shared a same strategy in addressing the food insecurity problems in this

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<sup>1</sup> NTT PIP

province. Oxfam GB is committed to an integrated approach throughout its programme across Indonesia and the planned joint food security and livelihood strategy in NTT is among other efforts to integrate better, which expected to give more impacts for vulnerable men and women.

Aside from Oxfam GB, there are also other Oxfam affiliates (notably Oxfam Australia and Oxfam Hongkong) working through their local partners in the area, and some may include food security and livelihood components. In addition to these, there are other organizations, e.g. CRS, CARE International, FAO, WFP, etc. who has significant food security and livelihood projects. Despite this, food shortages, water insufficiency, child malnutrition, and disease outbreaks seems the annual news from the area.

Various researches, studies, early warning system monitoring, and assessments to understand the situation have been made, however the information are scattered and not very well coordinated among stakeholders.

As an organisation, Oxfam GB realises the importance of having a solid coordination that will enable all related stakeholders to exchange available information on NTT and understand the underlying causes of existing problems towards the development of appropriate and integrated food security strategy.

Acknowledging there are chronic food insecurity problems and that Oxfam with its many projects and teams are working in the province, Oxfam plan to conduct a strategic food security meeting in February 2008 to be attended by all relevant teams, partners and other organizations.

This study is to collect, compile and analyse the available food security information in the area. The results will be used and fed into the strategic meeting in order to help the teams to work in a more integrated way in order to achieve greater impacts.

### **1.3. Objectives**

To collect, compile and analyse all existing information related to NTT food security issues, including from a gender perspective, into one concise, systematic and relevant understanding of the food security situation and the gaps of knowledge and interventions.

## **1.4. Methodology**

### **1.4.1. Understanding of Food and Nutrition Security**

Early definitions of food security focuses on aggregate food supplies at national and global levels, and analyst advocated production self-sufficiency as a strategy of nations to achieve food security. In 1974, World Food Conference defined food security as *availability at all times of adequate world supplies of basic food stuffs (UN 1975)*. Within the following 12 years, World Food Summit (1996) broaden the emphasize from *availability* to include *access to food*, and narrowed the focus from *global and national* to *household and individuals*. The current definition is ***Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food, which meets their dietary needs and food preferences for an active and healthy life.***

While 1996 Indonesian Constitution No 7 concerning Food, defines food security as ***a condition where there is sufficient food for every household, which is reflected by availability of sufficient food, both in quantity and quality, that is safe, evenly distributed, and accessible.*** Subsequently, the term of food security in the said Constitution is delineated as follows:

1. Sufficient food security is defined as food availability in broad sense, includes food and drink derived from plants, livestock, and fish and their derivatives, in amount suitable for each citizen to meet the demand of carbohydrate, protein, fat, vitamin and minerals useful for growth, health and physical and mental strength.
2. Availability of safe food implies availability of food that free from biological, chemical, and other kinds of contamination that can disturb, damage and endanger people's health. Furthermore, it should not forbidden by religious law.
3. Availability of evenly distributed food means that food available at all times in every location throughout Indonesia.
4. Accessibility of equally distributed food means that food is physically and economically accessible for every household in terms of accessible distance and price at all time.

Food insecurity reflects condition where some or all aspects above cannot be met. Food insecurity may be chronic or transitory. Chronic food insecurity refers to a situation in which people consistently consume diets inadequate in calories and other essential micro nutrients. This often happens due to inability to access food by production, purchase, gift or aid. Transitory food insecurity is a temporary shortfall in food availability and consumption. Factors like income, increase in food price, shortage of production, temporary shortfalls due to disasters, etc lead to temporary

food insecurity.<sup>2</sup> Food security, therefore, requires an understanding of essential dimension of food security, which are *availability of food, accessibility of food and utilization of food*.

#### **1.4.2. Method in review analysis**

The assessment was carried out based on the available and accessible secondary data. Study reports, statistics data, and other source of information from newspaper, website are studied and when relevant are selected. When access to raw data is possible, a secondary analysis is done.

Some of the reports use different outcome indicators. When similar outcome indicators are used, sometimes the information is presented differently from one report to another.

The reading materials are listed in reference list.

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<sup>2</sup> Food Insecurity and Vulnerability Analysis Timor Leste, VAM Unit, The UNWFP, Timor Leste, 2005

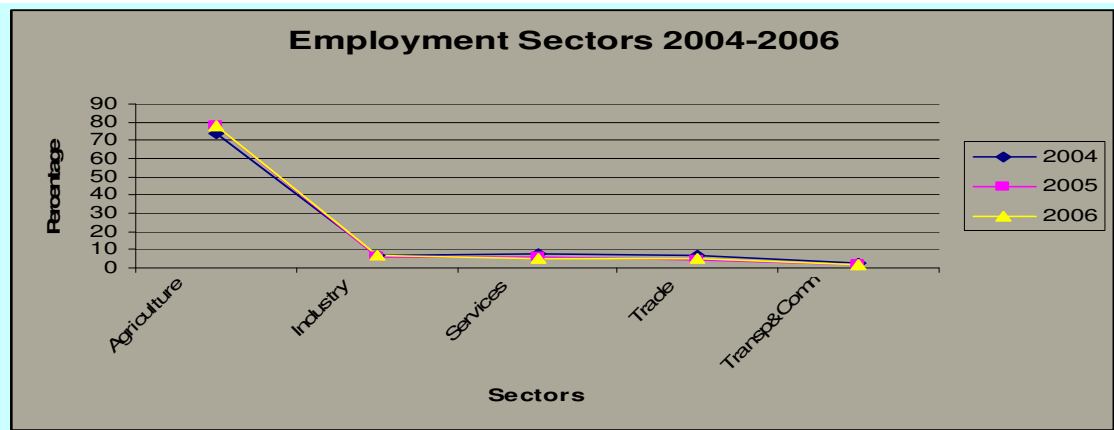
## Chapter II. Food Security Situation

### 2.1. Food Availability

#### 2.1.1. Source of food

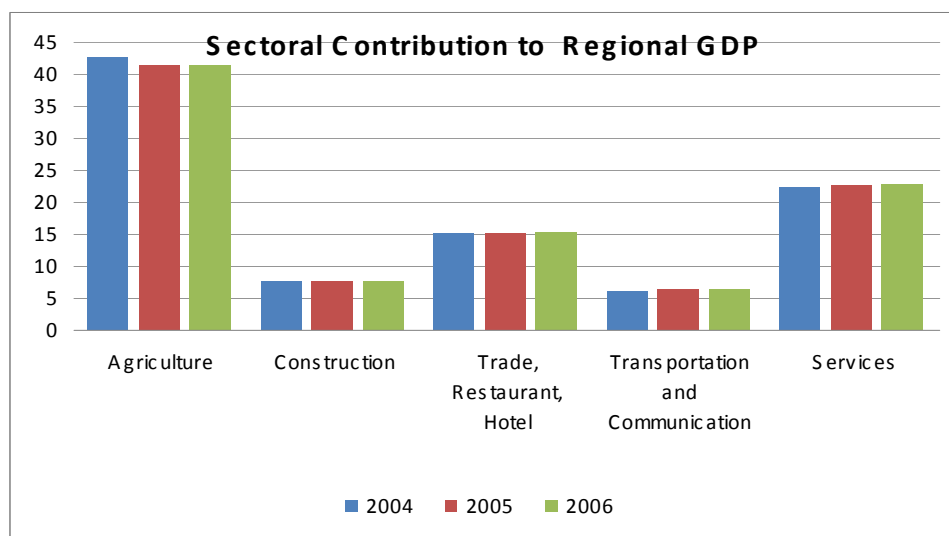
Agriculture is the main livelihood of people in NTT. More than 75% of NTT populations are farmers, and agriculture sector contributes more than 40% of the GDP, or the largest contributor to regional GDP.

Figure 1



Source: NTT In figure, 2005-2007; Sakernas 2005

Figure 2



Source: NTT in Figure 2007

It is then reasonable that the main source of food for most people are from their own production, as stated in ACF Report<sup>3</sup>. There are three kinds of staple food that community refer to as their main food : corn, rice and cassava.<sup>4</sup>

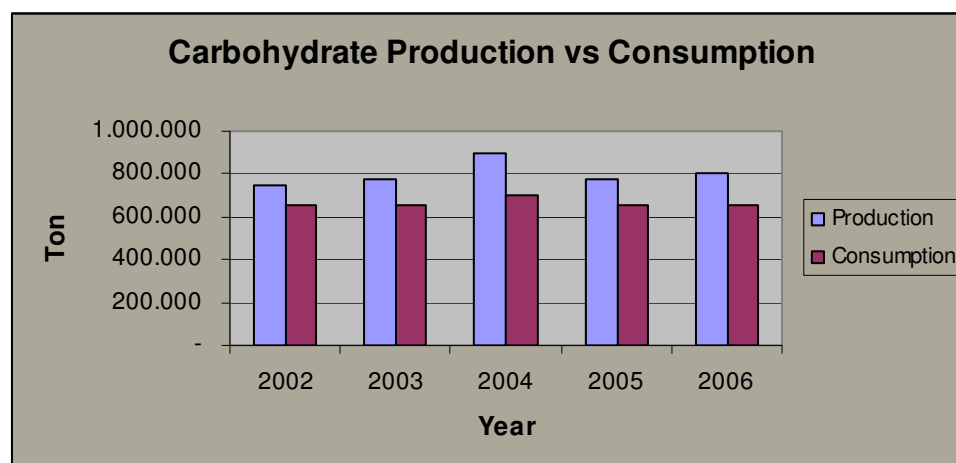
**Table 1. Production of Staple Food 2004-2006**

| No | Food Commodity | 2004              |                  | 2005              |                  | 2006              |                  |
|----|----------------|-------------------|------------------|-------------------|------------------|-------------------|------------------|
|    |                | Harvest Area (ha) | Production (ton) | Harvest Area (ha) | Production (ton) | Harvest Area (ha) | Production (ton) |
| 1  | Rice           | 183.728           | 552.205          | 162.539           | 461.008          | 173.208           | 511.910          |
| 2  | Corn           | 264.907           | 622.812          | 239.588           | 552.439          | 252.410           | 582.964          |
| 3  | Cassava        | 99.498            | 1.041.280        | 86.464            | 891.783          | 89.991            | 938.010          |
| 4  | Sweet Potatoes | 16.257            | 126.406          | 12.930            | 99.748           | 14.480            | 111.006          |

Source: NTT in Figures 2005-2007

With such level of production of carbohydrate source, food availability is always surplus in NTT during the last five years.

**Figure 3. Carbohydrate Production vs Consumption 2002-2006**



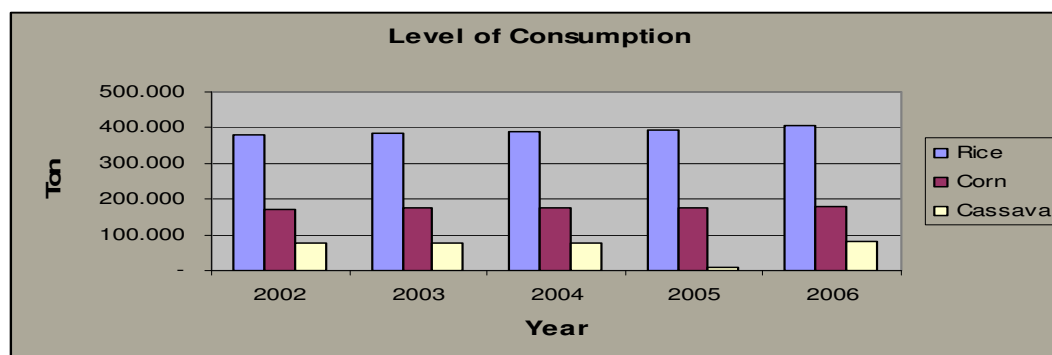
Source: NTT Agriculture Dept, 2007.

However, while cassava and corn productivity are higher than rice, people in NTT consume mostly rice in their daily diet. There are various reasons captured in research and assessment documents about this rice prevalence. *Prestige* appeared to be most frequently mentioned, other reasons are: *easy to cook, looks nice (white and clean)*, and *easy to find in the market*.

<sup>3</sup> Food Insecurity, Water and Sanitation Assessment Report, AFC 2007

<sup>4</sup> See, among others: PMPB PRA Report TTS, 2007; PIAR PPA Report Kupang, TTS and Rote Ndao, 2007; Plan International Food and Nutrition Assessment Report Lembata, 2007, AFC Assessment Report TTS and Alor, 2007.

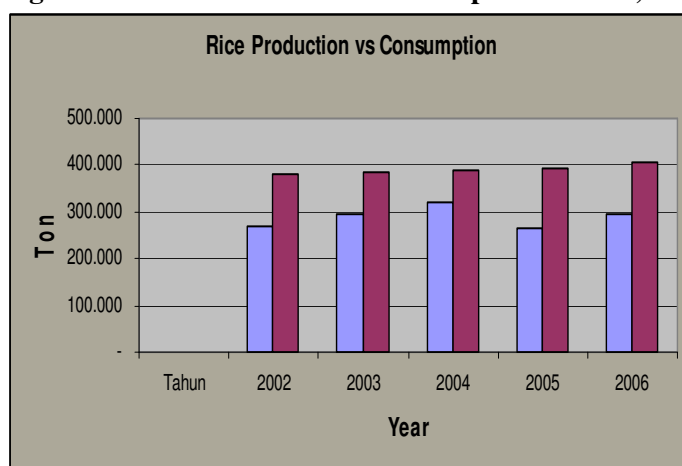
**Figure 4. Level of Consumption of Staple Food, 2002-2006**



Source: NTT Agriculture Dept, 2007.

Given its low production and high consumption, it is then understandable that NTT experience rice shortage every year, as shows below:

**Figure 5. Rice Production vs Consumption in NTT, 2002 - 2006**



In order to fulfill rice consumption needs, NTT imported rice from other area, mainly from Java and Sulawesi. In DOLOG records, all the rice was transported from East Java, the nearest big harbor to NTT. As not all of the rice produced are distributed through BULOG/DOLOG, the amount of local

rice distributed is much lower than that was produced.

Source: NTT Agriculture Dept, 2007.

**Table 2. Rice in NTT by Origin 1999 - 2004**

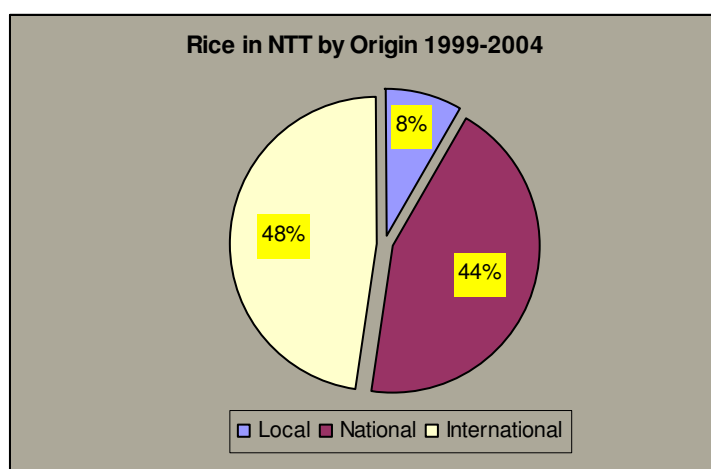
| Origin               | 1999       | 2000       | 2001        | 2002       | 2003       | 2004       |
|----------------------|------------|------------|-------------|------------|------------|------------|
| <b>Local</b>         | 9.235.000  | 11.045.000 | 8.699.000   | 11.548.000 | 9.300.000  | 1.329.200  |
| - Manggarai          | 5.780.000  | 7.451.000  | 5.276.000   | 7.584.000  | 5.000.000  | 175.000    |
| - Ngada              | 2.053.000  | 3.136.000  | 3.223.000   | 3.313.000  | 3.000.000  | 1.000.000  |
| - West Sumba         | 1.402.000  | 458.000    | 200.000     | 651.000    | 1.300.000  | 154.200    |
| <b>National</b>      | 60.651.000 | 57.009.000 | 70.933.000  | 30.500.000 | 13.906.408 | 37.000.000 |
| - East Java          | 60.651.000 | 57.009.000 | 70.933.000  | 30.500.000 | 13.906.408 | 37.000.000 |
| <b>International</b> | 38.395.000 | 36.522.000 | 126.600.000 | 79.399.120 | 12.160.500 | -          |
| - China              | 38.395.000 | 36.522.000 | 126.600.000 | 6.000.000  | 12.160.500 | -          |
| - Vietnam            | -          | -          | -           | 48.399.120 | -          | -          |
| - Thailand           | -          | -          | -           | 25.000.000 | -          | -          |

Source: BULOG Regional NTT Division, 2005

The level of imported rice from international market in the province was decided at the national level depending on the national rice production. Therefore, there is no correlation between local production and the amount of international rice sent to the province. Most of imported rice was used for Raskin (rice for poor), OPK (special market operation) and allocated for civil servants.

Although in 2004 there was no international rice imported to the province, however, the cumulative of rice consumed by NTT people within 6 years was dominated by international production, as shows below:

**Figure 6. Rice in NTT by Origin 1999 - 2004**



Source: BULOG Regional NTT Division, 2005

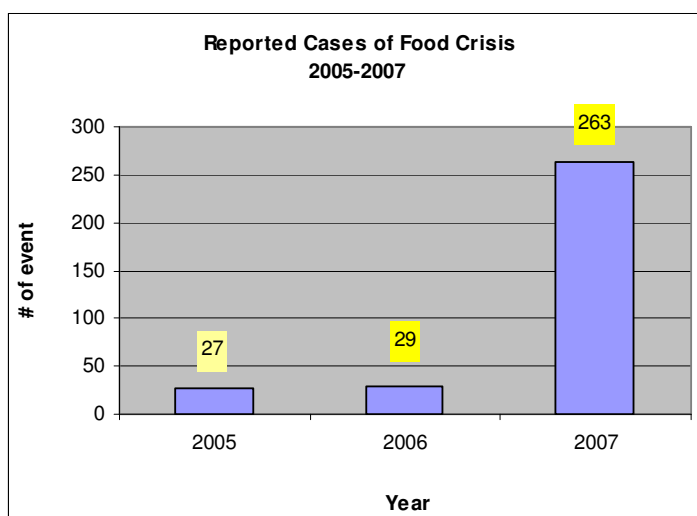
### **2.1.2. Threats and current crisis**

As food availability is about food production, then the major threats identified in the area are mainly about those which reduce agriculture production. Due to lack of available data, this report can only obtain 3 years data on threats occurrence (2005-2007).

Within the last 3 years, all districts in NTT experience food crisis,

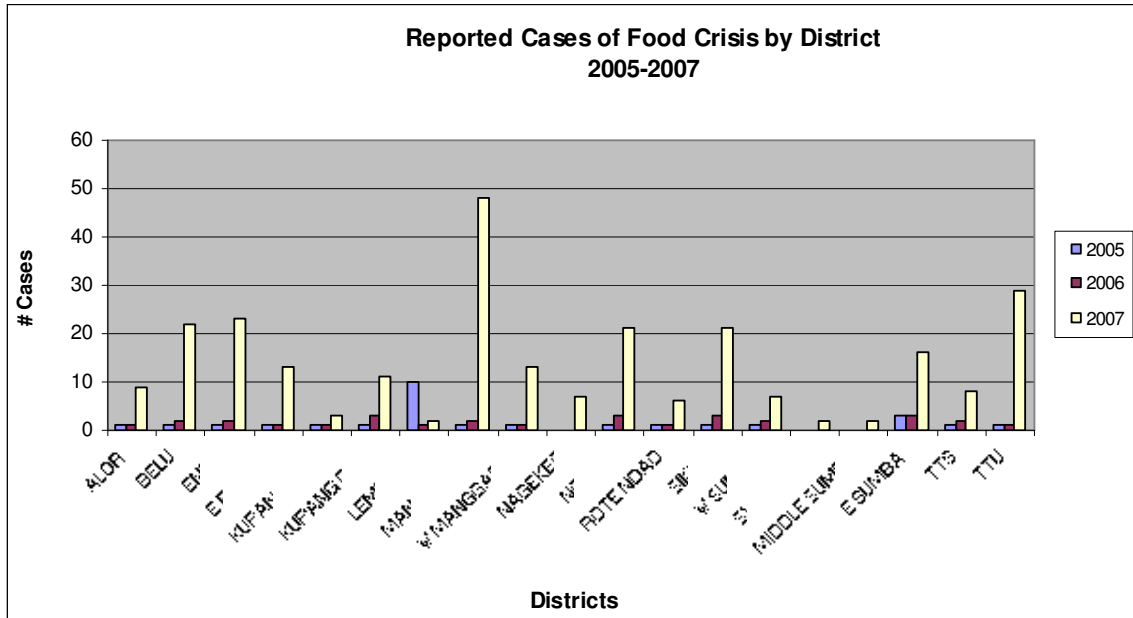
except Kupang municipal is the least affected, as its main livelihood does not depend on agriculture.

**Figure 7**



Source: Compiled from various source, mainly NTT Agriculture Dept and PMPB media monitoring

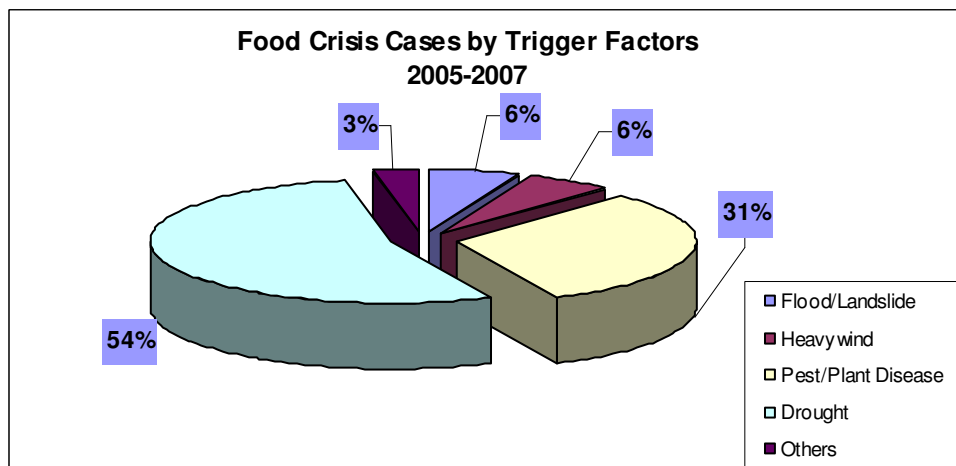
**Figure 8**



Source: Compiled from various source, mainly NTT Agriculture Dept and PMPB media monitoring.

The above data shows transitory food insecurity by districts, which were triggered by four major threats, namely: drought, flood/landslide, heavy wind and pest attack/plant disease. Drought, however, remains the major threats as shown below:

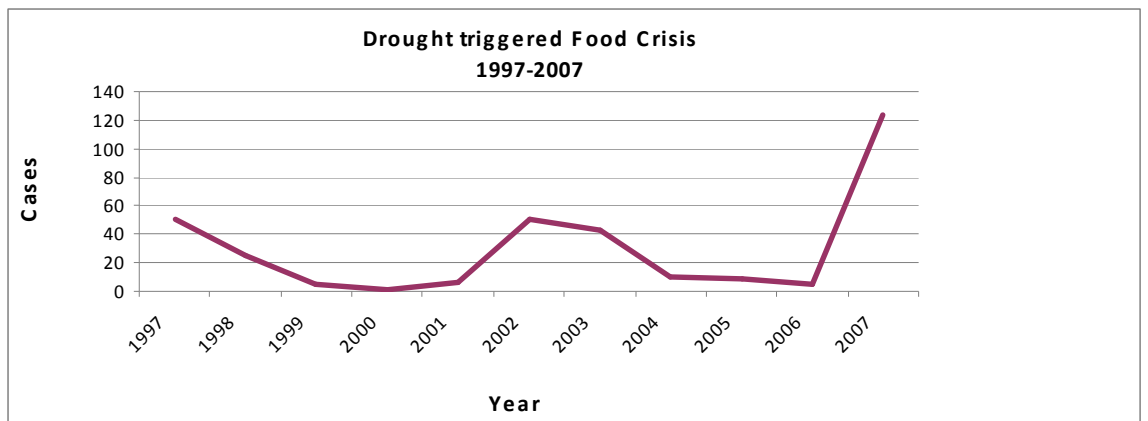
**Figure 9**



Source: Compile from PMPB media monitoring

Within the last ten years, farmers experience three severe drought events: in 1997, 2002 and during planting season of 2006 which affecting food availability in 2007.

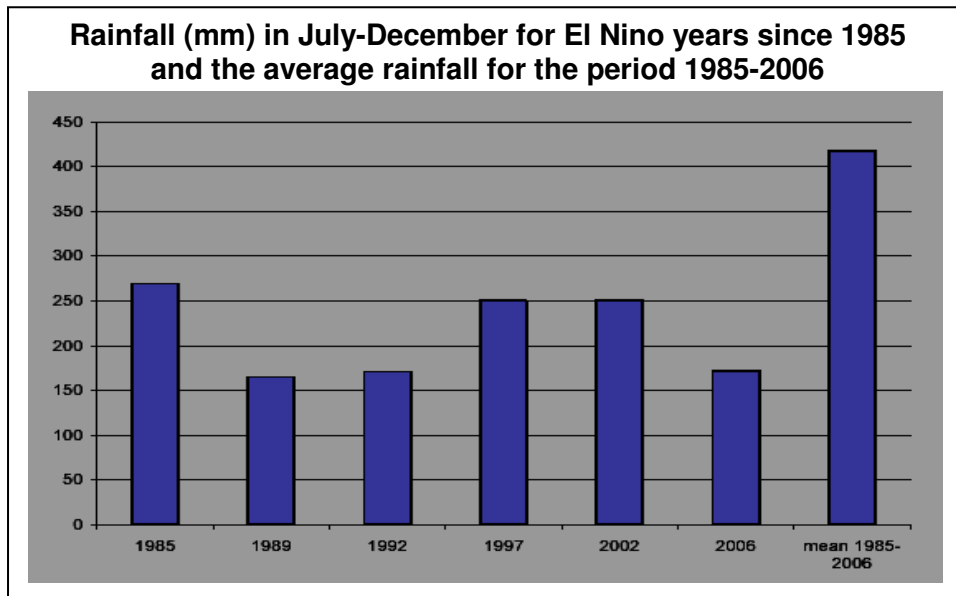
**Figure 10**



Source: Compile from PMPB media monitoring

Drought was related to ENSO (El Nino Southern Oscillation) phenomena, which caused low rainfall in the region. Initial rainfall reports for some parts of Eastern Indonesia indicate extremely low rainfall during the start of the 2006/2007 planting season.

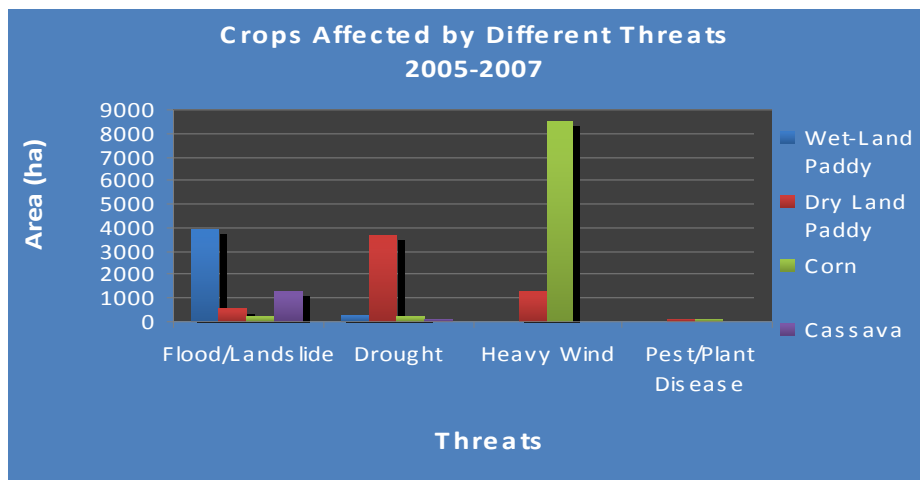
**Figure 11**



Source: adopted from CARE Food Security Assessment Report, March 2007

Other threats should be considered seriously, as those threats tend to occur repeatedly and affecting different crops differently.

**Figure 12**

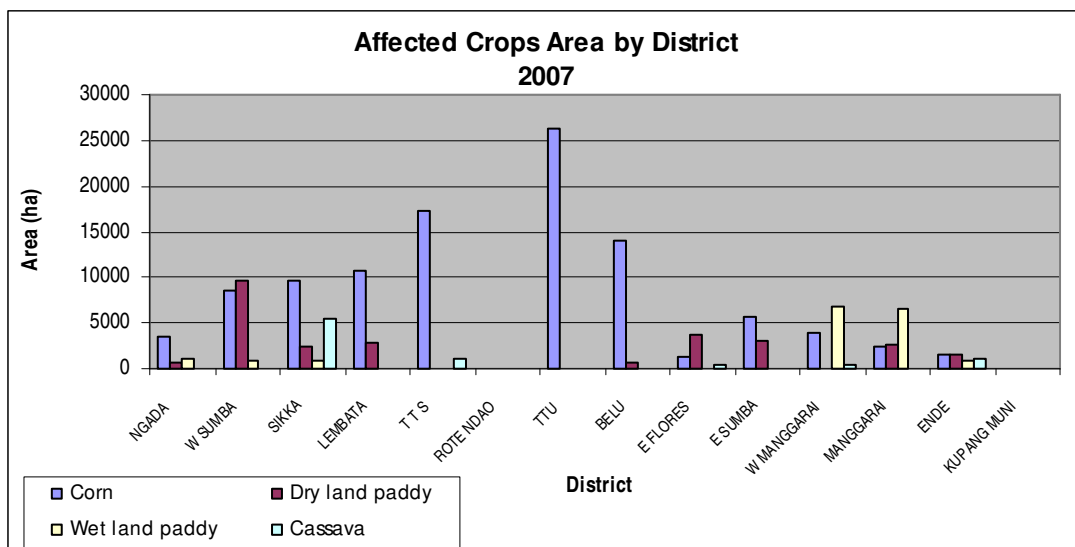


Source: NTT Agriculture Dept, 2007

As paddy crops require high rainfall to grow well, data on impact of drought in 2006-2007, shows that dry land paddy is the most susceptible crops to drought. The wet land paddy is assumed to be supported by irrigation system that makes it less vulnerable. As wet land paddy usually grows at the plain areas, it becomes vulnerable to flood/landslide. Corn identified as mostly susceptible to heavy wind, whilst also the second vulnerable crop to drought after dry land paddy. Cassava is the most resilient food crops to every threat.

Data available from government sources for crops affected areas by districts is limited to 2006-2007; whereas data in 2007 covered only drought affected area.

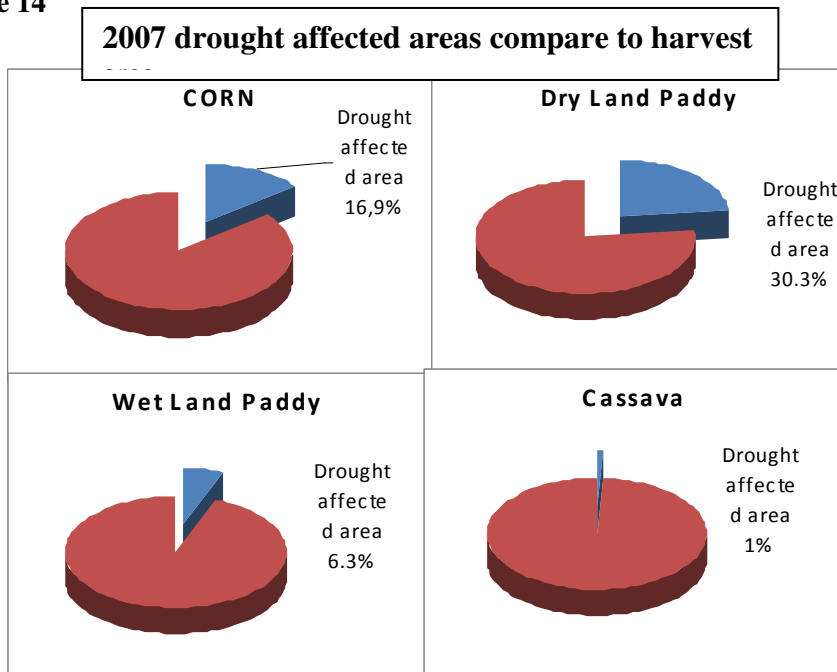
**Figure 13**



Source: NTT Agriculture Dept, 2007

In 2007, TTU district is mostly affected, especially its corn production, followed by TTS and Belu districts. Corn came up as the mostly affected crop. However, when the affected area is compared with harvested area; the most susceptible food crop is dry land paddy, and followed by corn.

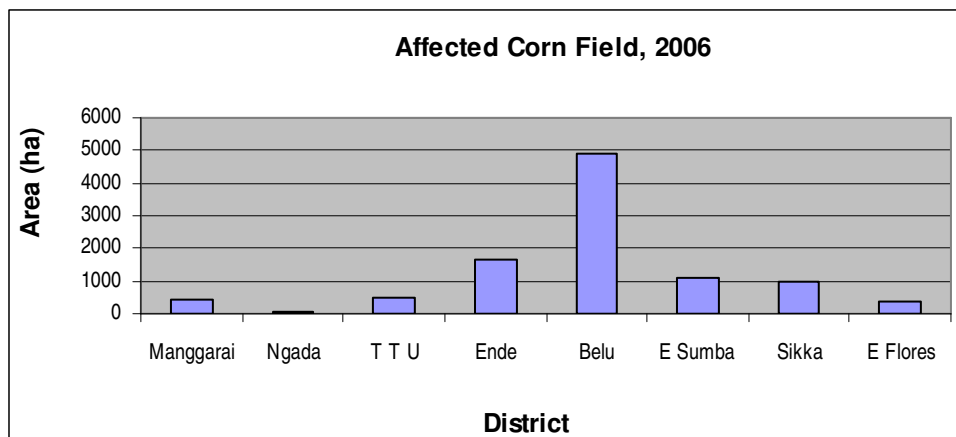
Figure 14



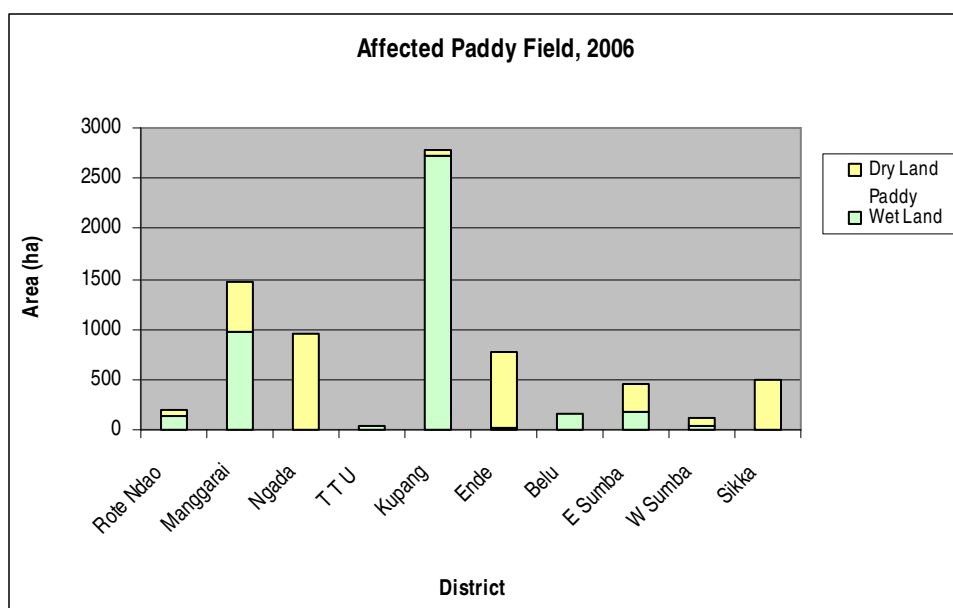
Source: NTT Agriculture Dept, 2007

There are considerably insufficient data available on affected food crops, as the only available data from government did not cover all districts. Figure 15, compiled from government source, shows that Kupang and Manggarai District - as rice production center in NTT - shared the largest paddy field disrupted by flood/landslide. While of corn production, the Belu and Ende District are mostly disrupted. However, again, the data need to be compared and completed with other sources if available.

Figure 15



**Figure 16**



Aside from affected by specific trigger factors, NTT farmers get used to food shortage since decades ago. The term *ordinary hunger* occasionally used to define particular period in each year when farmers experience food shortage. It usually happens around October to February, when food stock from previous corn harvest season has run up, and farmers are still waiting for the next harvest.

**Figure 17 Seasonal Food Availability Calendar**

| Jan             | Feb | Mar                         | Apr | May        | Jun | Jul | Aug | Sep | Oct             | Nov | Dec |
|-----------------|-----|-----------------------------|-----|------------|-----|-----|-----|-----|-----------------|-----|-----|
| Rainy Season    |     |                             |     | Dry Season |     |     |     |     |                 |     |     |
|                 |     | Corn/Dry Paddy Harvesting   |     |            |     |     |     |     |                 |     |     |
|                 |     | wet land paddy harvesting*) |     |            |     |     |     |     |                 |     |     |
| Ordinary Hunger |     |                             |     |            |     |     |     |     | Ordinary Hunger |     |     |

\*) depends on presence of irrigation

Source: compiled from various sources.

### **2.1.3. Vulnerabilities**

At community level, less land available to grow food is mentioned promptly as one of the main reason of food shortage<sup>5</sup>. As population increase, land distributed to the children which in turn lessen the width of land to be planted.

<sup>5</sup> From various documents, see for instance PIKUL Food Security Assessment in Mollo (TTS) and Sikka District, 2006.

**Table 3. Population Density by District, 1990-2005**

| Regency/Municipality     | Population Density per sq.km |       |          |
|--------------------------|------------------------------|-------|----------|
|                          | 1990                         | 2000  | 2005     |
| 01. West Sumba           | 72                           | 87    | 99,66    |
| 02. East Sumba           | 22                           | 26    | 29,46    |
| 03. Kupang               | 71                           | 58    | 58,32    |
| 04. Timor Tengah Selatan | 88                           | 98    | 103,8    |
| 05. Timor Tengah Utara   | 61                           | 76    | 79,27    |
| 06. Belu                 | 88                           | 151   | 146,42   |
| 07. Alor                 | 50                           | 57    | 60,12    |
| 08. Lembata              | -                            | -     | 77,9     |
| 09. East Flores          | 86                           | 93    | 121,41   |
| 10. Sikka                | 142                          | 152   | 162,45   |
| 11. Ende                 | 107                          | 113   | 118,21   |
| 12. Ngada                | 65                           | 73    | 80,93    |
| 13. Manggarai            | 70                           | 85    | 119,57   |
| 14. Rote Ndao            | -                            | -     | 82,59    |
| 15. West Manggarai       | -                            | -     | 64,03    |
| 71. Kupang Mun.          | -                            | 1.471 | 1.692,68 |
| NTT                      | 69                           | 83    | 89,97    |

Source: NTT in figures, 2007

Belu district hosted hundred of thousands of East Timor refugees in 1999, which caused a rapid change in density between 1990 and 2000, and it slightly decrease in 2005. Still it is the third dense district in the province. Conflict over land, especially agriculture land, appears lately as main causes of potential conflict in the area<sup>6</sup>. In Sikka district, household land ownership is approximately 0,25ha/HH. With 4-5 dependants within a household, land width considered as a major cause of food shortage.<sup>7</sup> However, dependency on land width is a result of traditional agriculture practice. For traditional dry land farmers, more food can only be obtained by expanding crop yield. Agriculture intensification, such as using fertilizer or improved technology is not part of dry land agriculture practice, up to recently.<sup>8</sup>

Farmers in NTT have been used to face ordinary dry season. Traditionally, farmers have the knowledge to identify the upcoming dry season, and adjust their planting pattern accordingly.<sup>9</sup> However, changing rainfall pattern without upgraded traditional knowledge, has led dry land farmers to be more vulnerable, as they are very much depends on rain (pattern and intensity) to grow food. Missing the right time to plant, even if there's enough rain intensity, will lead farmers to – what described as –

<sup>6</sup> Refer, for instance CIS Timor Conflict Assessment, 2007.

<sup>7</sup> BAPIKIR Food Security Project Report, 2008.

<sup>8</sup> Refer, for instance, AFC Food Security, Water and Sanitation Assessment Report, 2007.

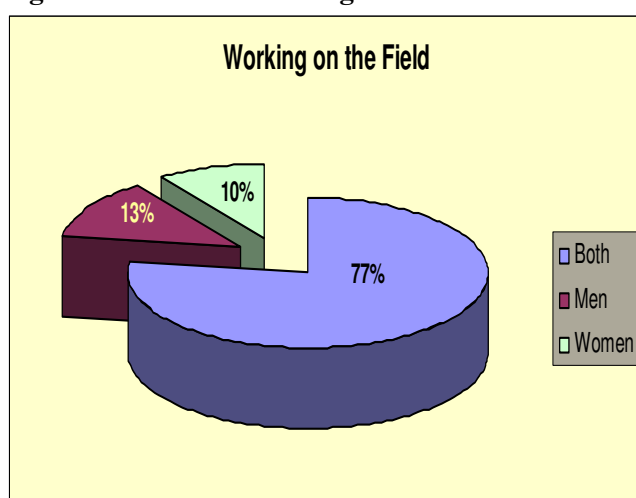
<sup>9</sup> Field interviews, prior to Desk Review.

planting failure, which is a waste of seeds. Absence of early warning after a prolonged and repeated food crisis is a dynamic pressure to food production in the province.

#### **2.1.4. Gender Aspect**

At household level, to produce food, there's no significant differences contribution between men and women. According to AFC assessment, 77% of the work on the field was done together by men and women. Women activities are mostly related with weeding and planting, while field cleaning and slash-burn activity is mainly done by men.

**Figure 18. Gender based Agriculture division of roles**



However, women are also responsible for domestic works, including household food preparation. In related to nutrition problem among mothers in the province, SMERU cited that:

*Most of pregnant and lactating mothers in NTT are under nourished due to insufficient food intake and high workload in comparison to men. Strong patriarch culture within community tends to benefit men as head of household, in term of food consumption,*

*as husband and the boys are on top priority.*<sup>10</sup>

Such conclusion is confirmed by ECOSOC research report on Malnutrition in NTT. They found out that in both households with and without under nourished children, mothers experience high work burden and do not receive priority in food consumption. There are also common practices within household to separate men's (husband) meals, so that there will always be guarantee that men have enough quantity of food. In the time of food shortage, this consumption pattern will left women as the latest priority, meaning that they are at highest risk of not getting food when food is not enough for whole family members.<sup>11</sup>

Men are more favorable in terms of land ownership, as one of the most significant production asset. On the contrary, women have sufficient access as they are highly involved in production activities, but not the control. PIAR findings in PPA below might represent common situation<sup>12</sup>:

<sup>10</sup> SMERU, 2000

<sup>11</sup> ECOSOC Report, 2006

<sup>12</sup> PIAR PPA Report, unedited translation, 2007

**Table 4. Gender based Access and Control over Productive Assets**

**Profile of Access and Control**  
**Results of PPA in Supul village, TTS District**

| No | Resource              | Female |                      | Male   |                     |
|----|-----------------------|--------|----------------------|--------|---------------------|
|    |                       | Access | Control              | Access | Control             |
| 1  | Plantation Area       | √      | <b>X</b>             | √      | √                   |
| 2  | Rice Land             | √      | <b>X</b>             | √      | √                   |
| 3  | Mamar                 | √      | <b>X</b>             | √      | √                   |
| 4  | Agricultural products | √      | √                    | √      | √                   |
| 5  | Forest                | √      | √ (mutual agreement) | √      | √(mutual agreement) |

It is not common for women to inherit land. Hence, women-headed households were more vulnerable to land ownership, which in turn reduce their ability to produce enough food, especially in the area with high population density.

**Table 5. Percentage of Women Headed Household by District 1990, 2000, 2005**

| No | Province/District/<br>Municipality | % of Women's<br>Headed HH<br>(2004) | Population Density per<br>sq.km |       |          |
|----|------------------------------------|-------------------------------------|---------------------------------|-------|----------|
|    |                                    |                                     | 1990                            | 2000  | 2005     |
| 1  | West Sumba                         | 9,81                                | 72                              | 87    | 99,66    |
| 2  | East Sumba                         | 6,97                                | 22                              | 26    | 29,46    |
| 3  | Kupang district                    | 9,9                                 | 71                              | 58    | 58,32    |
| 4  | TTS                                | 10,03                               | 88                              | 98    | 103,8    |
| 5  | TTU                                | 12,63                               | 61                              | 76    | 79,27    |
| 6  | Belu                               | 12,35                               | 88                              | 151   | 146,42   |
| 7  | Alor                               | 14,47                               | 50                              | 57    | 60,12    |
| 8  | Lembata                            | 25,67                               | -                               | -     | 77,9     |
| 9  | East Flores                        | 23,51                               | 86                              | 93    | 121,41   |
| 10 | Sikka                              | 15,61                               | 142                             | 152   | 162,45   |
| 11 | Ende                               | 21,13                               | 107                             | 113   | 118,21   |
| 12 | Ngada                              | 9,05                                | 65                              | 73    | 80,93    |
| 13 | Manggarai                          | 7,73                                | 70                              | 85    | 119,57   |
| 14 | Rote Ndao                          | na                                  | -                               | -     | 82,59    |
| 15 | West Manggarai                     | na                                  | -                               | -     | 64,03    |
| 16 | Kota Kupang                        | 17,67                               | -                               | 1.471 | 1.692,68 |
|    | Provinsi NTT                       | 12,64                               | 69                              | 83    | 89,97    |

*Source: compiled from Social Welfare Indicators of NTT 2005 and NTT in Figures, 2005*

Lembata District has the highest percentage of women-headed households, but quite low population density. East Flores District has the second largest women-headed households and the fourth highest population density. Ende and Sikka are also having

alarming figure in this sense. Such situation put women in more vulnerable situation with respect to food availability due to lack of access and control over productive assets.

## 2.2. Food Accessibility

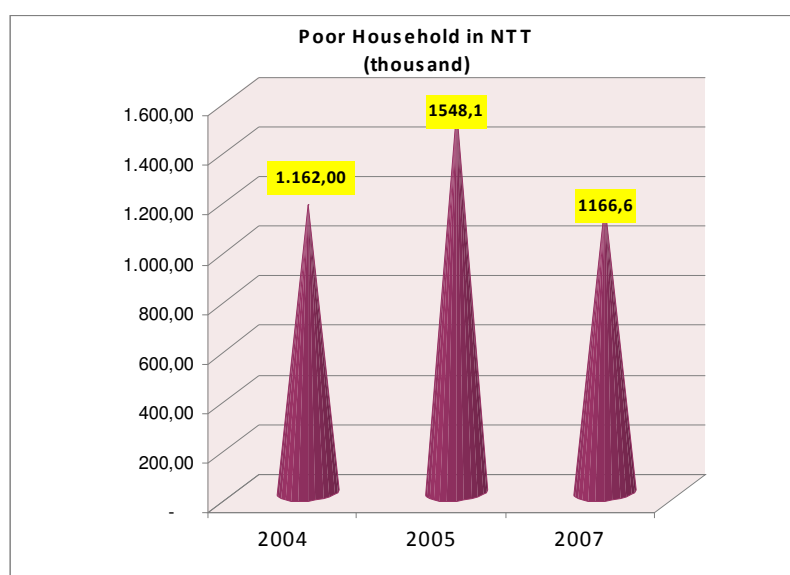
### 2.2.1. Poverty in the Province

Access to food is mainly determined by purchasing power, food price and food distribution. Purchasing power is linked to the income, the livelihood access, and ownership of household assets. Poverty, therefore, significantly determines people's capability to access sufficient food.

According to Human Poverty Index, in 2002, NTT was the 6<sup>st</sup> poorest province among 33 provinces in Indonesia.<sup>13</sup> In 2005, 27,72% of NTT population are living in poverty, which again placed the province at the 6<sup>th</sup> poverty rank.<sup>14</sup> In 2005, NTT is the 32<sup>th</sup> lowest Human Poverty Index, out of 34 provinces in Indonesia.<sup>15</sup>

**Figure 19. Poor Household in NTT 2004-2007**

In 2005, there is an increasing number of households living under poverty, especially due to increasing price of household commodities following the increase of fuel price. In 2007, even though the number is lower than in year 2005, but it is still higher than that in 2004.



*From various sources*

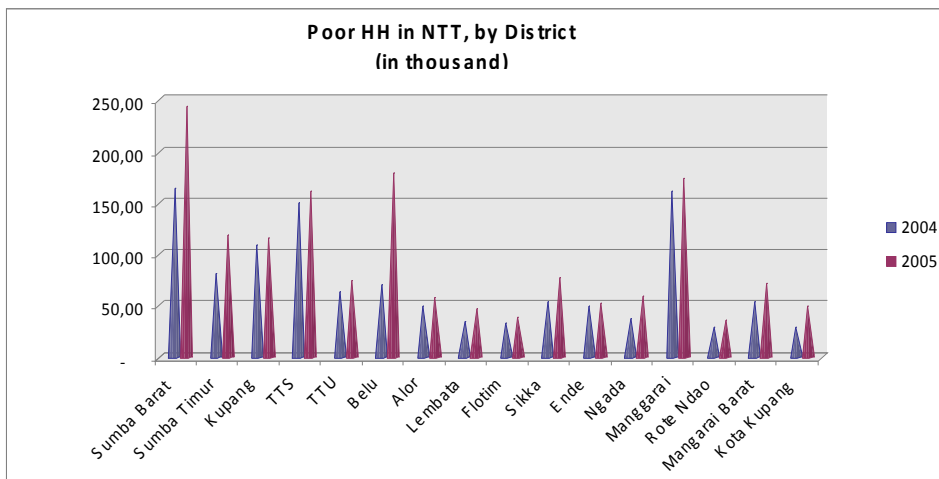
Poverty figure is different among district in NTT. The figure below shows level of poverty among districts.

**Figure 20. Poor Household by District, 2004-2005**

<sup>13</sup> *Human poverty index, Indonesia and Provincial Level, 1999 and 2002*

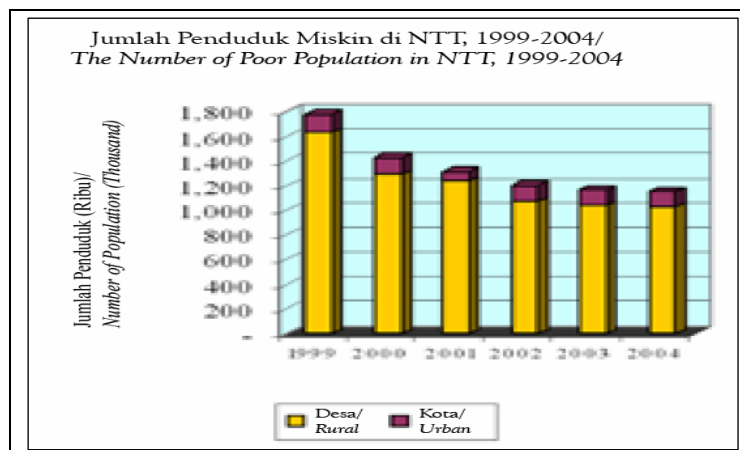
<sup>14</sup> *SUSENAS, 2001-2005*

<sup>15</sup> *HDI 2005*



West Sumba, Manggarai, TTS and Belu districts appear to have the highest amount of households living in poverty districts. In related to access to food, these districts are well known as rice production center in the province, hence their food production is mainly to be sold.

**Figure 21. The Number of Poor Population in NTT, Urban and Rural, 1999-2004**



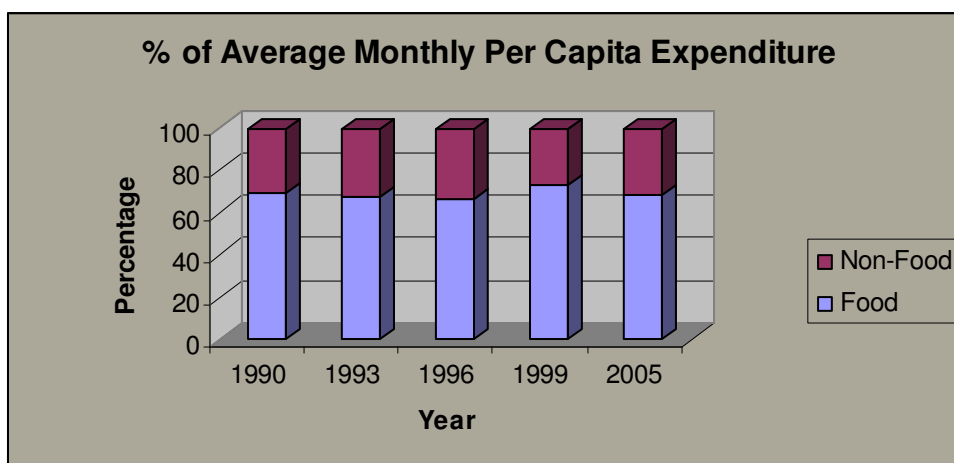
Source: SMERU, 2006.

Approximately 80% of the poor are living in rural areas, and majority of them are farmers. Such situation added to risk of farmers, if they are presumably the same farmers that experience shocks in their production, with limited access to purchase food externally due to their poor condition.

### **2.2.2. Food Price**

Within such chronic poverty, NTT people spend most of their income on food items, as shown below:

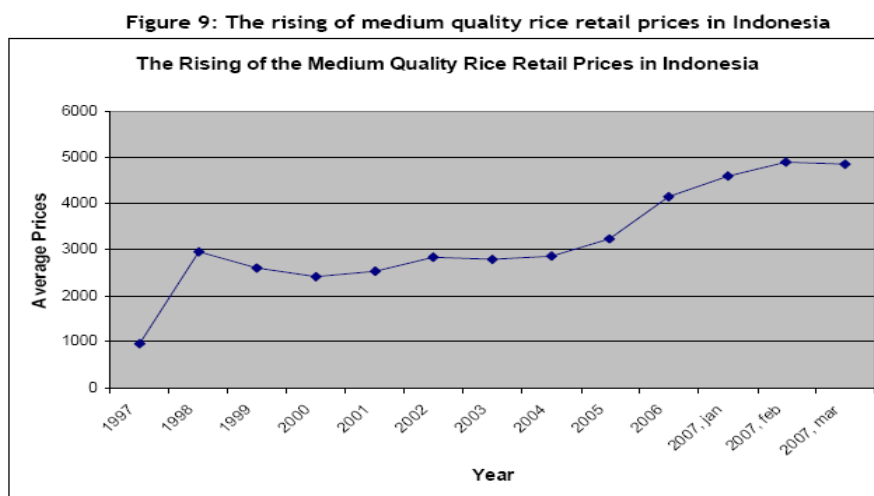
**Figure 22. % of Average Monthly Per Capita Expenditure, 1990 - 2005**



Source: *Social Welfare Indicators of NTT Province, 2005*

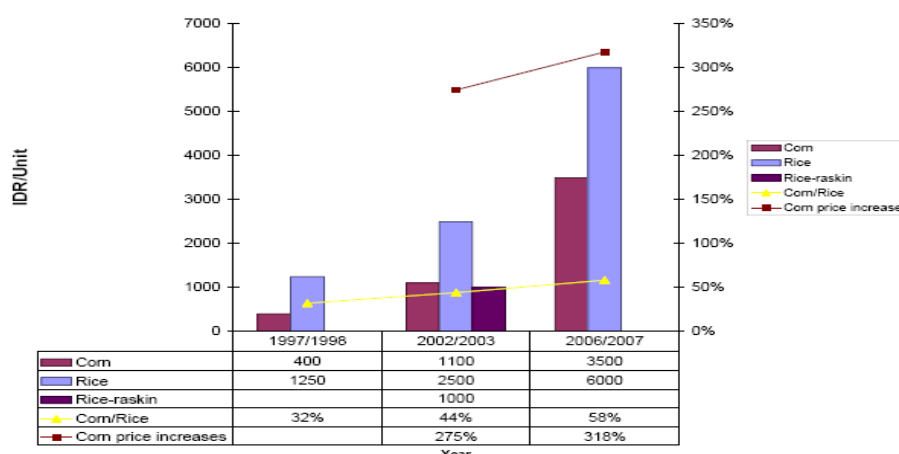
Given such high percentage of expenditure on food items, people become vulnerable to increasing of food items price. Unfortunately, that is the case nationally, and also in the province.

**Figure 23.**



Source: *adopted from ACF Assessment Report, 2007*

**Figure 24. Increasing price of Corn and Rice price in NTT since 1997-2007**



Source: Adopted from CARE Assessment Report, 2007

Rice is the main food that people would buy from the market. Increasing rice price during the time of decreasing food production due to drought put people in deeper crisis. As CARE assessment report found that *even prior to 2006 El Nino occurrence, there was increasing food insecurity among people, and it might be the impact of increasing price of rice and corn.*

Impact of food items price is different from one place to another, due to transportation barrier. As an islands province, the remote small islands experience much higher price, due to high transport cost and limited availability. The price of rice in Sabu and Adonara islands could be twice as high of that in Kupang Municipality.<sup>16</sup> Road condition, even in the main islands, also contributes to higher price of food items. In NTT province, 59.7% of district road<sup>17</sup> is considered as not appropriate, with 21.6% of it is severely damaged<sup>18</sup>. The condition of sub district road which connecting villages and from villages to sub district centers are observed to be even worst, although no appropriate data available.

### **2.2.3. Income and Purchasing Power**

Aside of price of food items, people's income is another aspect of access to food. High poverty level has indicates low income of NTT people. Agriculture remains the main livelihood which contribute to people's income, which up to 2006, 77,82% of workforce are working in agriculture sectors and contributes to 41,5% of regional GDP.

<sup>16</sup> From various media news

<sup>17</sup> District road represent road connecting sub districts within province.

<sup>18</sup> Data and Information Sub Division, Bina Program, Bina Marga Directorate, Public Works Dept ( 31-08-2006 )

While employment rate in agriculture sector tends to be stable, the contribution to regional GDP, on other hand, tends to decrease in comparison to other sectors, as shows in figure 2.

There are various challenges to farmers' income recently, such as instability (hence, uncontrollable) of commodity price and low and uncertain wages. It impacted per capita income, as shows below:

**Table 6. Per Capita Income based on Constant Price, 2004-2006**

| No | District            | 2004             | 2005             | 2006             |
|----|---------------------|------------------|------------------|------------------|
| 1  | West Sumba          | 1.400.818        | 1.442.655        | 1.473.767        |
| 2  | East Sumba          | 2.505.751        | 2.484.513        | 2.553.048        |
| 3  | Kupang District     | 2.624.726        | 2.585.205        | 2.615.486        |
| 4  | TTS                 | 1.747.315        | 1.786.927        | 1.843.342        |
| 5  | TTU                 | 1.754.400        | 1.808.082        | 1.857.483        |
| 6  | Belu                | 1.532.918        | 1.495.152        | 1.489.171        |
| 7  | Alor                | 1.612.832        | 1.642.273        | 1.682.324        |
| 8  | Lembata             | 1.142.506        | 1.130.709        | 1.157.331        |
| 9  | East Flores         | 1.965.404        | 2.001.869        | 2.046.925        |
| 10 | Sikka               | 2.319.227        | 2.424.230        | 2.506.062        |
| 11 | Ende                | 2.384.116        | 2.519.586        | 2.631.524        |
| 12 | Ngada               | 1.824.226        | 1.878.480        | 1.943.736        |
| 13 | Manggarai           | 1.413.956        | 1.449.566        | 1.468.649        |
| 14 | Rote Ndao           | 2.014.117        | 1.999.828        | 2.064.019        |
| 15 | West Manggarai      | 1.608.684        | 1.602.252        | 1.614.012        |
| 16 | Kupang Municipality | 5.067.590        | 5.042.121        | 5.166.347        |
| 17 | <b>NTT Province</b> | <b>2.140.051</b> | <b>2.156.136</b> | <b>2.213.229</b> |

*Source: NTT in Figures, 2007*

Lembata district appears to have the lowest per capita income, followed by Manggarai, West Sumba and Belu districts; regardless their role as rice production center in the province.

Employment opportunity and level of wages are precondition of income stability in order to be able to access sufficient food. Up to 2006, NTT has 5.46% unemployment, with the highest rate is in Kupang Municipality. Increased unemployment rate in Kupang, as the capital of NTT province, is also related to crisis situation in rural areas which force people to seek for better income in the urban areas.

**Table 7. Working Population and Employment, NTT, 2006**

| No. | District       | Workforce        | Non Workforce  | Employment       | Un-Employ      | %           |
|-----|----------------|------------------|----------------|------------------|----------------|-------------|
| 1   | Kupang Mun.    | 95.525           | 67.551         | 81.200           | 14.325         | 15,00       |
| 2   | Kab. Kupang    | 179.495          | 42.006         | 174.731          | 4.764          | 2,65        |
| 3   | West Sumba     | 230.858          | 25.784         | 221.764          | 9.094          | 3,94        |
| 4   | East Sumba     | 106.164          | 38.411         | 100.049          | 6.115          | 5,76        |
| 5   | TTS            | 143.206          | 70.019         | 139.892          | 3.314          | 2,31        |
| 6   | TTU            | 113.230          | 17.576         | 110.145          | 3.085          | 2,72        |
| 7   | Belu           | 128.269          | 47.206         | 119.804          | 8.465          | 6,60        |
| 8   | Alor           | 83.831           | 36.533         | 73.825           | 10.006         | 11,94       |
| 9   | Lembata        | 53.921           | 6.791          | 53.252           | 669            | 1,24        |
| 10  | East Flores    | 110.242          | 40.479         | 94.427           | 15.815         | 14,35       |
| 11  | Sikka          | 156.094          | 21.843         | 152.780          | 3.314          | 2,12        |
| 12  | Ende           | 123.245          | 42.822         | 101.060          | 22.185         | 18,00       |
| 13  | Ngada          | 111.404          | 27.456         | 110.735          | 669            | 0,60        |
| 14  | Manggarai      | 330.355          | 54.563         | 317.504          | 12.851         | 3,89        |
| 15  | West Manggarai | 133.395          | 10.869         | 132.109          | 1.286          | 0,96        |
| 16  | Rote Ndao      | 57.162           | 10.717         | 55.298           | 1.864          | 3,26        |
| .   | <b>Total</b>   | <b>2.156.396</b> | <b>560.626</b> | <b>2.038.575</b> | <b>117.821</b> | <b>5,46</b> |

Source: Analysis of Workforce profile, NTT Province, Dept of Labor and Transmigration

Level of wages is influenced by level of education, as shows in figure 27. It shows that the lower the education, the lower salary received, for higher working hours. Unfortunately, most of the workforce in NTT is still on the low level of educational attainment.

**Table 8. Averages of Weekly Hours Worked and Average of Wages/ Salaries per Month by Educational Attainment, 1999**

| Educational Attainment |                                  | Working Hours | Wages/ Salaries |
|------------------------|----------------------------------|---------------|-----------------|
| 1                      | Not Schooling                    | 44            | 107,601         |
| 2                      | Did Not Completed Primary School | 39            | 122,415         |
| 3                      | Primary School                   | 44            | 189,675         |
| 4                      | Junior High School (General)     | 43            | 325,711         |
| 5                      | Junior High School (Vocational)  | 33            | 230,31          |
| 6                      | Senior High School (General)     | 41            | 424,002         |
| 7                      | Senior High School (Vocational)  | 40            | 537,429         |
| 8                      | Diploma I/II                     | 36            | 599,223         |
| 9                      | Diploma III                      | 40            | 380,885         |
| 10                     | University                       | 38            | 642,814         |

Source: NTT in Figures

Additionally, income distribution in the province shows that economic disparity is increasing. Despite increasing economic growth and GDRP, poverty is also growing and unsolved. It left poor people in more and more vulnerable, concerning their access to food.

**Table 9. Income Distribution and Gini Index, NTT 1990 – 2005<sup>19</sup>**

| Year | 40% of Population with lowest expenditure | 40% of Population with moderate expenditure | 20% of Population with highest expenditure | Gini Index |
|------|---|---|--|------------|
| 1990 | 21,94                                     | 38,70                                       | 39,36                                      | 0,296      |
| 1993 | 25,66                                     | 37,58                                       | 36,76                                      | 0,254      |
| 1996 | 22,41                                     | 37,93                                       | 39,66                                      | 0,296      |
| 1999 | 23,60                                     | 38,40                                       | 38,00                                      | 0,280      |
| 2003 | 24,61                                     | 39,23                                       | 36,16                                      | 0,24       |
| 2004 | 20,57                                     | 37,10                                       | 42,23                                      | 0,34       |
| 2005 | 16,31                                     | 25,88                                       | 57,82                                      | 0,42       |

*Source.: Compiled from NTT in Figures and BPS NTT, Economic Indicator, 2005*

As shown in the above figure, income obtained by 40% low level community is decreasing year by year, and in 2005, the disparity has fall below World Bank 17% criteria. While Gini Index also indicates the same pattern, which the disparity is moving closer to 1,00. An economic analyst argued that increasing disparity is caused mainly by decreasing GDRP in agriculture sector, where most of the people are working in.

#### **2.2.4. Gender Aspect**

While women are highly involve in productive economic activities, but they received lower wage and higher working hours, even those with similar education level with men:

<sup>19</sup> There are two criteria used to measure income distribution, which are income disparity criteria from World Bank and Gini Index. According to World Bank criteria, disparity occurs when 40% of lowest level received less than 17% of total income. Furthermore, Gini Index is ranging between 0,00 to 1,00; if Gini Index is close to 0,00, means that distribution is more even. In the contrary, if Gini Index is closer to 1,00; indicated higher disparity.

**Table 10. Average of Weekly Hours Worked and Average of Wages/ Salaries per Month by Educational Attainment and Sex, 1999**

| Educational Attainment             | Male          |                 | Female        |                 |
|------------------------------------|---------------|-----------------|---------------|-----------------|
|                                    | Working Hours | Wages/ Salaries | Working Hours | Wages/ Salaries |
| 1 Not Schooling                    | 42            | 118,75          | 56            | 60              |
| 2 Did Not Completed Primary School | 39            | 160,367         | 39            | 66,362          |
| 3 Primary School                   | 43            | 208,296         | 49            | 93,173          |
| 4 Junior High School (General)     | 47            | 364,066         | 29            | 194,67          |
| 5 Junior High School (Vocational)  | 32            | 137,898         | 39            | 545             |
| 6 Senior High School (General)     | 41            | 438,923         | 39            | 367,446         |
| 7 Senior High School (Vocational)  | 40            | 536,539         | 39            | 538,872         |
| 8 Diploma I/II                     | 36            | 645,954         | 38            | 446,413         |
| 9 Diploma III                      | 42            | 423,525         | 37            | 337,033         |
| 10 University                      | 38            | 685,978         | 37            | 437,348         |

Source: NTT in Figures

While in general, level of education and literacy rate of women is lower than men that add to lower income women would obtain.

**Table 11. Education related GDI Index, 2002**

| GDI Index                       | NTT  |      | Indonesia |      |
|---------------------------------|------|------|-----------|------|
|                                 | ♂    | ♀    | ♂         | ♀    |
| Adult literacy rate             | 87.1 | 81.4 | 93.5      | 85.7 |
| Mean years of schooling (years) | 6.4  | 5.6  | 7.6       | 6.5  |

Source: National Statistic Bureau

At household level, women involvement in productive activities is high. They usually are responsible for small cattle breeding, handy craft making, collecting and selling firewood, and other home-based economic activities. Despite of their roles, they are not having control upon the use of income, as represent in PIAR PPA Report:

**Table 12: Gender based profile of Access and Control**

**Profile of Access and Control**  
(Results of PPA in Oetefu village, Rote Barat Daya Sub-district)  
(Farm Group of dry land & fishermen)

| Resources       | Access (Right to Posses) |          | Control (Right to Sell) |          | Holder of Income |   | Right to Determine use of Yields |          |
|-----------------|--------------------------|----------|-------------------------|----------|------------------|---|----------------------------------|----------|
|                 | ♂                        | ♀        | ♂                       | ♀        | ♂                | ♀ | ♂                                | ♀        |
| Land            | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | √        |
| House           | √                        | √        | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Chicken         | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Dog             | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Pig             | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Goat            | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Palmyra         | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Coconut         | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Onion           | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Palmsugar       | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Salt            | √                        | √        | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Jewelleries     | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |
| Marine products | √                        | <b>x</b> | √                       | <b>x</b> | √                | √ | √                                | <b>x</b> |

Source: PIAR PPA Report – unedited translation

## 2.3. Response to Food Insecurity

### 2.3.1. Government response

Since 2002, NTT Province Government has formed Food Security Council (*Dewan Ketahanan Pangan*) as an effort to coordinate multi-sector response and intervention to food problems in the province. The Council is chaired by the Governor, with 24 government agencies as the members, including universities, and consists of 5 Task Force, namely:

1. Food Production Task Force, coordinated by Agriculture and Food Security Department with 15 units as members.
2. Distribution Control and Price Monitoring Task Force, coordinated by Industry and Trade Department with 13 units and sub units as member.
3. Food and Nutrient Diversification Task Force, coordinated by Health Department with 8 units as member.
4. Quality Monitoring, food and nutrient awareness Task Force, coordinated by Social Affairs Department with 14 sub units as member.

5. Supporting infrastructure Task Force, coordinated by Public Works Department with 14 units and sub units as member.

The Council was designed as a coordinating body and was assigned to formulate policies on strengthening food security, which then implemented by related sectors. So the Council itself did not have its own program, but to be integrated to sector's programs. Each unit (sector) needs to report to the Council regularly through three monthly coordination meeting, or more often if necessary. The Council drew up three main strategies to coordinate programs and intervention on food security, namely<sup>20</sup>:

1. Particular sectors' development program, especially those related to food security
2. Emergency response programs, such as rice distribution (rice for poor, special market operation) and seeds distribution. It aimed to overcome sudden food insecurity.
3. Community Development programs in order to overcome chronic and recurrent food crisis, which aimed to create self-sufficiency communities.

The concept of coordinating government's efforts seemed quite good, as lack of coordination has been identified as a cause of ineffectiveness of government intervention. However, the concept didn't clearly define applicable mechanisms of cross sectoral coordination and common goals to be achieved by each sector and by the Council itself. The serial coordination meetings most often have no clear direction and decision making authority. The absence of decision making authority, despite the fact that council was chaired by Governor, lead to very limited budget allocated from local budget (APBD) for its operational, and no budget for programs of its own. While the Council was at province level, more than 80% of the budget distributed to technical sectors comes from national level, taken from the *deconsentration budget*.

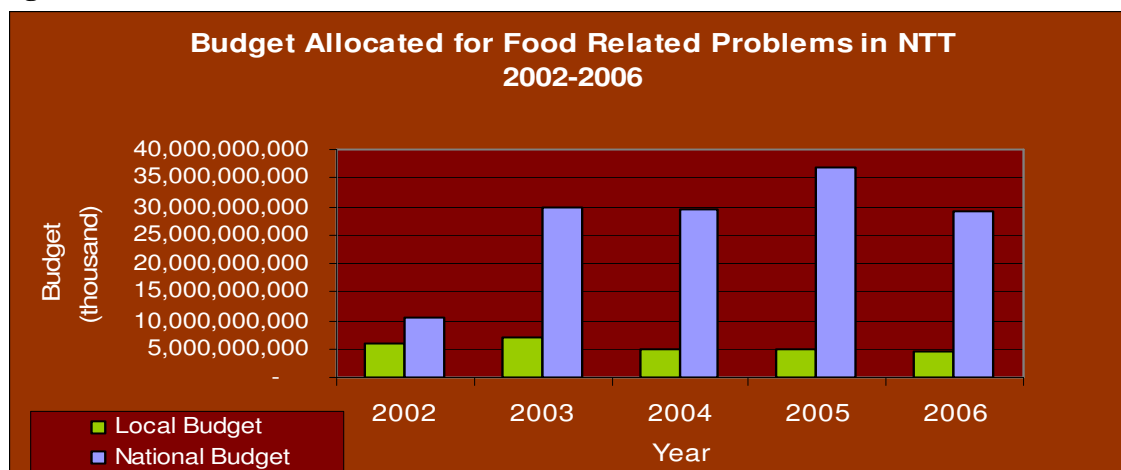
The issue of budgeting has become a serious concern in discussing government commitment to address food security problems. Budget dependency to central government lessen local government ability to formulate programs which really suit to local context. On the other side, budget available under local government authority (APBD) is usually allocated mostly for government operational cost (ranged between 60% to 80% annually) which left only tiny amount to fund direct developmental programs.

Budget structure of two main local government units who play significant roles in food security, Agriculture Department and Food Security Body, explains the dependency and lack of commitment, as shows below:

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<sup>20</sup> Adopted from Governor Annual Accountability Report, 2002.

**Figure 25.**



Source: 1. Report on Government Accountability and Performance, Agriculture Dept NTT, 2002-2006; 2. Food Security Body NTT, 2002-2006

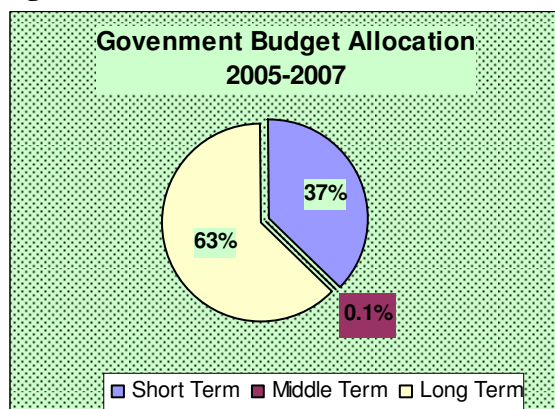
In Provincial budget of the Agriculture Department, 63.5% was allocated for government operational expenditure, and left only 36.5% for public expenditure. Within that stated as public expenditure, however, contains also travel cost, accommodation and monitoring cost of government officials. It then left even less to address the real problems at the community level.

Due to difficulties in acquiring data from government; analysis on government budget cannot be maximally elaborated. Data on government programs and budget allocation below is based on data from media monitoring on local (province and district) government response to food insecurity cases (2005-2007), government evaluation report on food and nutrition intervention programs (cross sector programs, 2005-2006), evaluation of Agriculture Department and Food Security Body program implementation (2005-2007) and report from Forestry Department NTT programs to address food security problems (2005-2007)<sup>21</sup>. Although it may not reflects all the programs and budget allocated all over province and district, it is safe to say that all the programs and budget mentioned in the next part are those specifically aimed to address food security problems.

In 2005-2007, government response to food crisis showed that majority of funds are for long term response.

<sup>21</sup> All the data gathered has been re-structured and selected to avoid overlapped as they are gathered from various sources.

**Figure 26.**



*Source: Compiled from various dept at province level.*

Short term response covers type of program/activities that aimed only to fulfill immediate food needs, such as food aid or food for work. Middle term covers activities such as seeds distribution, which enable people to get enough food for one planting season, and can only be effective if people still have other production assets and preconditions. While long term intervention covers more on strengtning people livelihoods, mostly taken form of

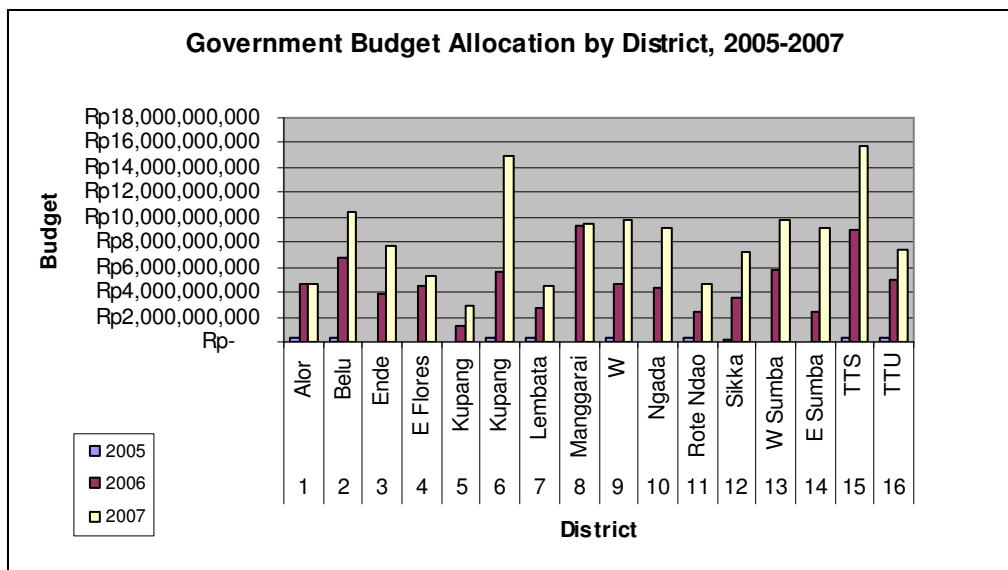
strengthening people economic ability in agriculture and forestry sectors.

The above data shows that the main type of intervention, in terms of budget allocation, is the long-term one. When it is examined further, the main type of livelihoods that encouraged by government intervention are: wet paddy agriculture (by providing infrastructure and inputs) and cash crops (by providing seeds, trainings, transportation infrastrucur – mainly road, etc). On the other hand, short term response in terms of food distribution consists of mainly rice distribution. There are limited program/intervention to strengthen food self-production capacities and/or food diversification.

Government budget was distributed to all districts<sup>22</sup>; Kupang and Rote Ndao have the least allocation as they are commonly considered as less vulnerable to food insecurity. In 2006, Manggarai district received slightly higher amount of money compare to TTS district (due to flood and landslide in the area), but over the last 3 year, TTS, - the most popular district of food crisis and under nourished cases - received the largest amount of budget. It is understandable that the district tapped majority of government short term response budget. Also, TTS received considerably big amount of budget for long term intervention with only slightly below that received by Kupang district. As described earlier, the long term program of government titled as food security (or food security supporting) programs are focusing on building infrastructure of wet land paddy agriculture, supporting agriculture technology, extensification and intensification of commodity crops agriculture, including road construction and/or rehabilitation.

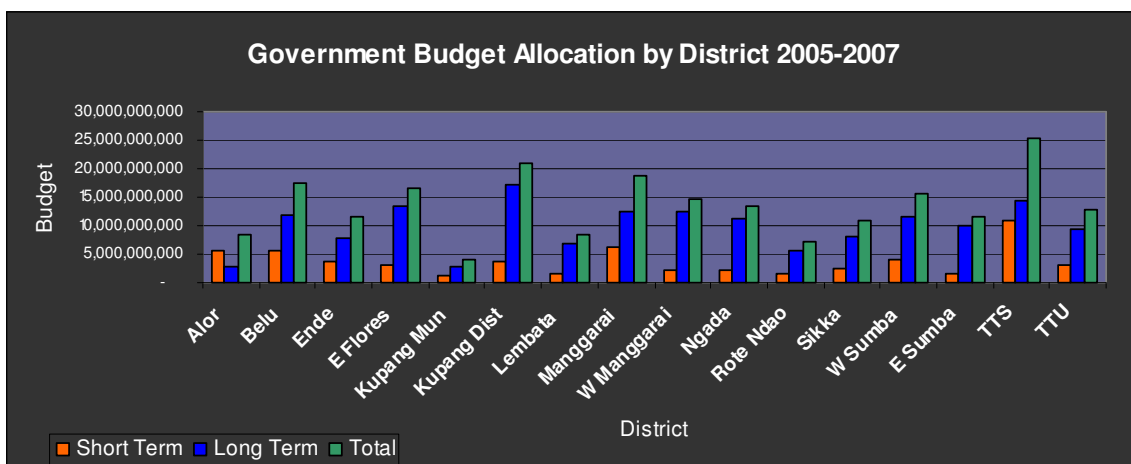
<sup>22</sup> Data is not covering Nagakeo, Southwest Sumba and Middle Sumba Districts, as there's no significant data available due to its newly established.

Figure 27.



Source: compiled from various sources

Figure 28.



Source: compiled from various sources

Unfortunately, as data available are not sufficient and covers only short period, it is still difficult to measure impact of government program to food security situation in the community. For instance, despite of its highest budget received, TTS district was on the fifth lowest per capita income and economic growth in 2006 and on the sixth highest poverty in 2005 (of 16 districts), and remains one of the most affected by threats on its food production. However, as data of budget allocation only available from 2005-2007, it is still difficult to analyse the connection. It is also challenging to further explore whether huge amount of money allocated it is considered as the most vulnerable area, or the area remains vulnerable because of mis-management of the fund (take an example of the failed Food Security Council). This is, in fact, a big question of all NTT province situation, considering the occurrence of recurrent and prolonged food crisis. The situation warrant further examination and advocacy.

### **2.3.2. INGOs and UN Agencies Response**

The presence of INGOs in NTT has started since at least two decades ago, and increasing sharply in 1997 (due to drought and economic crisis) and 1999 (due to East Timor refugees influx). Within the last four years, there are 11 INGOs and 3 UN Agencies (UN FAO, UN WFP and UNICEF) working in the province.

Data gathered on INGOs and UN Agencies' programs are mainly obtained from Joint Secretariat of Bappeda (Government Planning Agency) who has attempted to put together all the information about overseas aid in the province as a first step toward effective coordination. However, the data might not be complete, as those who did not respond to Secretariat' admission form are not included. But this data is quite representative and so far considered as the most complete among others.

For the review purpose, data presented here does not cover all INGOs and UN Agencies presence in the province. It is selected to ones mentioned as food security intervention and those aimed to strengthen people's economic capacities (income generation, access to market, etc).

Unlike government, INGOs and UN Agencies presence are not balance in terms of area coverage, as shows below:

**Table 13. INGOs & UN Agencies Working in NTT 2004-2007**

| <b>District</b> | <b>INGOs&amp;UN Agencies</b>        |
|-----------------|-------------------------------------|
| Alor            | WFP, WVI                            |
| Belu            | CARE, CCF, OGB, UN FAO, WFP         |
| Ende            | CARE, WFP                           |
| East Flores     | CARE, CCF                           |
| Kupang Dist     | CARE, CCF, NTA, WFP, OGB, PLAN, WVI |
| Lembata         | CARE, CRS, PLAN                     |
| Ngada           | WFP                                 |
| Rote Ndao       | WVI                                 |
| Sikka           | NTA                                 |
| West Sumba      | WVI                                 |
| East Sumba      | WVI                                 |
| TTS             | CARE, CCF, CWS, WFP                 |
| TTU             | WFP, WVI, OGB, CRS, CARE, UN FAO    |

*Compilation of Overseas Aid in NTT 2004, 2005,2006,2007 by Joint Secretariat Bappeda*

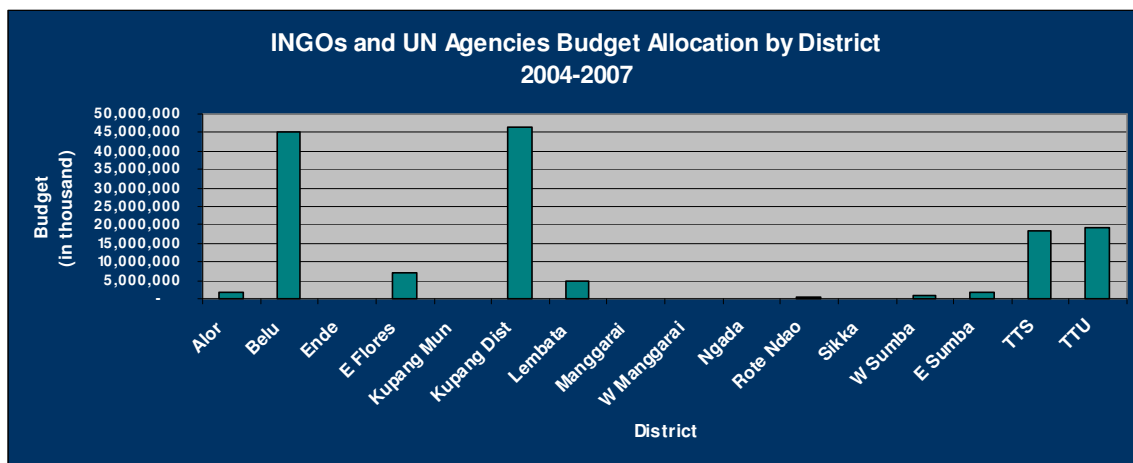
There's high concentration of INGOs and UN Agencies presence in West Timor than any other areas, especially very low in Western part of Flores island. As some of the

INGOs have been working in the particular district earlier than 2004, it is hard to found out the reasons behind their area choices. It is difficult as well to find an overall assessment report of the whole province which enable us to understand the whole picture of food problems and the reasons why particular organisation choose to work in particular area. In fact, the organisations tend to work in areas where their assessment taken place, and the assessment usually considerably deep, covering community and household level problems.

Given the fact that most of the organisations are working in West Timor areas, there might be three background factors : 1) The presence of ex East Timorese refugees who has triggered a lot of INGOs presence since 1999, and has not settled up to recently; 2) Media coverage of recurrent crisis, which exposed more on West Timor; 3) physically, West Timor is easier to access, especially those coming from outside NTT.

As a result, majority of budget went to West Timor, distributed mainly to Belu and Kupang district, where most of ex-East Timorese Refugees reside; followed by TTS and TTU districts, which are popular as area of highest food and nutritient insecurity cases occur.

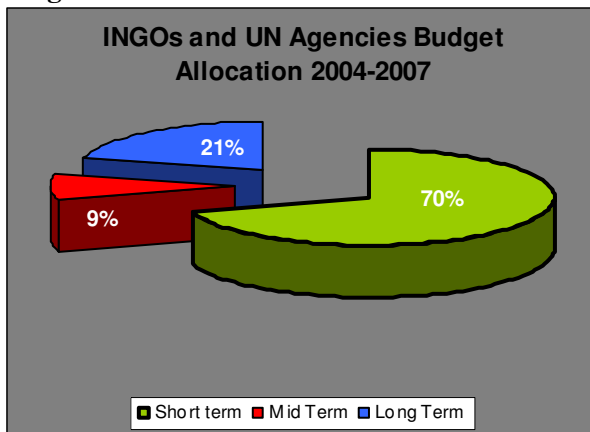
**Figure 29.**



*Compilation of Overseas Aid in NTT 2004, 2005,2006,2007 by Joint Secretariat Bappeda*

Again, unlike the government, INGOs and UN Agencies programs budget allocated more on short term response rather than long term ones as shows below:

**Figure 30.**



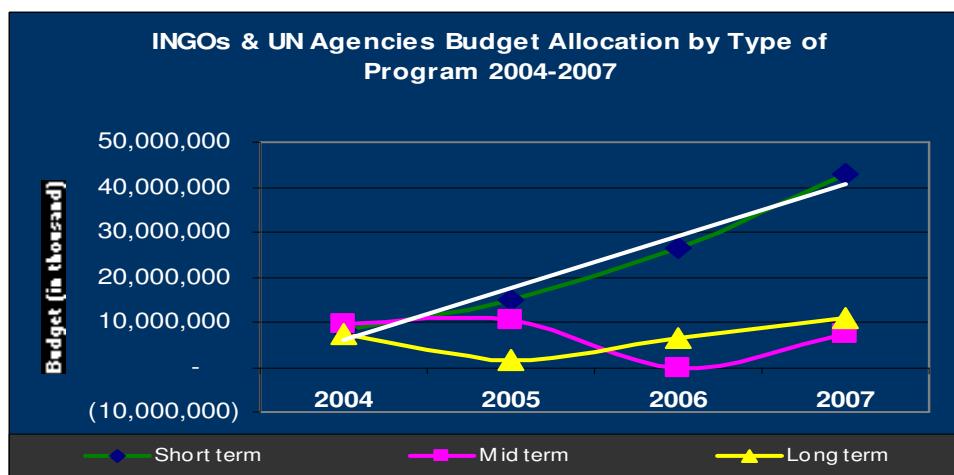
Even when an organisations conducted two or more types of program, the biggest amount of budget usually allocated for the short term, emergency like, program/intervention, although it is identified that INGOs have more creative type of programs.

*Compilation of Overseas Aid in NTT 2004, 2005,2006,2007 by Joint Secretariat Bappeda*

Over the years, there's a constant trend of increasing short term program in NTT province, *with or without* increasing cases of food crisis

occurred. In fact, the amount of budget doubled every single year since 2004.

**Figure 31.**



*Compilation of Overseas Aid in NTT 2004, 2005,2006,2007 by Joint Secretariat Bappeda*

At the end, the same challenging question that asked to the government is worth asked for the INGOs and UN Agencies, regarding the impact of such kind of intervention in crisis area. If it is assumed that INGOs and UN Agencies program management are better than that of government, the question will lay on the approaches used; considering occurrence of recurrent and pro-longed food crisis in the area. Therefore there's a rising need of a more comprehensive approach to food security problems.

### **2.3.3. People's response: the coping mechanisms**

People's responses to their food problems, identified as coping mechanisms, are varied. Several documents recorded types of coping mechanisms as follows: change food consumption, borrow money, sell livestock, collection of wild foods and hunting, work as daily worker and migration to other area.

Change in food consumption usually from rice or corn to what externally defined as 'lower quality food' and the locals defined as 'less preferred food'. While the other coping identified are more cash oriented and used to buy rice from the market. PMPB identified that there are changes in type of coping mechanisms. In the past, people's coping rely more on their natural and social assets (i.e. collecting wild food, community food stocking, borrowing food, exchange livestock with food). While recently, people rely more in financial asset and market to get rice. Rice then becomes the main staple food and alternative food at once. The main reason community mentioned are:

- More people experience food crisis at the same time
- Rice is easier to find (in market), even easier than other local foods.

In order to be able to buy food, borrowing money and migration (temporary and permanent) are now the preferred type of coping. Unfortunately, there are very limited data on migration that can be accessed. The data received from Labor and Transmigration Department NTT only consist of illegally recruited migrant workers, who get caught. In 2004-2006, there are 5,566 illegal migrant workers cases, categorized as human trafficking; 60% of them are women, originally from Belu, TTS, TTU and West Sumba District with age ranged between 15 to 30 years old. The data do not express the real depth of migration phenomena in the area. Traditionally, East Flores and Lembata Districts are well known as the main area of migrant workers. Reasons of their decision to migrate is mainly economic aspect, as they felt living in the villages do not give them enough opportunity to get better income, and even it is harder to get food.

### **2.3.4 The Absence of Effective Monitoring and Early Warning System**

Since food security is built upon complex and multidimensional components, it is understandable that several documents indicate different approach and perspective in understanding the problems at community level. Various kinds of responses are indeed needed, if it can be pursued a comprehensive way to overcome such complex situation. However, it is not the case in the NTT province experience. A case happened in 2005, when Regent of Sikka called for emergency response to address hunger in Sikka district. National government then sent a staff from Ministry of

People's Welfare, who later on declared no such hunger in that area; but then sent tons of rice anyway.

In order to avoid the same confusing decision and responses, it is urged to have a common monitoring and early warning system. In fact, some efforts have been taken in this issue, but still not effectively work. The existing monitoring and early warning systems are either too general, or only monitor the impacts, not the process which needed to be able to deliver proper early warning, or too details that make it too complicated in its implementation.

## Chapter III.

### Nutrition Security

#### 3.1. Food Security at household level

Several studies have measured household food security status using the US-FSSM (United State-Food Security/Hunger Survey Module) questionnaire. The questionnaire consists of a series of questions about conditions and behaviors known to characterize households having difficulty meeting basic food needs. Each question asks whether the condition or behavior occurred at any time during the previous 12 months and specifies a lack of money or other resources to obtain food as the reason for the condition or behavior.

Table 14. Questions in the US-FSSM<sup>1</sup>

| Question number (Q) | Keywords                                  |
|---------------------|---|
| 2                   | Worried food would run out                |
| 3                   | Food bought just didn't last              |
| 4                   | Couldn't afford to eat balanced meals     |
| 5                   | Few kinds of low-cost food for children   |
| 6                   | Couldn't feed children a balanced meal    |
| 7                   | Children were not eating enough           |
| 8                   | Adult(s) cut or skipped meals             |
| 8a                  | Adult(s) cut or skipped meals, 3+ months  |
| 9                   | You ate less than felt you should         |
| 10                  | You were hungry but didn't eat            |
| 11                  | You lost weight because not enough food   |
| 12                  | Adult(s) not eat for whole day            |
| 12a                 | Adult(s) not eat for whole day, 3+ months |
| 13                  | Cut size of children's meal               |
| 14                  | Children ever skip meals                  |
| 14a                 | Children skip meals, 3+ months            |
| 15                  | Children ever hungry                      |
| 16                  | Children not eat for whole day            |

<sup>1</sup> from Usfar et al 2007

The series includes 10 questions about food conditions at the household level and among adults in the household and, if there are children present in the household, an additional 8 questions about their food conditions (Nord, 2004). Subsequently,

households' responses were scored from a total of 18 questions (each scored as '1' for affirmative response and '0' for negative response) and the total scores (range 0-18) were categorized into four food security statuses : food secure (0-2), food insecure without hunger (3-7), food insecure with moderate hunger (8-12) and food insecure with severe hunger (13-18). The keywords in the questionnaire is presented in Table .. The questionnaire has been tested in some studies and it is applicable for use in Indonesia, both in urban and rural areas (Usfar et al, 2007).

From several studies assessed the food security, most of the households fell into food insecure with hunger category. The degree of the food insecurity varies across studies. In areas of developmental program, more households were in food insecure with hunger; whereas in non developmental program areas, more households were in food insecure without hunger category. In this respect, East Sumba had the highest proportion of households fell into food insecure with hunger category.

It shall be noted that the survey of WFP/SEAMEO was conducted in July-August 2005, when the food was relatively abundant.

Table 15. Food security status of the households

| Study                                   | Food security category |                              |                                    |                                  |
|---|------------------------|------------------------------|------------------------------------|----------------------------------|
|   | Food secure            | Food insecure without hunger | Food insecure with moderate hunger | Food insecure with severe hunger |
| Belu&TTS/ CARE <sup>2</sup> (n = 969)   |                        |                              |                                    |                                  |
| Belu&TTU/CARE <sup>3</sup> (n = 257)    | 2.7                    | 7.4                          | 28.4                               | 61.5                             |
| TTS/CWS <sup>4</sup> (n = 992)          | 6.9                    | 28.4                         | 45.1                               | 19.7                             |
| Belu&Kupang/CARE <sup>5</sup> (n = 162) | 7.5                    | 25.9                         | 66.7 <sup>1</sup>                  |                                  |
| From WFP/SEAMEO study <sup>6</sup>      |                        |                              |                                    |                                  |
| - Total (n = 701)                       | 22                     | 47.8                         | 23.7                               | 6.6                              |
| - Sumba Timur (n = 82)                  | 9.8                    | 41.5                         | 39.0                               | 9.8                              |
| - TTS (n = 251)                         | 18.3                   | 45.8                         | 29.9                               | 6.0                              |
| - Kota Kupang (n = 117)                 | 38.5                   | 41.9                         | 12.8                               | 6.8                              |
| - Ende (n = 148)                        | 19.6                   | 54.1                         | 20.3                               | 6.1                              |
| - Flores Timur (n = 103)                | 25.2                   | 55.3                         | 13.6                               | 5.8                              |

<sup>1</sup> Combination of food insecure with moderate and severe hunger

<sup>2</sup> Final report. Evaluation of MANDIRI project: An Emergency relief intervention project of CARE International Indonesia in Timor Tengah Selatan and Belu Districts, East Nusa Tenggara. SEAMEO 2005.

<sup>3</sup> Nutritional Status & Household Livelihood Security of Unrooted and Non-unrooted Communities: A Baseline Survey for PULIH Project in Timor Tengah Utara and Belu Districts, NTT. SEAMEO TROPED RCCN UI, CARE International Indonesia, 2006.

<sup>4</sup> CWS/HKI Indonesia Special Report: Nutrition and Health Survey among rural poor in Soe, Timor Tengah Selatan – West Timor (NTT). The Situation in April – may 2006. Church World Service and Helen Keller International 2007.

<sup>5</sup> Household livelihood security in the IDPs and host population in Central Kalimantan and NTT provinces: A baseline surveys for “Support for Empowerment of Non-integrated IDP’s to Improve Settlement and Economy” (SENSE) Project. SEAMEO TROPED RCCN UI, CARE International Indonesia, Yayasan Cakrawala Indonesia and Yayasan Timor Membangun. Jakarta 2007.

<sup>6</sup> Rapid nutritional assessment among children 6-59 months and women of reproductive age in West Nusatenggara and East Nusatenggara provinces. World Food Programme Indonesia and SEAMEO TROPED RCCN UI, 2005.

## 3.2. Food Consumption

### 3.2.1 Meso and macro level

Table 16. noted that the daily per capita energy and protein intake of NTT province is higher than national consumption. However, the proportion of energy and protein intake without prepared foods is lower than the national. This condition figures out that more people in NTT consumed home-prepared foods rather than commercially-prepared foods which might also show less urbanization in NTT than in Indonesia in general.

Table 16. Daily consumption of energy and protein per capita in NTT compared to national year 2005<sup>1</sup>

| Area      | Energy (kcal)          |                     | Protein (gr)           |                     |
|-----------|------------------------|---------------------|------------------------|---------------------|
|           | Without prepared foods | With prepared foods | Without prepared foods | With prepared foods |
| NTT       | 2062.20                | 2127.55             | 55.68                  | 57.41               |
| Indonesia | 1774.57                | 2007.65             | 50.15                  | 56.59               |

<sup>1</sup> BPS 2005.

Moreover, Table 17. showed that the proportion of households with energy intake <1,700 kcal were between 10.8% and 18.3%. The 1,700 kcal is 80% of the average of energy intake (2,200 kcal/day). It is interesting to note that Alor had the highest proportion of household with energy intake <1,700 kcal/day and East Sumba had the lowest. This might contradict with the situation where East Sumba had more limited food availability than in Alor. Also, it contradicts with the fact that East Sumba had the highest proportion of households fell into category of food insecure with hunger.

Table 17. Proportion of population with energy intake <1,700 kcal/day<sup>1</sup>

|                 | <b>% &lt;1,700 kcal energy intake</b> |
|-----------------|---------------------------------------|
| <b>Province</b> | <b>14.9 (7.0 – 22.8)</b>              |
| Sumba Barat     | 16.9 (7.1 – 26.8)                     |
| Sumba Timur     | 10.8 (4.4 – 17.2)                     |
| Kab Kupang      | 13.6 (6.2 – 21.0)                     |
| <b>TTS</b>      | <b>13.3 (5.1 – 21.5)</b>              |
| TTU             | 14.9 (6.2 – 23.5)                     |
| Belu            | 16.6 (8.1 – 25.1)                     |
| <b>Alor</b>     | <b>18.3 (8.9 – 27.7)</b>              |
| Lembata         | 16.6 (7.2 – 26.0)                     |
| Flores Timur    | 16.6 (7.0 – 26.2)                     |
| Sikka           | 12.3 (4.9 – 19.8)                     |
| Ende            | 14.7 (5.9 – 23.6)                     |
| Ngada           | 16.0 (6.7 – 25.2)                     |
| Manggarai       | 14.2 (6.0 – 22.3)                     |
| Kota Kupang     | 17.2 (3.0 – 31.4)                     |

<sup>1</sup>WFP 2006

### 3.2.2. Micro level

More and more evidence showed the beneficial effects of breastfeeding. Breastfed children had 3.16 I.Q point higher than formula-fed children (Anderson et al, 1999). Exclusive breastfeeding could prevent 13% of deaths in children <5 years (Jones et al, 2003) and immediate breastfeeding reduce 22% of neonatal deaths (Edmond et al, 2006). Moreover, exclusively breastfed children could achieve their potential growth as shown in the new WHO Child Growth Standards. Early introduction of foods is associated with poor growth (Le et al, 2000).

In general, breastfeeding is universally practiced by the community. However, appropriate breastfeeding practice is rare. Appropriate practices of breastfeeding includes: (1) Immediate breastfeeding after birth, (2) Exclusive breastfeeding for 6 months, and (3) Continue breastfeeding up to 2 years or beyond.

Colostrum was commonly fed to newborns. Relatively high proportion (>65%) of children received complementary foods <6 months. The proportion of exclusive breastfeeding for 6 months was also considered as low, although the appropriate figure for this is difficult to assured. Duration of breastfeeding was at 15.0 ± 7.2

months and age at initial introduction of solid food was  $4.2 \pm 1.9$  months (WFP/SEAMEO 2005).

Table 18. Feeding practice of children <5 years .

|   | Belu&TTS/<br>CARE <sup>1</sup> | Belu&TTU/<br>CARE <sup>2</sup> | Province/<br>WFP <sup>3</sup> | Alor, Sikka, East<br>Sumba/WFP <sup>4</sup> |
|---|--------------------------------|--------------------------------|-------------------------------|---|
| Ever breastfed                              | 91.1                           | 97                             | 97.4                          | n.a.  |
| Received colostrum                          | n.a.                           | n.a.                           | 88.2                          | 79.7  |
| Start of complementary<br>feeding <6 months | n.a.                           | 83.8                           | 77.7                          | 67.2  |
| Meal frequency <3<br>times/day              | n.a.                           | 25.1                           | n.a.                          | 46  |

<sup>1</sup> Final report. Evaluation of MANDIRI project: An Emergency relief intervention project of CARE International Indonesia in Timor Tengah Selatan and Belu Districts, East Nusa Tenggara. SEAMEO 2005.

<sup>2</sup> Nutritional Status & Household Livelihood Security of Unrooted and Non-unrooted Communities: A Baseline Survey for PULIH Project in Timur Tengah Utara and Belu Districts, NTT. SEAMEO TROPED RCCN UI, CARE International Indonesia, 2006.

<sup>3</sup> Rapid nutritional assessment among children 6-59 months and women of reproductive age in West Nusatenggara and East Nusatenggara provinces. World Food Programme Indonesia and SEAMEO TROPED RCCN UI, 2005.

<sup>4</sup> Rapid Food Security and Nutritional Assessment in Alor, Sikka and East Sumba, NTT Province. World Food Programme Indonesia and SEAMEO TROPED RCCN UI, 2007.

The frequency of meals does not necessarily reflect the quality of food consumed. Among refugees and ex-refugees households in Belu and Kupang, 44.9% of households had low variety of food intake (having score  $\leq 4$  out of 11) (SEAMEO/CARE, 2007). Similarly, study in Belu and TTU showed that children had low quality diet; i.e. 76.8% of children had low score of food diversity (having score  $\leq 3$  out of 8) with majority of diet are from grain, tuber and roots group, vitamin A rich plant food group and other fruit and vegetable group (SEAMEO/CRS, 2005).

This is similar with the findings from other study which shows that the consumption of food rich in micronutrient of vitamin A such as pumpkin/carrot and yellow fruit is relatively low (WFP/SEAMEO 2005). Green leafy vegetables are commonly consumed (indeed, actually the second most frequently consumed after rice) and they are rich in iron and vitamin A. However, its bioavailability is low; hence need other food to enhance it. i.e. vitamin C to promote iron and fat to promote vitamin A absorption.

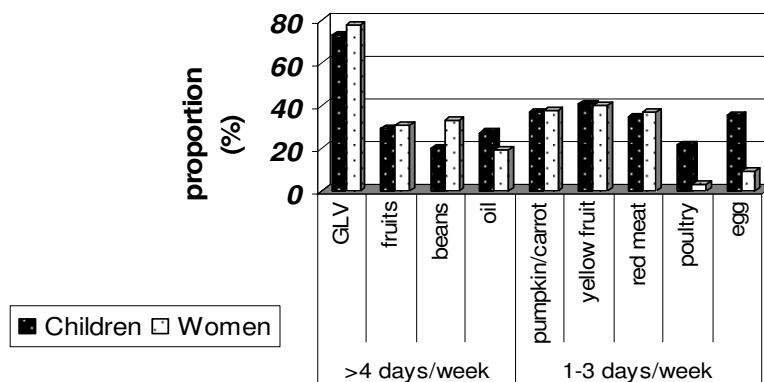


Figure 32. Consumption of food in the previous 7 days among children <5 years and women at reproductive age (WFP/SEAMEO 2005). (note: GLV – green leafy vegetables)

Table 19. Frequency and amount of food consumed among selected vulnerable group<sup>1</sup>

| Food                      | Frequency of intake (%)         |                    |                           |                             | Gram of intake (gr) <sup>2</sup>    |                    |                           |                             |
|---------------------------|---------------------------------|--------------------|---------------------------|-----------------------------|-------------------------------------|--------------------|---------------------------|-----------------------------|
|                           | Pregnant/<br>lactating<br>women | School<br>children | Childre<br>n 0 – 24<br>mo | Childre<br>n 25-59<br>month | Pregnan<br>t/lactati<br>ng<br>women | School<br>children | Childre<br>n 0 – 24<br>mo | Childre<br>n 25-59<br>month |
|                           | (n = 43)                        | (n = 42)           | (n = 21)                  | (n = 24)                    | (n = 43)                            | (n = 42)           | (n = 21)                  | (n = 24)                    |
| Rice                      | 83.7                            | 92.9               | 81                        | 91.7                        | 260.6                               | 228.8              | 117.6                     | 191.4                       |
| Corn                      | 58.1                            | 50                 | 38.1                      | 37.5                        | 137.3                               | 106.7              | 81.5                      | 88.9                        |
| Cassava                   | 37.2                            | 42.9               | 33.3                      | 37.5                        | 131.9                               | 90.3               | 45                        | 53.3                        |
| Noodle/<br>bread          | 16.3                            | 26.2               | 14.3                      | 33.3                        | 54.3                                | 39.1               | 30.0                      | 45.6                        |
| Fish                      | 53.5                            | 47.6               | 28.6                      | 54.2                        | 92.2                                | 63.8               | 22.5                      | 39.1                        |
| Vegetable                 | 90.7                            | 90.5               | 61.9                      | 91.7                        | 93.4                                | 57.9               | 35                        | 45.7                        |
| Beans                     | 9.3                             | 7.1                | 9.5                       | 4.2                         | 45                                  | 55.0               | 17.5                      | 80                          |
| Fruits                    | 32.6                            | 26.2               | 23.8                      | 33.3                        | 314.3                               | 116.8              | 91                        | 99.1                        |
| Oil/fats/co<br>conut milk | 53.5                            | 61.9               | 42.9                      | 70.8                        | 57.9                                | 59                 | 35.6                      | 29.1                        |
| Sugar                     | 55.8                            | 61.9               | 38.1                      | 70.8                        | 15.8                                | 16                 | 8.5                       | 12.6                        |

<sup>1</sup> from WFP/SEAMEO 2007

<sup>2</sup> gram of intake was calculated among those who consumed the respective foods.

Food intake by vulnerable groups in Sikka, Alor and East Sumba showed that the type of foods frequently consumed is limited. Among the vulnerable groups, children 25-59 months had the most limited type of food consumed; the most commonly food consumed were rice, vegetables, oil/fats and sugar. In all groups, rice and vegetables were the main food item commonly consumed. Beans as source of affordable protein and micronutrient was not frequently consumed.

Animal food intake is very limited. Even egg was not consumed. Access to fortified foods is small. Maybe the only available fortified food is wheat flour, which has a mandatory regulation to be fortified with iron, zinc, vitamin B1, vitamin B2 and folic acid. It shall be noted that this assessment might miss other type of food, such as foods from forest (honey, insects, wild fruits, and vegetables), foods from lontar tree (sugar, juices, and fruit), seasonal vegetables and fruits as well as festival foods.

To illustrate the contribution of food groups towards energy and macronutrient intake, a calculation was made for pregnant/lactating women and children 25-59 months. It shall be noted that this illustration overestimate the true intake because it assumes an individual consumed all type of foods. Among pregnant/lactating women, oil/fats and rice were the main contributors to energy intake while fish, beans and rice were the main contributors to protein intake. Coconut milk is included in the oil/fats group, which is more frequently consumed than cooking oil. Similar figure was also found for children 25-59 months.

Table 20. Contribution of macronutrient intake from major food groups consumed in pregnant women<sup>1</sup>

| Food group            | Amount        |              |              |               | % to total intake |            |            |            |
|-----------------------|---------------|--------------|--------------|---------------|-------------------|------------|------------|------------|
|                       | CHO (gr)      | Protein (gr) | Fat (gr)     | Energy (kcal) | CHO               | Protein    | Fat        | Energy     |
| Rice                  | 104.24        | 10.42        | 0            | 456.05        | 33.61             | 20.02      | 0          | 21.28      |
| Corn                  | 45.77         | 4.58         | 0            | 200.23        | 14.76             | 8.79       | 0          | 9.34       |
| Cassava               | 43.97         | 4.40         | 0            | 192.35        | 14.18             | 8.45       | 0          | 8.98       |
| Noodle/ bread         | 43.44         | 4.34         | 0            | 190.05        | 14.01             | 8.34       | 0          | 8.87       |
| Fish                  | 0             | 16.14        | 4.61         | 115.25        | 0                 | 30.99      | 6.66       | 5.38       |
| Vegetable             | 4.67          | 0.93         | 0.00         | 23.35         | 1.51              | 1.79       | 0          | 1.09       |
| Beans                 | 15.75         | 11.25        | 6.75         | 168.75        | 5.08              | 21.61      | 9.75       | 7.87       |
| Fruits                | 37.72         | 0            | 0            | 157.15        | 12.16             | 0          | 0.00       | 7.33       |
| Oil/fats/coconut milk | 0             | 0            | 57.90        | 579.00        | 0                 | 0          | 83.60      | 27.02      |
| Sugar                 | 14.58         | 0            | 0            | 60.77         | 4.70              | 0          | 0          | 2.84       |
| <b>Total</b>          | <b>310.13</b> | <b>52.06</b> | <b>69.26</b> | <b>2143</b>   | <b>100</b>        | <b>100</b> | <b>100</b> | <b>100</b> |

<sup>1</sup> recalculation from WFP/SEAMEO 2007

Table 21. Contribution of macronutrient intake from major food groups consumed in among children 25-59 months<sup>1</sup>

| Food group            | Amount       |              |             |               | % to total intake |            |            |            |
|-----------------------|--------------|--------------|-------------|---------------|-------------------|------------|------------|------------|
|                       | CHO (gr)     | Protein (gr) | Fat (gr)    | Energy (kcal) | CHO               | Protein    | Fat        | Energy     |
| Rice                  | 76.56        | 7.66         | 0           | 334.95        | 35.73             | 17.66      | 0.00       | 23.08      |
| Corn                  | 29.63        | 2.96         | 0           | 129.65        | 13.83             | 6.84       | 0.00       | 8.93       |
| Cassava               | 17.77        | 1.78         | 0           | 77.73         | 8.29              | 4.10       | 0.00       | 5.36       |
| Noodle/ bread         | 36.48        | 3.65         | 0           | 159.60        | 17.03             | 8.42       | 0.00       | 11.00      |
| Fish                  | 0            | 6.84         | 1.96        | 48.88         | 0.00              | 15.79      | 4.54       | 3.37       |
| Vegetable             | 2.29         | 0.46         | 0.00        | 11.43         | 1.07              | 1.05       | 0.00       | 0.79       |
| Beans                 | 28.00        | 20.00        | 12.00       | 300.00        | 13.07             | 46.15      | 27.87      | 20.67      |
| Fruits                | 11.89        | 0            | 0           | 49.55         | 5.55              | 0.00       | 0.00       | 3.41       |
| Oil/fats/coconut milk | 0            | 0            | 29.10       | 291.00        | 0.00              | 0.00       | 67.58      | 20.05      |
| Sugar                 | 11.63        | 0            | 0.00        | 48.46         | 5.43              | 0.00       | 0.00       | 3.34       |
| <b>Total</b>          | <b>214.2</b> | <b>43.3</b>  | <b>43.1</b> | <b>1451.2</b> | <b>100</b>        | <b>100</b> | <b>100</b> | <b>100</b> |

<sup>1</sup> recalculation from WFP/SEAMEO 2007

Another example to show the energy and nutrient intake among preschool children is taken from survey in three villages in Lembata. While the intake of macronutrient has fulfilled the requirements, the intake of micronutrients is short of the requirements; in particular vitamin A and zinc. The intake of iron is little bit doubtful for two reasons: (1) the figure is relatively high and (2) there was a high variation among the three villages, ranged from 3.9 – 11.6 mg. Study in Sikka, East Sumba and Alor from limited number of subjects indicated that the median adequacy of iron intake was relatively low; 19% among pregnant/lactating women, 25.5% among school age children, 25.7% and 28.9% among preschool children (WFP/SEAMEO 2007).

Table 22. Energy and nutrient intake of children <5 years in Lembata (n = 90)

| Energy and nutrient | Amount   | % adequacy compare to RDA |
|---------------------|----------|---------------------------|
| Energy              | 940 kcal | 108.5                     |
| Protein             | 21.8 mg  | 110.6                     |
| Fat                 | 8.4 mg   | 34.6                      |
| Calcium             | 154 mg   | 32.1                      |
| Vitamin A           | 283 µgRE | 67.8                      |
| Vitamin B1          | 0.51 mg  | 88.0                      |
| Vitamin C           | 41.7 m g | 98.3                      |
| Iron                | 7.0 mg   | 99.3                      |
| Zinc                | 1.8 mg   | n.a.                      |

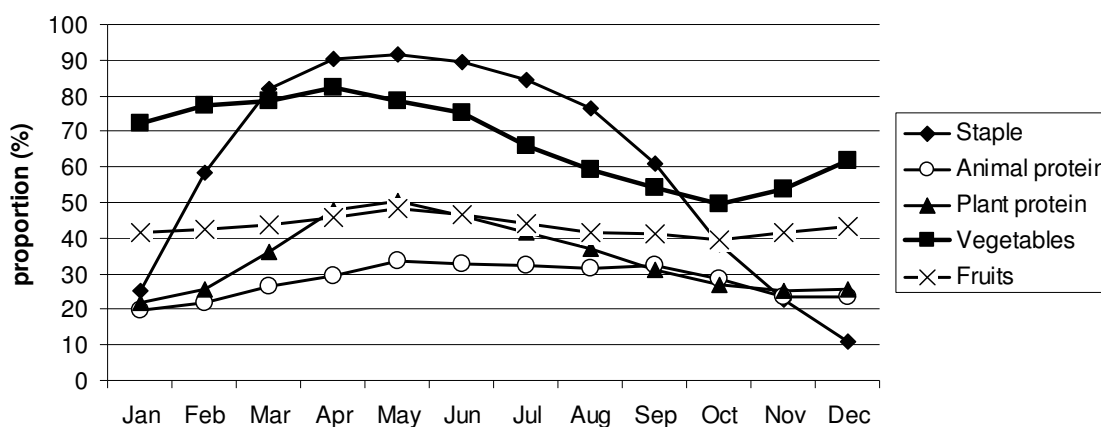


Figure 33. Food availability at the households among ex-refugees and local population in Belu and TTU district (CARE/SEAMEO 2006).

Figure 33 shows that the availability of fruits was relatively stable (albeit in small quantity) whereas of staple foods varied considerably throughout the year. In general, April through July is good months for food availability.

### 3.3. Nutritional Status

#### 3.3.1 Description about the nutritional indices

The most simple and sensitive indicator for measuring children nutritional status is using anthropometric method; i.e. based on weight and length/height of the children. Based on age and gender, the weight and length/height of the children are compared to the growth reference. Normally, the nutritional status of children is measured into 3 categories, namely (1) Weight-for-age, (2) Height/length-for-age and (3) Weight-for-height/length.

**Weight for age** reflects body mass relative to age. Low weight for age is described as ‘lightness’ and reflects a pathological process referred to as ‘underweight’. Weight for age also reflects both weight-for-height and height-for-age; hence it fails to distinguish tall, thin children from those who are short with adequate weight.

**Height/length-for-age** reflects the achieved linear growth that can be used as index of past nutritional or health status. Low height-for-age is defined as ‘shortness’ and reflects either normal variation or a pathological process involving failure to reach linear growth potential.

**Weight-for-height/length** measures body weight relative to height/length. Low weight-for-height/length in children is described as ‘thinness’ and reflects pathological process referred to as ‘wasting’. It rises from a failure to gain sufficient weight relative to height or from losing weight. High weight-for-height is termed ‘overweight’ and arises from gaining excess weight relative to height or insufficient height relative to weight (Gibson 2005).

Recently, the measure of BMI (body mass index)-for-age is introduced as one of the nutritional status index for children. The BMI-for-age is particularly important to identify overweight and obesity. Normally, the BMI is a measured of nutritional status among adults (James et al 1999).

The nutritional status of the children is then determined according to cut-off point as shown in Table 23.

Table 23. Determination of nutritional status

| Indices                     | Cut off                                |  | Nutritional status category |
|-----------------------------|--|--|-----------------------------|
| Weight-for-age (W/A)        | Weight for age Z-score (WAZ)           | > 2 SD                                 | --                          |
|                             |  | $2\text{ SD} \geq 0 \geq -2\text{ SD}$ | Normal                      |
|                             |  | < -2 SD                                | Underweight                 |
|                             |  | < -3 SD                                | Severe underweight          |
| Height/length-for-age (H/A) | Height/length for age Z-score (HAZ)    | > 2 SD                                 | Tall                        |
|                             |  | $2\text{ SD} \geq 0 \geq -2\text{ SD}$ | Normal                      |
|                             |  | < -2 SD                                | Stunting                    |
|                             |  | < -3 SD                                | Severe stunting             |
| Weight-for-height (W/H)     | Weight for height/length Z-score (WAZ) | > 2 SD                                 | Overweight                  |
|                             |  | $2\text{ SD} \geq 0 \geq -2\text{ SD}$ | Normal                      |
|                             |  | < -2 SD                                | wasting                     |
|                             |  | < -3 SD                                | Severe wasting              |

Earlier, the WHO recommends the use of NCHS/WHO (1985) as the reference to determine the nutritional status of the children. Since 2006, the WHO recommended the use of WHO Child Growth Standards to measure, monitor, and evaluate growth of all children from birth to 5 years old worldwide regardless of ethnicity, socioeconomic status or type of feeding. The Child Growth Standards are developed based on the growth of healthy breastfed infants from 6 countries. Differences with the NCHS/WHO reference vary depending on age, sex, growth indicator and particularly striking among infants 0-6 months of age. There is no algorithm to be

used to derive estimates from NCHS/WHO reference; hence reanalysis of raw data has to be done to obtain new prevalence estimate using the new WHO Child Growth Standards. However, it could be estimated that underweight will increase substantially 0-6 mo and decrease thereafter when based on WHO standards, stunting rates will increase for all age groups, and wasting and severe wasting substantially higher 0-6 mo, thereafter severe wasting will continue to be 1.5-2.5 higher. Therefore it is important for future studies to present the nutrition data of children using both NCHS/WHO reference and WHO Child Growth Standards.

An example of the nutritional status data analyzed according to the NCHS/WHO reference and WHO Child Growth Standards is shown in Figure ... It shows that the changes in prevalence vary according to age groups. The most striking changes are seen among infants 0 – 6 months old. Overall, compared to NCHS reference, the prevalence of underweight is lower, stunting is higher and wasting is relatively similar according to WHO Child Growth Standards.

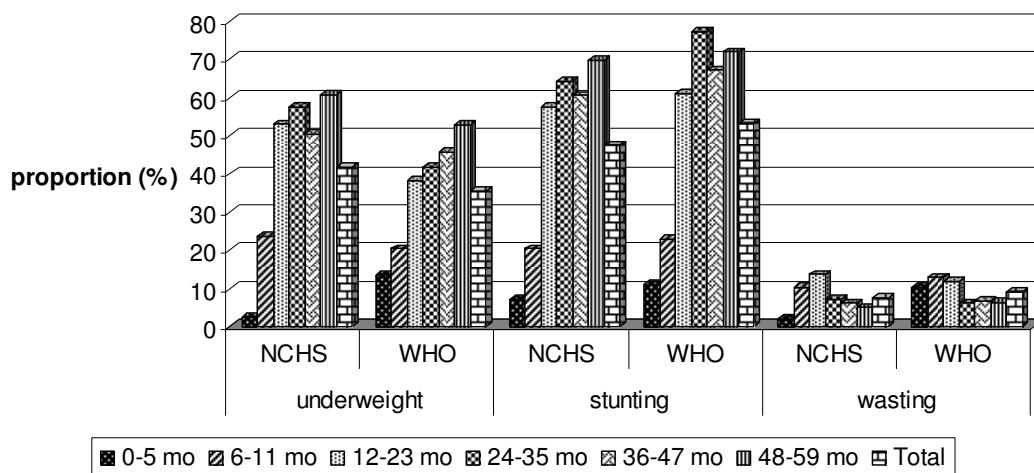


Figure 34. The nutritional status of children 0 – 59 months from rural NTT (n = 1,109) based on NCHS reference and WHO Growth Standards.

In this report, all nutritional status data are presented using the NCHS/WHO reference.

### **3.3.2 Macro and Meso Level**

The prevalence of underweight among children <5 years old in NTT from year 1989 through 2005 decreased only slightly. When it is examined further, the prevalence of severe underweight tended to increase. The figure for stunting among children 2 – 5

years old in year 2005 was 50.6% and 57.3% in urban and rural respectively. The figure for wasting was 20.5% and 18.9%.

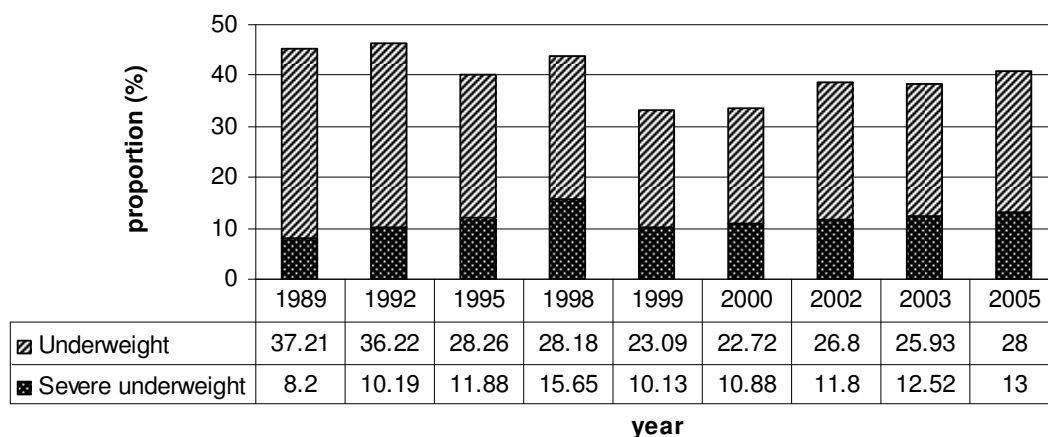


Figure 35. prevalence of underweight and severe underweight in NTT province year 1989 – 2005 (Gizi.net)

The prevalence of underweight among children in all districts in NTT showed an exceptionally high figure (>30%). The prevalence of underweight >30% indicates a severe public health problems (Gibson 2005.). Data from SUSENAS (on which the WFP 2006) data is based) only have underweight data.

Data in Table 24. could estimate that the number of household member is at the average of 4 – 6 (the lowest Lembata and the highest Sumba Barat) and the proportion of children <5 years is between 10.8% and 16.7% (the lowest Kota Kupang and the highest Sumba Barat). However, the highest number of population was in Manggarai and the lowest in Lembata. Even though the highest prevalence of underweight was in TTU district, the biggest proportion of underweight children in NTT was in Manggarai, followed by Sumba Barat.

Table 24. Nutritional status of children 0 – 59 months <sup>1</sup> .

| Area            | Number of population | Number of households | Number of children 0-59 month | % underweight <sup>2</sup> | Number of underweight children |
|-----------------|----------------------|----------------------|-------------------------------|----------------------------|--------------------------------|
| <b>Province</b> | <b>3,790,354</b>     | <b>792,627</b>       | <b>503,813</b>                | <b>38.8 (35.2 – 42.4)</b>  | 195,479                        |
| Sumba Barat     | 352,653              | 61,121               | 55,476                        | <b>31.8 (28.0 – 35.7)</b>  | 17,641                         |
| Sumba Timur     | 183,238              | 36,773               | 24,193                        | 39.2 (32.5 – 45.8)         | 9,484                          |
| Kab Kupang      | 398,948              | 89,721               | 51,793                        | 41.2 (37.0 – 45.4)         | 21,339                         |
| TTS             | 386,753              | 87,721               | 48,551                        | 46.8 (42.2 – 51.5)         | 22,722                         |
| TTU             | 193,198              | 43,969               | 23,818                        | <b>47.8 (41.6 – 53.9)</b>  | 11,385                         |
| Belu            | 275,666              | 59,653               | 36,051                        | 42.0 (37.1 – 46.9)         | 15,141                         |
| Alor            | 163,670              | 35,459               | 20,737                        | 41.1 (35.7 – 46.6)         | 8,523                          |
| Lembata         | 89,385               | 21,149               | 10,857                        | 43.2 (37.5 – 48.8)         | <b>4,690</b>                   |
| Flores Timur    | 195,722              | 41,040               | 24,152                        | 34.6 (29.6 – 39.6)         | 8,357                          |
| Sikka           | 262,407              | 53,209               | 31,110                        | 35.3 (29.9 – 40.7)         | 10,982                         |
| Ende            | 230,840              | 48,150               | 27,570                        | 35.4 (28.6 – 42.1)         | 9,760                          |
| Ngada           | 222,021              | 42,980               | 30,658                        | 37.1 (32.2 – 41.9)         | 11,374                         |
| Manggarai       | 599,641              | 119,053              | 93,229                        | 38.3 (34.7 – 41.9)         | <b>35,707</b>                  |
| Kota Kupang     | 236,212              | 52,629               | 25,618                        | 32.8 (20.1 – 45.6)         | 8,403                          |

<sup>1</sup> WFP 2006

<sup>2</sup> % (range)

### **3.3.3 Micro Level**

Several surveys had been conducted in NTT province to assess the nutritional status of children <5 years, particularly by international NGOs in their developmental project areas. In general, these studies show that the prevalence of underweight was much higher than the WFP estimation from SUSENAS data. This is explainable as the developmental project areas, by nature, are more disadvantages areas. Particularly, the developmental projects also worked among the Internally Displace Persons who were considered more vulnerable than normal community.

Table 25. Nutritional status of children from some surveys (%)\*

| Sources                                 | Underweight      |                   | Stunting         |                   | Wasting          |                   |
|---|------------------|-------------------|------------------|-------------------|------------------|-------------------|
|   | All              | Severe            | All              | Severe            | All              | Severe            |
| From project area                       |                  |                   |                  |                   |                  |                   |
| Belu&TTU/CRS <sup>1</sup><br>(n = 906)  | 50.8             | 10.3              | 56.7             | 20.1              | 8.7              | 1.2               |
| Belu&TTS/CARE <sup>2</sup><br>(n = 969) | 54.8             | 15.4              | 49               | 20                | 19.4             | 3.9               |
| Belu&TTU/CARE <sup>3</sup><br>(n = 714) | 60.9             | 15.3              | 50.7             | 18.3              | 15.4             | 2.1               |
| Lembata/PLAN <sup>4</sup><br>(n = 90)   | 52.2             | 12.2              | 41.1             | 8.9               | 18.9             | 5.6               |
| TTS/CWS <sup>5</sup> (n = 1117)         | 59.7             | 14.8              | 61.3             | n.a.              | 10.0             | 1.7               |
| Representing province/district          |                  |                   |                  |                   |                  |                   |
| Province <sup>6</sup> (n = 745)         | 44.4             | 13.8              | 43.1             | 17.1              | 11.2             | 1.4               |
|   | <b>Boys</b>      | <b>Girls</b>      | <b>Boys</b>      | <b>Girls</b>      | <b>Boys</b>      | <b>Girls</b>      |
| From project area                       |                  |                   |                  |                   |                  |                   |
| Belu&TTU/CRS <sup>1</sup><br>(n = 906)  | 52.6             | 48.6              | 59.6             | 53.1              | 10.5             | 6.4               |
| Belu&TTS/CARE <sup>2</sup><br>(n = 969) | 58.0             | 51.5              | 53.0             | 44.9              | 23.5             | 15.1              |
| Belu&TTU/CARE <sup>3</sup> (n = 714)    | 64.7             | 56.6              | 53.4             | 47.6              | 16.8             | 13.8              |
| Lembata/PLAN <sup>4</sup>               | 52.1             | 52.4              | 39.6             | 41.9              | 18.8             | 19                |
| TTS/CWS <sup>5</sup> (n = 1117)         | n.a.             | n.a.              | n.a.             | n.a.              | n.a.             | n.a.              |
| Representing province/district          |                  |                   |                  |                   |                  |                   |
| Province/WFP <sup>6</sup> (n = 745)     | 46.2             | 42.5              | 44.9             | 41.1              | 10.5             | 11.9              |
|   | <b>6 – 23 mo</b> | <b>24 – 59 mo</b> | <b>6 – 23 mo</b> | <b>24 – 59 mo</b> | <b>6 – 23 mo</b> | <b>24 – 59 mo</b> |
| From project area                       |                  |                   |                  |                   |                  |                   |
| Belu&TTU/CRS <sup>1</sup><br>(n = 906)  | 43.1             | 56.0              | 44.9             | 64.5              | 12.5             | 6.2               |
| Belu&TTS/CARE <sup>2</sup><br>(n = 969) | 47.0             | 59.2              | 38.8             | 54.7              | 30.8             | 13.1              |
| Belu&TTU/CARE <sup>3</sup><br>(n = 714) | 53.4             | 64.9              | 38.1             | 57.4              | 21.9             | 12.0              |
| Lembata/PLAN <sup>4</sup><br>(n =       | n.a.             | n.a.              | n.a.             | n.a.              | n.a.             | n.a.              |
| TTS/CWS <sup>5</sup> (n = 1117)         | 54.5             | 63.6              | 52.9             | 67.6              | 12.8             | 8.0               |
| Representing province/district          |                  |                   |                  |                   |                  |                   |
| Province/WFP <sup>6</sup> (n = 745)     | 41.0             | 46.9              | 35.0             | 48.9              | 16.8             | 7.2               |
|   |                  |                   |                  |                   |                  |                   |

\* Study 1,2,3 and 6 among children 6 – 59 months and study 4-5 among children 0 – 59 months.

<sup>1</sup> Baseline Survey. Household food security, nutrition and health status in Belu and Timor Tengah Utara District, West Timor. SEAMEO and CRS, 2006.

<sup>2</sup> Final report. Evaluation of MANDIRI project: An Emergency relief intervention project of CARE International Indonesia in Timor Tengah Selatan and Belu Districts, East Nusa Tenggara. SEAMEO 2005.

<sup>3</sup> Nutritional Status & Household Livelihood Security of Unrooted and Non-unrooted Communities: A Baseline Survey for PULIH Project in Timor Tengah Utara and Belu Districts, NTT. SEAMEO TROPED RCCN UI, CARE International Indonesia, 2006.

<sup>4</sup> Food and nutrition security assessment at Lembata program unit areas in Nusa Tenggara Province. Plan Indonesia and Department of Community Nutrition – Faculty of Human Ecology, Bogor Agricultural University. 2006.

<sup>5</sup> CWS/HKI Indonesia Special Report: Nutrition and Health Survey among rural poor in Soe, Timor Tengah Selatan – West Timor (NTT). The Situation in April – may 2006. Church World Service and Helen Keller International 2007.

<sup>6</sup> Rapid nutritional assessment among children 6-59 months and women of reproductive age in West Nusatenggara and East Nusatenggara provinces. World Food Programme Indonesia and SEAMEO TROPED RCCN UI, 2005.

Similar to the prevalence of underweight, the prevalence of stunting is also of public health importance (>30%). As has been explained above, underweight fails to distinguish tall, thin children from those who are short with adequate weight. Of some studies in which the raw data are accessible, a further examination on the nature of underweight in NTT population is carried out. Figure .. shows that among underweight children, around one third of underweight children were severely stunted and almost 75% were stunted which explains that children had low weight because they were short. In areas where prevalence of both underweight and stunting are high, provision of supplementary feeding for underweight children has to be carried out carefully in order to avoid the other side of nutritional problem, i.e. overweight and obesity among stunted children.

The prevalence of wasting was above the cut off of public health importance (>10%). Wasting is an acute condition of undernutrition. Severely wasting children – in particular with clinical signs - require immediate nutrition rehabilitation intervention to prevent further rapid nutritional status deterioration and/or death. The prevalence of severe wasting ranged from 1.2% – 5.6%; suggesting that immediate action has to be taken place. Severe wasting >1% suggests that the problem is highly significant and needs immediate action.

The high prevalence of stunting and wasting indicate that both chronic and acute nutrition problem are present in NTT. It should be noted that the prevalence of undernutrition in Belu & TTU/CARE is exceptionally high.

In general, the prevalence of undernutrition did not differ between boys and girls. Even in some studies, girls were nutritionally better off than boys. However, older children are in more disadvantages condition than the younger children. This condition points out the importance of tackling malnutrition as early as possible. When the problem was not tackled earlier, it will be carried over throughout their childhood and adulthood and the cycle of malnutrition will not be broken out.

In the above studies, in average, the proportion of children aged 6-23 months was almost half of that of children aged 24-59 months (37.3% vs. 62.7% respectively); while the proportion boys was slightly higher than girls (52.2% vs. 47.8%).

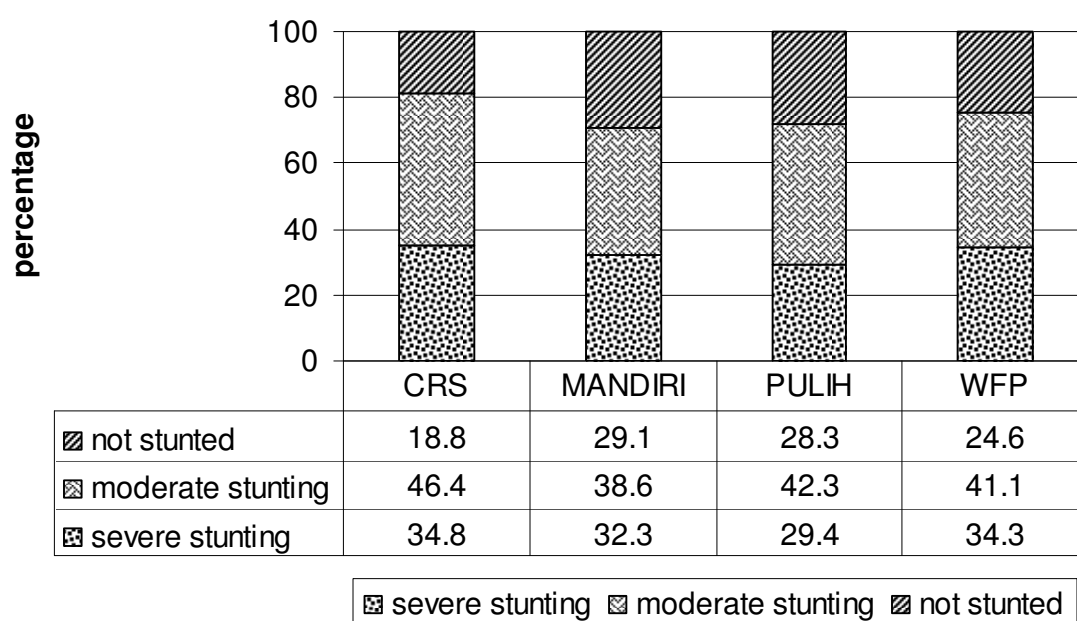


Figure 36. Prevalence of stunting among underweight children

### **3.3.4 Micronutrient Status**

Data on micronutrient deficiencies was relatively rare. The available data indicates that the prevalence of anaemia among preschool children indicates a severe public health problem (prevalence >40%). A small survey among school girls aged 10-12 years old in Kupang city found that the prevalence of anaemia was 29.1% (Kurniawan et al 2007). Anaemia was measured using Hemocue from finger prick blood.

Even though anaemia is recognized as one of the main nutritional problem among children <5 years, there is no specific intervention program for this problem. The available program addressing anaemia is iron supplementation for pregnant women

and mandatory wheat flour fortification. However, the mandatory of wheat flour fortification has been uplifted in January 2008 while no other intervention in place.

Prevalence of other micronutrient deficiencies such as of vitamin A and zinc is not available among preschool children. Micronutrient is very important for immunity and growth of children. Considering the limited variety of food consumption and high prevalence of stunting in NTT, it could be assumed that the prevalence of zinc deficiency is also high. The prevalence of vitamin A deficiency might not be as high as the prevalence of zinc deficiency because vitamin A capsule supplementation program is available for children 6 – 59 months. Every children <5 years old shall receive 2 high doses of vitamin A capsule every year.

Table 26. Prevalence of anaemia among children 6 – 59 months

| Study                               | Age group |            | Sex  |       | All  |
|-------------------------------------|-----------|------------|------|-------|------|
|                                     | 6 – 23 mo | 24 – 59 mo | Boys | Girls |      |
| Belu&TTU/CRS <sup>1</sup> (n = 356) | 77.2      | 56         | 65.7 | 63.6  | 64.9 |
| TTS/CWS <sup>2</sup> (n = 154)      | 71.5      | 37.8       | n.a. | n.a.  | 51.3 |
| Province/WFP <sup>3</sup> (n = 740) | 68.4      | 48         | 57.5 | 54.4  | 56.6 |

<sup>1</sup> Baseline Survey. Household food security, nutrition and health status in Belu and Timor Tengah Utara District, West Timor. SEAMEO and CRS, 2006.

<sup>2</sup> CWS/HKI Indonesia Special Report: Nutrition and Health Survey among rural poor in Soe, Timor Tengah Selatan – West Timor (NTT). The Situation in April – May 2006. Church World Service and Helen Keller International 2007.

<sup>3</sup> Rapid nutritional assessment among children 6-59 months and women of reproductive age in West Nusatenggara and East Nusatenggara provinces. World Food Programme Indonesia and SEAMEO TROPMED RCCN UI, 2005.

### **3.3.5. Nutritional Status of women**

The nutritional status of women of reproductive age at the district level - in this case is shown in TTS (CWS) and Belu and TTU (CARE) – was much lower than at the provincial level (WFP). Indeed, the developmental projects mostly worked in most disadvantage areas. The prevalence of anaemia was high and indicates a public health problem. It is generally assumed that half of the anaemia cases are due to iron deficiency.

Study assessing the dual malnutrition was rare – if no existence – in NTT. The dual malnutrition refers to the existence of over- and under-nutrition problem in one

household. Dual malnutrition problem typically is in the form of overweight among mothers of underweight preschool children. The proportion of overweight/obese among woman of reproductive age was 13%, ranged from 7% in Sumba Timur to 23% in Kota Kupang (WFP/SEAMEO 2005). Unfortunately, the assessment of women was not necessarily the mothers nor at the same household of children; hence the dual malnutrition problem is difficult to assess.

Table 27. The nutritional situation of women reproductive age (%).

|   | <b>Undernutrition<br/>(BMI &lt; 18.5 kg/m<sup>2</sup>)</b> | <b>Overweight<br/>(BMI &gt; 25 kg/m<sup>2</sup>)</b> | <b>anaemia</b> |
|---|--|--|----------------|
| Province/WFP <sup>1</sup> (n = 517)     | 19.3   | 13   | 26.4           |
| TTS/CWS <sup>2</sup> (n = 879)          | 32.0   | 4.7  | 28             |
| Belu&TTU/CARE <sup>3</sup><br>(n = 498) | 39   | 6.8  | n.a.           |

<sup>1</sup> Rapid nutritional assessment among children 6-59 months and women of reproductive age in West Nusatenggara and East Nusatenggara provinces. World Food Programme Indonesia and SEAMEO TROPED RCCN UI, 2005.

<sup>2</sup> CWS/HKI Indonesia Special Report: Nutrition and Health Survey among rural poor in Soe, Timor Tengah Selatan – West Timor (NTT). The Situation in April – May 2006. Church World Service and Helen Keller International 2007.

<sup>3</sup> Nutritional Status & Household Livelihood Security of Unrooted and Non-unrooted Communities: A Baseline Survey for PULIH Project in Timur Tengah Utara and Belu Districts, NTT. SEAMEO TROPED RCCN UI, CARE International Indonesia, 2006.

Study in Belu & TTU (CARE) assessed the nutritional status of both mothers and children. However, since the prevalence of overweight among mothers of children <5 years was small (6.8%), the dual malnutrition was negligible.

### **3.3.6. Diseases/ illness**

The common illness affecting children in NTT were diarrhoea, fever and ARI (Table 28.) as shown by the high prevalence of diseases in the previous 2 weeks. Similarly, study in TTS also showed that 53.3% of children had symptoms of ARI (runny nose or cough) on the day of interview and 9.8% suffered from diarrhoea within the previous week (CWS/HKI, 2006).

Table 28. Prevalence of illness in the previous two weeks among children <5 years

|                          | Province (WFP<br>2005)<br>(n= 756) | Alor, Sikka, East<br>Sumba (WFP 2007)<br>(n= 457) | Belu & Kupang (CARE<br>2007)<br>(n = 469) |
|--------------------------|------------------------------------|---|---|
| Diarrhoea                | 19.3                               | 26.8  | 20.1                                      |
| Fever                    | 51.7                               | 50.7  | 18.7                                      |
| ARI (cough/runny<br>nose | 54.0                               | 63.1  | 43.4                                      |
| Ever diagnosed<br>with:  |                                    |   |   |
| - TB                     | n.a.                               | n.a.  | 1.5                                       |
| - Malaria                | 39                                 | n.a.  | 19.1                                      |

NTT is also known as malaria endemic area. In February 2008, TTS was declared to have malaria outbreak as 6 persons died. The available data suggested that malaria might be high among children <5 years old as well. From the interview, 19.1% - 39% of children in Alor, Sikka and East Sumba had ever been diagnosed to have malaria (WFP/SEAMEO, 2007).

When children were sick, most of the mothers will seek for treatment; mostly to Puskesmas (57.1%) or Posyandu (15.2%). However, it was not ascertained at what stage of disease the children were brought for treatment.

### **3.3.7. Attendance to growth monitoring**

Regular growth monitoring at the Posyandu is intended to have early correction when growth faltering occur; hence severe malnutrition could be prevented earlier. Posyandu has been available in every village and it shall be opened once every month for growth monitoring. In Alor, Sikka and East Sumba, most of children <5 years (91.1%) were brought to Posyandu within the previous 3 months was relatively high; however it was not regular. Only 37.9% of children were brought to Posyandu 3 times in the last 3 months (WFP/SEAMEO 2007). In TTS, receipt of vitamin A capsule – as a proxy to access of nutrition intervention – was low, i.e. 54.6%; whereas of immunization coverage – as the proxy indicator for access to basic health service – was relatively better; i.e. 71.9% of children aged 12 – 17 months were fully immunized (CWS/HKI, 2006).

### 3.4. General characteristics of the Population

In general, basic public services in NTT need major improvement. For example, only about 34% of the households had connection to the electricity; the highest was in Ende (56%) and the lowest in Sumba Barat (23%). Connection to the electricity will open access to information and technology (BPS, 2007).

Access to basic sanitation was also low. One in every five households used piped drinking water. This indicates that approximately, 80% of the households had unprotected drinking water sources (BPS, 2007).

The situation at the household level was not different from the provincial level. In general, the basic condition of households in NTT needs major improvement as shown in Table 29.

Table 29. General characteristics of households in NTT

| No. | Description  | Province (WFP 2005) | Alor, Sikka, East Sumba (WFP 2007) |
|-----|--|---------------------|------------------------------------|
|     |  | <b>(n = 704)</b>    | <b>n = 630</b>                     |
| 1.  | Head of households with primary education or lower     | 45.4%               | 77.3%                              |
| 2.  | Head of households worked in small farm                | 47.2%               | 32.1%                              |
| 3.  | Households with dirt/soil floor                        | 41%                 | 35.6%                              |
| 4.  | Household without electricity                          | 32%                 | n.a.                               |
| 5.  | Households with unprotected source of drinking water   | 55.2%               | 54.9%                              |
| 6.  | Households with open /non-hygienic place of defecation | 58.6%               | 63.2%                              |

### 3.5. Response to the Nutritional Problems

The information of the budget for nutrition program was obtained mainly from newspaper. In general, the budget for nutrition program increased at the national level; for year 2008, the budget allocation was Rp 600 billion, of which Rp 50 billion (8.3%) is for NTT province. The nutrition budget for the NTT province in year 2008 was expected to be around Rp 57 billion (US\$ 6.5 million); of which Rp 2 billion

from provincial budget, 5 billion from districts budget and 52 billion from Central budget. The budget will be allocated mainly to treat malnourished children, including the severely malnourished children. The intervention will be directed for supplementary feeding for malnourished children and nutrition rehabilitation for severely malnourished children.

Record shows that many International NGOs are also working in NTT. In year 2007, at least 10 international NGOs were present with various programs aiming to improving health and nutritional status of the population. Most of the assistance were present in West Timor island, Sumba island and the eastern part of Flores island, including Lembata and Alor. Ngada and Manggarai Barat did not receive any intervention and Manggarai district also in limited amount. When taken into account the absolute number, Manggarai district has the highest number of malnourished children. However, information on its severity was lacking.

Table 30. International NGO working in NTT for various programs according to district

| District           | Nutrition             | Water            | Food Security | Health and nutrition Education and Promotion | Sanitation  |
|--------------------|-----------------------|------------------|---------------|--|-------------|
| Kota Kupang        | UNICEF                | UNICEF           |               |  |             |
| Kupang             | ACF, WFP, WVI         | ACF, WVI         | ACF           | WVI  |             |
| TTS                | ACF, CWS, WFP         | ACF              | ACF           | CARE, CWS                                    |             |
| TTU                | ACF, CRS              | ACF, WVI         | ACF           | CARE, WVI                                    | WVI         |
| Belu               | ACF, CRS, UNICEF, WFP | ACF, CARE        | ACF, Oxfam GB | CARE, Oxfam GB                               |             |
| Alor               | ACF, UNICEF, WVI      | ACF, UNICEF, WVI | ACF           | WVI  | UNICEF, WVI |
| Flores Timur       | CCF                   | CCF              |               | CCF  | CCF         |
| Lembata            | PLAN                  | PLAN             | PLAN          | PLAN, UNICEF                                 | PLAN        |
| Ende               | UNICEF                | CARE             |               |  | UNICEF      |
| Sikka              | UNICEF                | CARE, UNICEF     |               | UNICEF                                       | UNICEF      |
| Ngada              |                       |                  |               |  |             |
| Manggarai          |                       |                  |               |  |             |
| Manggarai Barat    |                       |                  |               |  |             |
| Sumba Barat        | ACF, UNICEF           | ACF, WVI         | ACF           |  | WVI         |
| Sumba Timur        | ACF, UNICEF, WVI      | ACF, WVI         | ACF           |  | WVI         |
| Rote Ndao Province | WVI, UNICEF           | WVI              |               |  |             |

Table 30. International NGO working in NTT for various programs according to district  
*continue)*

| <b>District</b> | <b>Health</b>  | <b>Income<br/>generating/livelihood</b> | <b>Advocacy</b> | <b>Reproductive<br/>health</b> | <b>Community<br/>Empowerment</b> |
|-----------------|----------------|---|-----------------|--------------------------------|----------------------------------|
| Kota Kupang     | UNICEF         |   | UNFPA           | UNFPA                          |                                  |
| Kupang          | UNICEF,<br>WVI | PLAN, WVI                               | UNFPA,<br>WVI   | UNFPA                          | CARE                             |
| TTS             | CWS            |   | UNFPA           | UNFPA                          |                                  |
| TTU             | CRS, WVI       | WVI                                     |                 |                                |                                  |
| Belu            | CRS            | WVI                                     | Oxfam GB        |                                | CARE, Oxfam GB                   |
| Alor            |                |   | UNFPA,<br>WVI   | UNFPA                          |                                  |
| Flores Timur    | WVI            | WVI                                     |                 |                                |                                  |
| Lembata         | CCF            | CCF                                     |                 |                                | CCF, CRS                         |
| Ende            | PLAN           | PLAN                                    | PLAN            |                                | CRS, PLAN                        |
| Sikka           |                |   | UNICEF          |                                |                                  |
| Ngada           |                |   |                 |                                |                                  |
| Manggarai       |                |   | UNFPA           | UNFPA                          |                                  |
| Manggarai       |                |   |                 |                                |                                  |
| Barat           |                |   |                 |                                |                                  |
| Sumba Barat     | UNICEF         |   | UNFPA           | UNFPA                          | WVI                              |
| Sumba Timur     | UNICEF,<br>WVI | WVI                                     |                 |                                | WVI                              |
| Rote Ndao       | UNICEF,<br>WVI | WVI                                     |                 |                                |                                  |
| Province        | UNICEF         |   |                 |                                | AusAID/ANTARA                    |

## **Chapter IV.**

### **Conclusion and Recommendation**

#### **4. 1. Conclusion**

1. Farmers in the province can produce their own food at sufficient level to guarantee food – as translated in fulfilling energy intake - is available. However, the agriculture activities are at risk, threatened by drought, flood, landslide, heavy wind and pest. On the other hand, increasing population and land conversion for more cash oriented activities, lack of adaptive strategies to current changing of rain patterns, skills and technology and changing in consumption preference; have made farmers more vulnerable to the threats or shocks. Therefore, although at province level food is available, but at community and household level, there are cases of food shortages.
2. Production of corn and cassava are higher than rice, but people prefer rice as their staple food. Majority of rice stock is made up from import (international and national). Shortage of rice at household level commonly perceived as shortage of food, both by people as well as external agencies (government and non government).
3. Distribution of food, physically and economically, is not equal and it affected food accessibility. Factors contributed to limited access to food are low income, high price of food items and area isolation. Rural farmers, who are vulnerable to shocks in food production are also the poor people and susceptible to shocks in increasing price of food items.
4. There are responses and interventions from government and non government agencies aimed to overcome problems of food security in the province. However, there are several gaps to be addressed:
  - a. Gaps in the area of intervention;
  - b. Gaps in effectiveness in practices, especially of government intervention, despite of quite good concept on the paper;
  - c. Gaps in approach that put more emphasize on short term response to acute (transitory) crisis, rather than long term to address chronic problems.
  - d. Gaps in coordination, monitoring and early warning.
5. People's coping mechanisms in facing recurrent threats are changing, toward more exploitative mechanisms. People tend to sacrifice their productive assets, including human assets which lead to human trafficking.

6. The problem of undernutrition, including micronutrient deficiencies problem among children in NTT is highly prevalent as it is high above the cut-off indicating public health problems. Moreover, the problem is in chronic condition as signified by that about 80% of underweight children are also stunted.
7. The undernutrition problem also starts early in life, as the manifestation of high prevalence of chronic malnutrition among women.
8. Routine and appropriate nutritional interventions are generally in place. However, the programming quality and coverage might not reach the level to exert high impact; as shown by the low coverage of vitamin A capsule supplementation, irregular attendance to Posyandu for growth monitoring and low proportion of mothers practiced appropriate breastfeeding.
9. The food intake was particularly low in its quality; the low score of food diversity and low adequacy of micronutrient intake, such as vitamin A, iron and zinc. This is because animal food intake is limited. In general, animal foods contain more micronutrient and its micronutrients are also in more bioavailable forms. For example, iron from red meat is absorbed 16 times higher than iron from green leafy vegetables. In addition to that, animal foods also have better protein quality than plant foods.
10. Poor health status of the community is also contributing to the high prevalence of malnutrition.
11. The prevailing high nutritional problems are also related with relatively poor basic services of the households; such as low educational level, low basic sanitation and clean water services, as well as low access to electricity.
12. Many International NGOs are interested to respond the nutrition situation in the province. However, the efforts seem not to be effective enough to prevent further deterioration, let alone to lift up the undernutrition problem.

## 4.2. Recommendation

1. Integration of disaster risk management perspective in addressing problems of food production. Thorough, yet detail and contextual analysis of threats, vulnerabilities and capacities to develop risk reduction plan which suit local context. Different risk would require different risk reduction strategy; it could be mitigation of threats (ie re: heavy wind or pest) and/or preparedness and development of adaptive strategies (ie re: adaptation to drought and flood).
2. Reducing farmers vulnerabilities and avoid tendency of exploitative coping mechanisms. An effort of Central Government, to ensure availability of land for agriculture could be a mean of reducing farmer risk (as stated in National Action Plan for Food and Nutrient Security). Oxfam could support this strategy, to ensure that land conversion in NTT (as it is the tendency of both community and government) could be controlled and prioritizing land use for food first.
3. More exploration on food diversification and post production processing. At community level, encourage food diversification in daily diet; combine with understanding of nutrient content and innovation in food processing. At policy level, supporting a concept of local government for food diversification could be a strategic option as well. However it needs to be combined with deeper analysis of *raskin* (rice for poor) program impact to people's food security and encourage government to better facilitate local food distribution.
4. Integration of poverty alleviation and sustainable livelihood program into food security is crucial in addressing problems of food accessibility. Targeting the poor while enhancing livelihood options is essential in food security.
5. Initiate a meaningful coordination of external intervention, both by government and non government actors in the area. Aside from addressing overlapped and/or overlooked issues, this could be an entry point toward improving management and approach to better and more sustainable food security.
6. Strengthening food security monitoring system which using specific and local indicators; and advocating its use by relevant actors.
7. Interventions addressing nutrition or have positive effects on nutrition shall be focused on the earliest period of life – prenatal, infancy and early childhood (*or pregnancy through 24 months of age*) in order to prevent further deterioration of chronic undernutrition.
8. Improving the quality of the delivery of basic and effective nutrition interventions, particularly on (a) Breastfeeding promotion and counseling, (b) Growth monitoring and promotion, (c) Vitamin A capsule supplementation and (d) Prenatal iron-folate supplementation.

9. In order to improve the quality of nutrition intervention delivery, inclusions of wider stakeholders shall be sought for, such as inclusion of husbands (men) as target group in breastfeeding promotion and counseling as well as in nutrition and health program in general.
10. Malnutrition shall not always be referred to food aid programming. It shall be complemented with other programs for its sustainability and continuation at the community level.
11. Considering its multidimensional features, the nutrition problems shall be tackled using interdisciplinary and intersectoral approaches as there is no instant solution for food, nutrition, and income insecurity problems.
12. Strengthening the early warning nutrition surveillance system and use it as the basis for **preventive** action.
13. Revitalize animal husbandry (cattle and fishery) sector for increasing access to this nutritious food, particularly among vulnerable groups such as pregnant women and infants and young children.
14. Vulnerable groups identified to suffer for food and nutrition insecurity are: farmers, rural communities, women farmer, women villagers, pregnant women, lactating women, infants and young children.
15. Stunting and wasting among children are the best indicators to measure the impacts of food and nutrition security programmes.
16. Food insecurity and nutrition problems in NTT are very much related with prevailing poverty. However, programs for poverty alleviation shall not be limited to income generating activities programs only. It shall be complemented with provision of basic facilities, such as basic sanitation and clean water facilities, health facilities, basic education facilities, electricity, and transportation.

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