

THE LINKAGES BETWEEN FOOD AND NUTRITION SECURITY
IN LOWLAND AND COASTAL VILLAGES
IN THE PHILIPPINES

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CHAPTER 1

INTRODUCTION

1.1 Food and nutrition security as a worldwide problem

The persistence of hunger in a world of plenty is the most profound moral contradiction of our age. New estimates for 1995-97 show that around 790 million people in the developing world do not have enough to eat (FAO, 1999). The world produces enough food to feed everyone with a minimally adequate diet but guaranteeing the right to this food and freeing the world from hunger continues to be an unrealized dream (Pinstrup-Andersen et al., 1995)

Since the 1970's, food security became a prominent issue and a global concern (Maxwell and Frankenberger, 1992) especially in the developing countries. At the World Summit for Children (WSC) in New York (1990) and at the International Conference on Nutrition (ICN) held in Rome (1992), ensuring household food security was an important goal included in the World Declaration on Nutrition and in the Global Plan of Action for eradicating malnutrition. Many nations have joined the bandwagon to ensure that every man, woman and child would be free from hunger and malnutrition.

The trends in malnutrition among under-fives show some decline worldwide, but the rate of decline tapered off in the last decade (ACC-SCN, 1997). This also means that the goal of the WSC and ICN to reduce malnutrition to half by the year 2000 was not met. Similarly, by the end of the last century the prevalence of iron deficiency anemia (IDA), vitamin A deficiency (VAD) and iodine deficiency disorders (IDD) remained at the two-digit level and much higher than the targets set for the year 2000 at the WSC and ICN (ACC-SCN 2000¹).

Many development programs have been implemented by governments of developing nations to attain food security as a means to protect people against malnutrition. However, recent evidence indicates that improvements in household food security do not necessarily translate into improvements in nutritional status, especially of women and children (Haddad et al., 1995). This means that household food security is a necessary condition but not sufficient for adequate nutrition (Maxwell and Smith, 1992). Evidently, indiscriminate imposition of solutions from central levels of government supported by international donors, so far have not solved the problem of hunger and malnutrition. Perhaps the policies and programs have made the situation worse for many social groups: the landless, the small farmers, the sharecroppers, and the urban poor.

Similarly poor nutrition due to chronic energy deficiency (food insecurity) and an inadequate quality of habitual diets (nutrition security) occur in poor households, but the theory that economic growth leads to better nutrition rests on a series of often-questionable assumptions (Berg, 1973):

¹ Ending malnutrition by 2020: An Agenda for Change in the Millennium. Final Report to the ACC/SCN by the Commission on the Nutrition Challenges of the 21st Century. Food and Nutrition Bulletin 21 (5), September 2000.

- a national increase in per capita income means an increase, large and rapid enough in the income of the poor to be of nutritional significance.
- increase in the income of the poor leads to an immediate and automatic increase in the amount the family spends on food.
- increase in food expenditures by the poor lead to an improvement in nutrition.
- increase in food production will lead to improved food consumption.
- improved nutrition in the family means an improvement of the nutritionally vulnerable members of the family.

The effectiveness of government efforts to strengthen household food and nutrition security requires proper targeting. We need to identify the food insecure households and vulnerable individuals, where they are and why they have not been able to improve their situations.

If we really want to understand why households are food insecure and children are malnourished, we have to start thinking in terms of households and individuals. We have to see ourselves inside the huts, or shacks, living in slums, villages and compounds – where overworked mothers have a dollar-a-day to live on and to rear their children. Waking up in the dark, starting the fire, washing the baby, going to work in the yellow light of dawn. Praying that the child's cough is not worsening, wondering where the evening meal will come from.

This study attempts to bring an understanding of the processes that maintain food insecurity of households and poor quality of diets among its members, notably mothers and young children.

1.2 Context of the research

The National Nutrition Surveys in the Philippines show that malnutrition problems such as protein-energy malnutrition (PEM), and micro-nutrients deficiencies, notably iron-deficiency anemia (IDA), vitamin A deficiency (VAD) and iodine deficiency disorders (IDD) continue to persist. The problems continue to afflict a major proportion of Filipinos, particularly the infants, preschool children, pregnant and lactating mothers.

According to the last (1998) National Nutrition Survey conducted by the Department of Science and Technology/ Food and Nutrition Research Institute (DOST/FNRI), about 31.9 percent of 0-5 year old children are moderately and severely underweight², and 33.0 percent are stunted³, using the international reference for growth (National Center for Health Statistics, NCHS) (Barba, 1999). As in other developing countries, this precarious situation is attributed to poverty due to low food production and limited off-farm employment. In addition family size influences the adequacy of resources while the low educational level adds to nutrition insecurity through poor nutrition knowledge, persistence of harmful food beliefs and inadequate childcare.

² Is an indicator of past nutrition (underweight) and the most widely used anthropometric parameter for individual screening, growth monitoring and community diagnosis; the measurement uses weight-for-age < - 2 standard deviation scores of the international (WHO) reference.

³ Height-for-age < - 2 standard deviations of the international (WHO) reference; is an indicator or sign of chronic malnutrition.

The Philippines as a signatory to the World Declaration on Nutrition is committed to the global call to eradicate hunger and malnutrition. This commitment is operationalized in the Medium-Term Philippine Food and Nutrition Plan (MTPFNP) of 1993-98, otherwise known as the Philippine Plan of Action for Nutrition.

The PPAN serves as ‘the springboard for the administration’s goal to decrease the prevalence of malnutrition in the entire country’ (National Nutrition Council (NNC), 1993). Two strategies are employed in the operationalization of the PPAN - the promotion of household food security and the prevention, control and elimination of micronutrient malnutrition.

Several national nutrition programs are being implemented such as the Comprehensive Nutrition Program of the Department of Health (CPN-DOH), the Home, School and Community Food Production and the Applied Nutrition Program of the Department of Education and Sports (DECS), the Self-Help Assistance Program (SEAP-DSWD) and the Comprehensive Food Security and Poverty Alleviation of Agriculture called ‘The Agriculture and Fisheries Modernization Act (AFMA) of 1999’ of the Department of Agriculture. This Act will pave the way for modernizing agriculture and fisheries sectors as well as address the intertwined problems of poverty, food insecurity, malnutrition and unemployment (NNC Working Paper, 1999).

A recent development is the devolution authority and the decentralization of planning and implementation of public services. Local government units (LGU), i.e. municipal authorities are supposed to generate taxes to supplement the budget received from the central government and to allocate them according to local development plans. It is obvious that needs outnumber resources available. Joint efforts of LGU, non-governmental organization (NGOs), local centers of knowledge and expertise such as universities and the community are mandatory – not only to generate financial and human resources but to empower households to share the responsibility for their well-being.

It is within this context that Barangay Integrated Development Approach for Nutrition Improvement (BIDANI) operates. BIDANI is an extension program of a network of state universities and colleges. Its *vision* is the formation of a partnership with LGU, NGOs and the community in efforts to reduce malnutrition among under-fives; its *mission* is to improve nutrition in a development approach through enhancement of appropriate (transparent and professional) governance and needs-oriented interventions in the field of food production, enhanced purchasing power and domiciliary prevention of malnutrition among under-fives and/or rehabilitation (for details see section 2.8).

BIDANI, therefore, offers an excellent opportunity to study the promoting and limiting factors to food (dietary energy supply at household level) and nutrition security (quality of habitual diets and intra-familial distribution of foods).

The database of BIDANI provided relevant baseline information to look into the linkages between livelihood strategies and food security, which will be dealt with in the thesis of Ms. Gerry van Nieuwenhoven⁴ and to examine the relationship of household resources food and nutrition security, and malnutrition among under-fives, reported in this thesis.

⁴ Ms. Van Nieuwenhoven was a former Dutch Volunteer who was involved in the micro-credit delivery program of BIDANI for more than two years. She is currently attached to Wageningen University.

1.3 Research problem and objectives

Research problem

Studies have shown that global or national food sufficiency/availability defined by Dietary Energy Supply (DES) (FAO, 1996)⁵ does not necessarily translate into improvements in household food security. An analysis of national trends in food consumption and the nutritional status of people in developing countries, the Philippines included, over the past two decades suggests that, while there has been some improvement in achieving greater food security at the national level, this has not resulted in comparable reductions in child malnutrition (World Bank, 2000a).

Many studies in the Philippines on food and nutrition have investigated the factors, which are associated with and are possible determinants of nutrition/malnutrition (Aguillon et al., 1982; Mendoza, 1984; Balatibat, 1988; Haddad and Bouis, 1990; Garcia, 1990; De Guzman et al., 1994; Bautista, 1995; Eusebio et al., 1998). These studies also reported on a diverse set of indicators that are thought to capture important aspects of nutrition. Only few studies have conducted research on the food security situation of the country and even fewer studies that have examined the food problem of Filipino households in general and the vulnerable groups in particular (Pollisco, 1989; Garcia and Pinstup-Andersen, 1990; Del Mundo, 1995; Dacanay, 1999). None of these studies have assessed the relationship of food and nutrition security at household level and as determinants of child malnutrition

High incidence of poverty and a great variation in agro-ecological and cultural setting as well as socio-economic conditions potentially affect household's food and nutrition security. Yet, in poor communities and fragile environmental conditions, considerable variation is observed on food consumption and nutrition status of the population. Individual malnutrition may exist in food secure households while a well-nourished individual may be observed in a food insecure household. The relationships between factors that underlie these differences have not been properly elucidated.

Given the rural and agricultural resource base of Philippine poverty, any attempt to delineate food and nutrition problem areas is a difficult task. Specifically, to elucidate what works, under what conditions and by what mechanisms food security leads to nutrition security, we must first understand how people themselves respond to conditions within a local context. Most importantly, we must examine this at the level where the interactions between determinants of food and nutrition security are most apparent, the household level.

Since 1978, the BIDANI program has addressed the issue of rural food and nutrition security. Many quantitative data at household and community levels are generated through the built-in monitoring and evaluation systems of BIDANI (process evaluation). If the inputs-outputs and outcomes are in expected direction, it is assumed (plausible) that the SUCs spearheading the BIDANI strategy have contributed to good governance, food security and poverty alleviation and thereby to improve nutritional status of children, aged 0-36 months. However, the

⁵ World Food Summit, Technical Background Documents 1-5, Rome FAO November 1996. The threshold for food insecurity is defined as the average minimum requirement for individuals, allowing for only light activity.

available information is not sufficient to draw firm conclusions on BIDANI's role in poverty alleviation, food security and nutritional status in the study areas. A proper impact evaluation of the BIDANI is not possible due to the multitude of BIDANI and non-BIDANI inputs and their interaction with the dynamics of regional and national development (Kusin, 1997). To come as close as feasible to an impact evaluation, the process evaluation will be complemented by a pre- and post BIDANI evaluation by cohorts (PPEC). PPEC consists of two surveys, one at the start and one at the end of 24-month period of BIDANI implementation in BIDANI and non-BIDANI (control) villages. PPEC thus provides trends in household food and nutrition security and the nutritional status of children, 0-36 month of age. But one is left with the question of *why* were outputs achieved or not achieved?

To answer this question, in particular to understand the processes within households that determine livelihood and food security, the dietary patterns between household members and finally the potential relation with nutritional status of under-fives, this PhD study was conducted. In contrast to the PPEC surveys that cover calculated sample sizes of under-fives and their households to test differences in the prevalence of malnutrition, this study attempts to provide in-depth insights, using also qualitative research and case studies.

Research objectives

Through the years the food insecure households have developed among themselves various strategies or measures to cope up with food crises. However, it is not clear whether household food security strategies and coping mechanisms will also lead to better nutrition of vulnerable groups. It is on this question that a study on the linkages between food and nutrition security of households in rural and coastal villages was conducted.

The present study is designed to contribute to the understanding of intra-household dynamic that have implications for possible impact of policy decisions and development projects like BIDANI. The study seeks to bridge informational gaps concerning how households respond to changes in fluctuations in food supply and income (Garcia, 1990). Timely examination on what households do to ensure access to sufficient foods, and the social and economic coping mechanisms that buffer them from periodic stress, are important in explaining how a particular household achieves food and nutrition security. A development program may provide benefits to some household members, but may increase the burden on other members by altering the allocation of tasks and in some instances disrupting the access to resources on which the household previously relied. Expanding existing knowledge on how households achieve food and nutrition security and how they use their resources can help BIDANI re-adjust its program planning and implementation.

The research specifically seeks:

1. To describe the factors influencing food and nutrition insecurity at the household and individual level and the magnitude of these problems.
2. To describe the people's perception of and attitudes towards household food security and how these affect their behaviour and actions during food crisis.
3. To assess the effects of seasonality on food supplies, intra-household distribution of food and energy and other micronutrients status of vulnerable household members.
4. To identify and examine the impacts of different coping mechanisms employed to increase access to food.

5. To determine the role of gender on food and nutrition security.
6. To define the lessons learnt for the BIDANI program, which aims at improving food and nutrition security of households and individuals in the household.

The study was conducted in two different ecological settings, namely coastal and lowland villages, to compare variations across these communities with regard to the above-mentioned objectives.

1.4 Research plan and funding

Discussions on the research problem started as early as 1996, when there was a series of meetings to discuss the monitoring and evaluation system in the BIDANI Network Program. Point of discussion was the assessment of the impact of BIDANI on the food and nutritional status of preschool children in the project areas. As mentioned earlier, due to the multitude of BIDANI and non-BIDANI inputs, not to mention budgetary constraints, a proper impact evaluation of BIDANI was regarded problematic. Recognizing this, a preliminary proposal was drafted for food security and micro-credit case studies to be submitted to external fund sources. These studies were envisioned to address the why's and how's of the proposals, one aimed at investigating the linkage between livelihood strategies and household food security, the other at the relationship between food and nutrition security. The proposals were submitted to the Neys-van Hoogstraten Foundation in November 1997, and they were formally approved in January 1998.

1.5 Outline of the thesis

This thesis presents the results on the research on the factors that affect food and nutrition security, what households do to ensure access to sufficient foods, and the social and economic coping mechanisms that buffer them in periodic stress. Chapter 1 is meant to put the research in context. It includes a discussion on the issue of food security at global and national levels and on the relevance of research and the objectives the study hopes to achieve.

Chapter 2 provides a profile of the Philippines, in so far as relevant for an understanding the food and nutrition problems of the country. It includes a section on ecology and demographic characteristics of the country, the political and administrative structure, and the economic, food and nutrition situation. Another section discusses the various national development policies adopted and programs implemented by the government to address the problem of food security and under-nutrition. This background information puts the objectives of the research into a proper perspective. The last section gives an overview of the BIDANI Network Program, which reflects the academic institutions' endeavor to accelerate improvement of nutritional status and the general well-being of the population.

The theoretical considerations and conceptual framework are presented in Chapter 3. It provides an extensive review of the relevant literature on food security, nutrition security and coping. The household is chosen as the unit of analysis because of its important role in

generating livelihood and food security for its members (Niehof, 1999a). Therefore, the functioning of the households and the need to understand intra-household dynamics are given due to attention. The effects of seasonality and role of gender are also examined in this chapter.

Chapter 4 presents the research design and the methods of data collection and analysis. The statistical tools used in the analysis of the household survey data are presented in this chapter.

In the Pre and Post Evaluation by Cohorts of the BIDANI program (PPEC) the profile of the municipalities, villages and sample households were examined to understand the food and nutrition situation and variation across different locations. The magnitude and prevalence of malnutrition and food insecurity were determined and the factors that affected the household's food security such as household size, dependency rate, income and education of mothers were examined. Chapter 5 presents a brief description of the PPEC and its link with the present study.

In Chapter 6, the people's perception on household food security and how these affect the dynamics of decision-making and the actions and strategies households pursue in times of food shortage are reported.

Chapter 7 examines the consequences of seasonality for household food supply, the procurement pattern of households for staple food and the quality of households' diets. Household responses and coping strategies during periods of stress are discussed as well.

Chapter 8 presents data on the intra-households distribution of food and energy status of mothers and preschool children. The role of gender and the influence of women's employment on food and nutrition security were also investigated.

Finally, Chapter 9 presents a general discussion of the research findings in the light of the research problem and the research questions. The role of BIDANI in the context of research findings was also examined. Furthermore, policy and program recommendations are formulated.

CHAPTER 2

THE PHILIPPINE CONTEXT

The food and nutrition situation in developing countries is fragile. Floods, drought, financial collapse and war jeopardize progress. This is also evident in South East Asia, including the Philippines. A major setback is reported from the economic crisis that hit the countries in the region during 1997-98. Populations as a whole were affected and vulnerable groups in particular (ACC-SCN, 2000).

This chapter describes the food and nutrition situation in the Philippines in the context of its ecological, socio-economic and political setting, the financial market for consumers and the National Nutrition Action Plan. The fieldwork of this study was carried out in villages covered by the *Barangay* Integrated Development Approach for Nutrition Improvement (BIDANI). The last section, therefore, gives a brief description of the vision, mission, and implementation of this program.

2.1 Ecological and socio-demographic characteristics

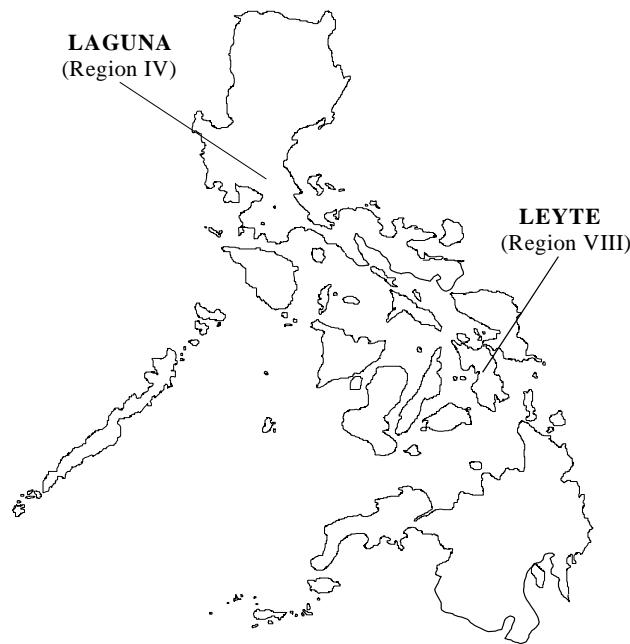
Geography, ecology and climatic conditions

The Philippines is an archipelago of 7,107 islands with a land area of about 300,000 km². It is bounded on the north and west by the South China Sea, on the east by the Pacific Ocean and on the south by the Celebes Sea. The islands are divided into three groups: the Luzon group, which is the largest and northernmost island and site of the capital, Manila. At the southern end of the archipelago, is the second largest island, Mindanao. The third is the tightly packed island groups the Visayas, which fills the space between Luzon and Mindanao. The country is divided into sixteen administrative regions and autonomous local governments comprising 78 provinces and 81 cities, 1,528 municipalities and 42,000 *barangays*. It has over a hundred ethnic groups and a mix of foreign influences, which have molded a unique Filipino culture. The locations of the BIDANI Network are shown in Figure 2.1. The study was conducted in Laguna, Region IV and Leyte, Region VIII.

The ecology and climatic conditions of the Philippine territory may be an important factor explaining why food and nutrition problems remain so pervasive. The Philippine climate is typically tropical with a bimodal type of climate having a pronounced dry season from January to June and a wet season from July to December.

There are three predominant air streams that influence the climate of the Philippines: the Northeast monsoon (*amihan*), which is relatively cool and dry and prevails during November-February; the Southwest monsoon (*habagat*) characterized by warm, extremely humid air that prevails during June-September; and the warm and humid trade winds during April-early May.

Figure 2.1 Map of the Philippines, locations of the BIDANI Network and study sites



The country is located in the global region that experiences the highest frequency of tropical cyclones or typhoons, which normally start in June and end in November. The Philippines is visited by an average of 19 typhoons every year. According to the National Disaster Coordinating Council (1997), typhoons alone account for the country's highest catastrophic damage due to natural causes. Between 1980 and 1990, a total of 213 typhoons crossed the country affecting 25 million people and resulting in 5,952 deaths, about 14,000 missing or injured people and environmental and property damage of about P45 billion¹. In 1989 alone, floods damaged property and crops worth over P390 million. In fact, the calamities that hit the country in 1980s and 1990s were the major factors responsible for the decline in the country's food supply and high prevalence rate of malnutrition (NNC, 1992; PDI², 1998).

The Philippines has to reckon not only with typhoons. The country lies between the Eurasian and Pacific tectonic plates, and within the most prominent volcanic chain called the 'ring of fire' (Peter, 1994). Hence, other natural disasters like earthquakes and volcanic eruptions have taken place and could strike at any time. To name a few, the July 1990 earthquake was a major disaster killing 1600 people and destroying over 20,000 buildings and houses in the Baguio City in Region II, and the massive eruptions of Mt. Pinatubo in 1992 caused a havoc which could not be dealt with by the communities and even the national government. This has prompted the government through the National Disaster Coordinating Committee (NDCC) to conduct a nation-wide training on capacity building for handling emergency situations. Preparedness is crucial in emergency situations. However, being prepared is just one side of the coin. The rehabilitation process is just as important for people to survive and be able to live a normal life again (Mula, 1999).

¹ US\$ = Pesos (P) 14-20 in the late 1980s

² PDI = Philippine Daily Inquirer

Aside from natural calamities, the country's ecology is also beset by rapid environmental degradation, making it the first among the 25 countries classified by Conservation International as Priority Biodiversity Hotspots, needing urgent attention (World Bank, 2000a). The country's agricultural and fishery production is also threatened by environmental degradation. Sajise and team members (1992) emphasize that the continuing decline of forest cover has affected the capacity of major watershed areas to supply water, protect the soil from erosion and preserve bio-diversity which have profound impacts on sustainability of the agricultural resource base. Moreover, marine and coastal ecosystems also show a decline in productivity due to over-fishing, destruction of the habitat of certain marine life, and water pollution. This has a direct impact on the livelihood and food security of the country in general, and coastal communities in particular.

Socio-demographic characteristics

The socio-demographic characteristics of the country's population are derived from reports on macro indicators (Table 2.1) published by UNFPA (1998 and 2003). The Philippines is characterized by a moderately large population of 80.0 million people in 2003, an annual population growth rate of 1.8 and a relatively high total fertility rate (TFR)³ of 3.2 (above the South East Asian averages of 1.4 and 2.6, respectively), and a growing urban population of 59 percent. With respect to childbirth in the last five years, 27 percent were to mothers who wanted children later and another 18 percent to mothers who did not wish to have another child at all⁴. Seemingly, these wishes were not met or realized because Filipino married men want more children than their wives. On average each Filipino woman has one more child than she desires (Herrin, 2000).

In terms of levels of formal education, the country fares better than other countries in South East Asia. The country ranked third among nine countries with lowest illiteracy for both males and females above 15 years. In fact, the female illiteracy rate is the lowest in South East Asia 1998 and 2003 (UNFPA, 1998 and 2003).

As far as the health situation is concerned, about 86 percent of the population in 2003 has access to safe water supply. The mortality rates both for infants and under-fives are low compared to countries in South East Asia. In 2003, the infant mortality rate was 29 per 1000 live births and the under-five mortality rate was 35 per 1000 in this age-group, respectively. Both showed a significant decline during the past decade. This trend could be attributed to the high education levels of women, which reportedly have a significant inverse relation with the infant mortality rate (IMR) (UNFPA, 1998, 1999, 2003). Average life expectancy at birth of Filipinos is 70 years, with women outliving men.

In terms of infant immunization, coverage for measles and DPT vaccination reached 83 percent between 1993-98, but is still lower than the 93 percent coverage in South East Asia. More efforts are needed to improve immunization coverage, particularly in the countryside. Child malnutrition among under-fives is still quite high (30% based on international (WHO) reference), higher than the average for the South East Asian region. This is rather surprising, as one would expect that the high level of education of women would be reflected in the nutritional status of children.

³ The TFR of a certain year is the average number of children per woman at the end of her childbearing period, calculated on the basis of age-specific fertility levels in that year.

⁴ Based on results of 1998 Demographic and Health Survey.

Details of the food and nutrition situation will be described in section 2.5.

Table 2.1 Selected Philippine social indicators

Selected Indicators	1998	2003	South East Asia	
			1998	2003
Population				
Total population, mid-year (millions)	72.2	80.0	506.0	543.2
Growth rate (% annual average)	2.0	1.8 ⁵	1.6	1.4
Urban population (% of population)	54.0	59.0 ⁶	34.0	38.0
Total fertility rate (1995-2000)	3.6	3.2 ⁷	2.9	2.6
%Illiterate (>15 years old)				
Male	5.0	5.0	9.0	10.0
Female	6.0	5.0	20.0	20.0
Access to safe water (% of population)	85.0	86.0		
Immunization rate (% under 12) (1999-98) ⁸				
Measles	83.0	-	93.0	-
DPT	83.0	-	93.0	-
Child malnutrition (% under 5 years) 1998-98 ⁹	30.0	-	20.0 ¹⁰	-
Life expectancy at birth (years)				
Total	68.4	70.0	65.7	66.8
Male	66.6	68.0	63.7	64.4
Female	70.2	72.0	67.7	69.1
Mortality				
Infant (per 1,000 live births)	35.0	29.0	46.0	41.0
Under-five (per 1,000 live births)				
Male (per 1,000 population)	59.0	40.0	74.0	61.0
Female (per 1,000 population)	48.0	30.0	65.0	49.0
Maternal (per 100,000 live births)	280.0	213.0	-	404.0

Sources: UNFPA (1998) and (2003); World Bank (2000).

2.2 Political history and government structure

Brief political history

The earliest inhabitants probably arrived in the Philippines over land during the ice period from the Asian mainland some 40,000 years ago (Weir, 1999). The original people of the Philippines are related to the people known today as Negritos or Aetas. They are an Australo-Melanesian people, with dark skin and curly brown hair.

Elements of other cultures can be traced back from Chinese traders who came to the

⁵ Average between 2000-2005.

⁶ 2001 data.

⁷ Average between 2000-2005.

⁸ World Bank, 2000.

⁹ World Bank, 2000. Data is based on international reference standard for growth (NCHS) of WHO.

¹⁰ For East Asia and Pacific.

Philippines in the tenth century, followed by Muslim traders from Borneo. Before the Spaniards came, *Rajas* and *Datus* ruled the Philippines.

Ferdinand Magellan, a voyager from Spain discovered the Philippines on March 16, 1521. His expedition sighted the island of Samar where Magellan erected a cross and claimed the islands for Spain. Two Rajas, Kolambo and Siago who took him to Cebu to meet Raja Humabon welcomed him. Magellan allied with Raja Humabon who was baptized as Christian together with 800 Cebuanos. Lapu-lapu, a rebellious datu in a nearby area killed Magellan in a battle between Spanish soldiers and Lapu-lapu warriors. The relationship between Raja Humabon and the remaining Spaniards deteriorated due to disputes over women. The Spaniards departed from Cebu to resume their exploration. In 1522, the Victoria cargo ship returned to Spain with huge financial success despite its human losses. Four more expeditions followed between 1525 and 1542. Ruy Lopez de Villabos, the commander of the fourth expedition, named the Philippines islands after Philip II.

The Spanish *conquistadores* established a colonial government in Cebu in 1565. In 1571 they transferred the seat of government to Manila and proceeded to colonize the country. Philip II appointed Miguel Lopez de Legaspi as the first Governor-General. He declared Manila the capital of the entire archipelago due to its strategic position as trading center and military outpost. The Spanish government did not develop the trade potential of the Philippine's agricultural or mineral resources because its commerce centered on the galleon trade between Canton and Acapulco, where Manila served as secondary entrepôt. Nevertheless, the Spanish rule had two lasting effects on Philippine society: the near universal conversion of the population to Roman Catholicism and the creation of a landed elite. Philip II ordered the conversion of the Philippines to Christianity without force by the Augustinian, Dominicans, Franciscan Recollect and Jesuit missionaries (Weir, 1999).

Spain introduced Christianity and attempted to unify the people from the islands under a central government. While the different missionaries founded their parishes and estates in the barangays, the officials of the civil administration preferred to stay in Manila and govern indirectly through the traditional barangay *datu* or village chief. Although the traditional kinship organization of the barangay had maintained the communal use of land, the Spanish governors brought with them their feudal notions of land tenure with *encomienderos* and subordinate vassals. In most villages, the priest and the local *principale* or "notable" represented the Spanish authority. The *friarocracy* of the religious orders and the oligarchy of the landholders were the twin pillars of colonial society whose main interests were in keeping their positions of authority and privilege. The creation of a privileged land-holding elite on whom most of the rural population was dependent as landless tenants introduced a class division in Philippine society that has been the perennial source of social discontent and political strife ever since.

The Reform Movement led by Marcelo H. Del Pilar, Lopez Jaena and Jose Rizal¹¹ led to a revolution in 1896. In 1898, the Spanish colonization, which started in 1565 ended through a revolt of Filipinos and after a victory in the Spanish-American war where Spain ceded the Philippines including Guam and Puerto Rico to the United States for US \$ 20 million (Weir, 1999). Emilio Aguinaldo declared the Philippines independent from Spain and became the

¹¹National hero, Jose Rizal started the peaceful reform in 1892 under colonial rule. He founded a national organization for peaceful reform – La Liga Filipina (The Philippine League). On December 30, 1896, he was executed after the Spanish government found him guilty of rebellion, sedition and illicit association.

president of the First Philippine Republic in 1898.

After 333 years of ruling, the Spaniards finally left the Philippines and the Americans took over for 48 years. The Tydings-McDuffie Act of 1934 established the Commonwealth of the Philippines. Between 1942-1945, the Filipino-Japanese war erupted. The US government defended the Philippines and ultimately won the war against the Japanese. On July 4, 1946, a year after the end of the war, the Americans recognized Philippine independence.

Despite social fragmentation and political corruption, the democratic institutions survived under the administration of President Manuel Roxas, who became the first President of the Third Philippine Republic, followed by President Elpidio Quirino and President Ramon Magsaysay. Carlos Garcia became president when Magsaysay died in an airplane crash in 1957. He was re-elected in 1957. In 1961, Diosdado Macapagal won the presidential election. President Marcos succeeded him in 1965 (Weir, 1999). The beginning of the Marcos era in 1965 was marked by an ambitious program on public works. In 1969, Marcos won his second term but his popularity declined precipitously due to growing criticism of dishonesty and corruption in the government. At the end of his first term, leftist rebellion and Muslim separatist activities for the secession of Muslim Mindanao grew significantly. Marcos took advantage of these and other incidents, such as student protests and labor strikes, to create a political atmosphere of crisis and fear to impose martial law on September 21, 1972. It was lifted in 1981. His dictatorship ended in 1986 through a peaceful People's Power Revolution; two and half years after the assassination of opposition leader Senator Benigno Aquino.

In 1986, President Corazon C. Aquino, became the first woman to become president. Under her term, a new constitution was ratified by Referendum in February 1987, which restored democracy in the country. The National Assembly was replaced with a bicameral legislature, the Senate and House of Representatives, also called as the Upper and Lower Houses. The Philippine Constitution limits the president's term of office to a single six-year period.

In 1992, President Fidel Ramos took over the government through a democratic and peaceful election, the first since the Marcos era. His government was able to establish economic and political stability. President Joseph Ejercito Estrada succeeded him in the second democratic presidential election in 1998. After two years, due to widespread corruption, cronyism and inefficiency, President Estrada was ousted through another peaceful People's Power Revolution.

His constitutional successor, the then Vice President Gloria Macapagal Arroyo succeeded him. President Arroyo's government has outlined four areas of major concern: 1) to win the fight against poverty within the decade, 2) to improve moral standards in government and society, 3) to change from personality-driven to program-based politics, and 4) to promote leadership by example. At this time, the Philippines passed another important test of its democratic institutions.

Government structure

The country has a democratic form of government. The people elect the President, the 24-member Senate as well as the 200 members of the House of Representatives (Crofton, 1990). The Congress serves as the legislative body, which passes the law of the country.

The executive body, composed of Cabinet Secretaries appointed by the President, is the

implementing arm of the government.

The administration of the Republic of the Philippines is subdivided into 16 regions (including Metro Manila as the National Capital Region) consisting of 78 provinces. Every province consists of a provincial capital and several municipalities, which in turn consist of village communities, called *barangay* or village. The changing of guards at these levels is through an election. A governor heads the province while a mayor governs a municipality. A *barangay* with an elected head, the *barangay captain*, is the smallest socio-political administrative unit in the Philippines (Peters, 1994).

The Philippine Constitution provides for national elections held every four and six years. Election of the President as well as members of the senate and congress is every six years, while election of local officials from the provincial down to village level e.g. governors, mayors and *barangay* captains is every four years. This process to some extent hinders the smooth implementation and delivery of government projects, programs and services because of usual pre- and post election transition jitters when government services take a more tentative pace (Offemaria, 1998). The transition period can take a long time and may be too costly for the government and the people in general, due to changes in policies that hamper the continuity of government programs and services, not to mention the large sums of money divested during the election period.

2.3 Economic situation

In the 19th century the Philippines boasted a vibrant economy based on free trade and commerce. It was the first country in South East Asia to embark on the road of industrialization. However, it has failed to take off as a full-fledged industrialized country, and agriculture still plays a dominant role (Chowdhury & Islam, 1997)¹². Former President Ramos (1992-1998) launched his vision, 'Philippines 2000', by which he wanted to transform the Philippines into a newly industrializing economy. He continued the reform program introduced in the 1980s (Chowdhury & Islam, 1997: 248). However, in 1998 agriculture, forestry and fishing still accounted for around 41 percent (against 46 percent in 1993) of the total employment in the Philippines (Table 2.2).

The rate of unemployment varied between 7.4 and 8.9 percent in the 1992-1997 period. The highest unemployment rate occurred in 1993, when 8.9 percent of the 26.8 million-labor force had no job. The lowest was in 1996 at 7.4 percent. Of the more than 68 million Filipinos in 1997, 30.3 million were in the labor force. From this number, which was 2.1 percent higher than in the previous year, 7.9 percent or 2.39 million were unemployed.

The Gross Domestic Product (GDP)¹³ per capita ranged from 418 US \$ in 1960 to 691 US \$ in 1982 as lowest and highest value in the 1960-1995 period. The GDP per capita in 1995 was only 630 US \$ (UNDP, 1998). In the past few years the GDP growth was 5.8 percent in 1996, 5.2 percent in 1997, then decreased to 0.5 percent in 1998 and increased to 3.2 percent again

¹² Although agriculture is more important in terms of employment, manufacturing contributes more to GDP.

¹³ Using 1987 US \$

in 1999 (ADB, 1999a: 47; ADB, 2000: 108). The real GDP per capita (PPP\$)¹⁴ ranged from 1,183 in 1969 to 2,762 in 1995 (UNDP, 1998).

Table 2.2 Structure of employment ('000) for 1993 and 1998

Employment sector	1993 (‘000)	1998 (‘000)	1993 (%)	1998 (%)
Agricultural, forestry & fishing	11,249	11,272	45	41
Mining	101	104	0	0
Manufacturing	2,582	2,787	10	10
Construction	1,187	1,511	5	5
Electricity, gas & water	101	140	0	0
Commerce	3,563	4,328	14	15
Transport	1,401	1,885	6	7
Finance, insurance	494	695	2	2
Government	4,480	5,631	18	20
Total incl. Others	25,170	28,262	100	100

Source: National Statistics Coordination Board (NSCB), press reports quoted in World Bank (2000).

The Gross National Product (GNP) is GDP plus income of Filipino firms abroad and remittances from overseas Filipino workers. These two income flows contribute substantially to the GNP. The remittances alone contributed 0.6 percent to the total GNP in 1998. In 1998 around 4 million Filipinos were working overseas (PDI, 1998). The bulk of the remittances comes from workers deployed in the United States, Middle East and Asia (Dumlao, 1999).

Aside from the international migration, there is a lot of domestic migration, both intra-rural as well as inter-sectoral. Using data of the population census of 1979, 1975 and 1980, Saith (1998a) concludes that across the country, the poorer classes rely far more on domestic receipts, while to families in the upper income classes, income from abroad is more important. This suggests the existence of a dualistic labor migration pattern, where domestic migration involves movement of population from poorer to richer regions, and international migration involves movement from richer regions to countries overseas. The Special Survey on Overseas Contract Workers (OCWs) carried out by the National Statistics Office (NSO) in 1991 shows a more precise picture. The study indicates that women from poorer regions have inferior jobs (as domestic helper or entertainer) when in overseas employment while men from richer regions tend to find better jobs (Saith, 1998b).

The pace of poverty reduction in the Philippines has been lagging behind compared to the rest of East Asia. The Philippines was the only large country in East Asia where the absolute number of people living on less than \$1 a day did not decline during 1985-1995 (Table 2.3).

Poverty in the Philippines is predominantly rural (rural poor constitute about 37 percent of the rural population and make up almost three-fourths of the country's poor). The majority of the poor live in households where the head has little education (World Bank, 2000b)(World Bank, 2000e). Although the incidence of poverty went down, the number of rural poor increased by 2.4 million between 1991 and 1997 (World Bank, 1999a).

¹⁴The GDP per capita of a country converted into US dollars on the basis of the purchasing power parity (PPP) of the country's currency (UNDP, 1998).

Table 2.3 Poverty in East Asia 1975-1995

Economy	Number of people living in poverty (millions)		
	1975	1985	1995
Philippines	15.4	17.7	17.6
Malaysia	2.1	1.7	< 0.2
Indonesia	87.2	52.8	21.9
Thailand	3.4	5.1	< 0.5
East Asia	716.8	524.2	345.7
East Asia without China	147.9	125.9	76.4

Source: Ahuja, et al. (1997).

Poverty appears to have increased in 1998 when per capita GDP fell by 2.6 percent due to the combined effects of the Asian financial crisis and El Niño, but began to decline again in 1999 as the economy started to recover (World Bank, 2000b). However, income inequality among families did not decline (Funck et al., 2000). A main cause of rural poverty is the low productivity of agricultural employment. The highest incidence of poverty exists among households whose head is employed in the agricultural sector and is far higher than among those engaged in services or industry (Table 2.4).

Table 2.4 Sectoral profile of poverty (in percent)

Employment sector of Household head	Poverty incidence	Contribution to total poverty ¹⁵
Agriculture	42.3	67.8
Mining	30.0	0.7
Manufacturing	13.5	3.8
Utility	9.5	0.3
Construction	23.1	7.1
Trade	13.5	4.7
Transport	13.7	4.4
Finance	3.0	0.2
Services	9.9	4.9

Source: Balisacan (1999).

The Philippines performed also poorly in terms of inflation. In the 1970s and 1980s the average annual inflation rate was approximately 14 percent. Table 2.5 gives an overview of selected Philippine economic indicators.

What should not be overlooked when interpreting some of the figures mentioned in Table 2.5, is that a part of the economy has gone underground. Bureaucracy and corruption in the government have brought about an underground system of economic activities, having to have nothing to do with government institutions and, instead, creating separate political economic system (Panopio, et al., 1994). This ‘people’s economy’ is visible in numerous forms. It includes ambulant vendors who sell fruit or fish on the sidewalk; employees of organizations who had the chance to go abroad and import goods to sell from home; fishermen who try to rent out their boats to other fishermen; and businesswomen who try to sell clothes.

¹⁵ Figures do not add up to 100 percent because households whose heads were unemployed were excluded.

Table 2.5 Selected Philippine economic indicators

Selected indicators	Latest single year			Same region/income Group	
	1970–1975	1980–1985	1993–1998	East Asia & Pacific	Lower-Middle-income
Poverty (% of population)					
National headcount index	..	52.0	40.6	..	..
Urban headcount index	..	42.0	22.5	..	..
Rural headcount index	..	58.0	51.2	..	..
Income					
GNP per capita (US \$)	370	520	1,050	990	1,740
Consumer price index (1995 = 100)	10	43	127	130	131
Food price index (1995 = 100)	..	45	121	..	
Income/Consumption Distribution					
Gini index	..		46.2	..	..
Lowest quintile ¹⁶ (% of income or cons.)	5.0		5.4	..	..
Highest quintile (% of income or cons.)	56.0		52.3	..	..

Source: World Development Indicators CD-ROM, World Bank (2000).

Corruption can affect the poor in several ways. It affects them directly, as they are subject to various types of financial extortion by corrupt officers, and because unscrupulous government functionaries often divert funds intended for social services for the poor. It affects them indirectly, by reducing the economy's growth potential. Corruption reduces foreign and domestic investment, decreases the efficiency of investments, and leads to diverting resources to rent-seeking activities. All of these have a significant negative impact on economic growth (ADB, 2000).

2.4 National development policies

The Philippine economy faces three structural challenges that must be dealt with to achieve sustained growth: poverty reduction, proper environmental management, and adequate infrastructure. Starting with the last challenge, the Philippines has lagged behind many of its neighboring countries in physical infrastructure to support the industrialization and the overall development effort. Poor roads, inadequate port facilities, and unreliable and expensive power supply have increased costs and reduced economic efficiency. Many of these deficiencies in infrastructure have been addressed in the past few years, but much remains to be done.

Environmental protection by proper environmental management, the second challenge, is essential for sustaining growth and ensuring livelihood for some of the poorest segments of society. It is a major structural constraint to development, and unless tackled urgently, will impede progress. As far as the first challenge is concerned, poverty incidence has fallen slowly over the past decades but remains high, particularly in rural areas. Little progress has been made in raising living standards for the poorest of the poor, who are below the subsistence income threshold. Poverty reduction programs have failed to effectively target the needs of the poor. The government considers poverty reduction a major priority of its

¹⁶ An income quintile is one fifth of the population, ranked according to levels of per capita income. The lowest quintile would earn 20% of the total income. The highest quintile would earn a cumulative percentage of 100%.

development agenda. The former administration of President Estrada boasted of being a 'pro-poor' administration. In fact, the Medium Term Philippine Development Plan has a modest target for reducing the overall incidence of poverty by at most 7 percent during 1997-2004, which reflects no major additional emphasis on poverty reduction.

The Philippine Social Reform Agenda (SRA), the package of interventions that the government pursues to ensure the welfare and early integration of disadvantaged groups into the political and economic mainstream, has been the most comprehensive anti-poverty program. It is a package of reforms agreed upon by government sectors to improve the conditions through a concerted effort. Basic Reform Commitments (BRCs) per target sector and convergence area of the SRA Convergence Policy framework are mentioned in Table 2.6.

Table 2.6 Basic reform commitments, sectors and convergence areas of the SRA

Basic Reform Commitment, (basic service)	To be delivered to target sector or beneficiaries	Convergence area (area prioritized by the program)
Agrarian reform	Farmers and landless rural workers	Agrarian reform communities
Aquatic reform	Fisherfolk	Coastal communities in priority bays and lakes
Ancestral domain	Indigenous people	Certificate of ancestral domain claim areas
Basic services	All basic sectors	Comprehensive and integrated delivery of social services areas
Rehabilitation	Rehabilitation	Disaster victims
Urban reform	Urban poor and workers in the Informal sector	Urban areas, resettlement sites and growth centers

Source: Bautista (1999).

The focus of the SRA is on marginalized communities, anchored on improving people's capabilities for self-help and self-reliance. The SRA adopted a Minimum Basic Needs (MBN) approach. The intervention will empower the Filipino family to meet its minimum basic needs for survival (health, food and nutrition, water and sanitation and clothing); security (income and livelihood, shelter, peace and order, and public safety); and enabling needs (basic education and literacy, family care/psychosocial needs, and participation in community affairs) (Bautista, 1999).

The above mentioned anti-poverty initiatives have been consolidated under the later established National Anti-Poverty Commission (NAPC) created by virtue of Republic Act No. 8425 enacted in December 1997. It is the coordinating and advisory body for the implementation of the *Erap para sa Mahirap* or Poverty Eradication Program (National Anti Poverty Commission, 1999). The Commission has been tasked to pursue the government's policy of adopting an area-based, sectoral and focused intervention to poverty alleviation. The intervention will empower the Filipino family to meet its minimum basic needs of health, food and nutrition, water and environmental sanitation, income security, shelter and decent housing, peace and order, education and functional literacy, participation in governance, family care and psycho-social integrity.

Two other important laws that might be helpful in reducing poverty are the Agricultural Competitiveness Enhancement Fund (ACEF) under Republic Act No. 8178; and the Agriculture and Fisheries Modernization Act (AFMA) (R.A. 8435). They are meant to

provide more resources towards agricultural modernization and cushion the negative impact of tariff reforms in the Philippines (Funck et al., 2000). Aside from the implementation of the above mentioned laws, the government has also begun annual poverty surveys, which will help to monitor and delineate the dimensions of poverty and guide efforts to address the needs of the poor (ADB, 2000).

The statistics included in these documents are based on the results of the Family Income and Expenditure Survey (FIES).

2.5 The food and nutrition situation of the Philippines

Food supply and availability

Aggregate data on net food supply (from domestic production and food importation) showed a steady increase from 1993 to 1997; with the cereals group contributing the biggest share of the total food supply. In terms of annual growth rate, a different trend can be observed. The data showed a significant decline in annual growth rate of more than 6 percent between 1993 and 1995 followed by a catch-up in 1997 (Table 2.7). The varying levels of annual growth rates seem to be due to the food supply of almost all commodity groups except fats and oils and milk and milk products which showed a relatively stable level. The country continued to rely heavily on importation of milk and dairy products. However, in 1996-97, importation of rice has been resorted to due the effects of calamities that have shrunk agricultural growth by minus 6 percent during the first three-quarters of 1998. This record was the country's worst in 30 years (Bayani, 1999).

Table 2.7 Net food supply and annual growth rate by commodity group, Philippines, 1993-1997

Commodity Group	Net Food Supply (in million tons)			Annual Growth Rate (in percent)		
	1993	1995	1997	1993	1995	1997
Cereals and cereal products	6.8	8.1	9.4	6.2	2.5	-2.1
Starchy roots and tubers	1.6	1.7	1.7	0.0	0.0	0.0
Sugars and syrups	1.1	1.0	1.1	-8.3	-23.1	-15.4
Pulses and nuts	0.8	1.0	1.0	0.0	11.1	11.1
Vegetables	2.4	2.4	2.7	14.3	0.0	3.8
Fruits	5.4	6.0	7.3	17.4	7.1	10.6
Fats and oils	0.3	0.3	0.3	0.0	0.0	0.0
Miscellaneous	3.2	3.7	4.7	14.3	5.7	27.0
Meat and meat products	2.3	1.9	2.3	0.0	-20.8	9.5
Fish and marine products	2.4	2.5	2.4	0.0	4.2	-4.0
Milk and products	0.2	0.2	0.2	0.0	0.0	0.0
Eggs	0.2	0.2	0.3	0.0	0.0	50.0
TOTAL	26.7	29.0	33.4	7.2	0.7	5.4

Source: National Statistical Coordination Board (1998).

From these food supply data, one can reasonably infer that in the past four years the diet has become poorer in quality or that people have to spend more money to maintain a nutritious diet. This picture is more or less borne out by data of per capita food supply (Table 2.8) and

reports showed that compared to 1988 prices, the cost of food has gone up by 81 percent in 1994, by almost 100 percent in 1995 and 119 percent in 1996 (Bayani, 1999).

The unstable levels of food supply can be attributed to food production patterns characterized by considerable seasonal fluctuations, which are closely related to environmental factors (Barba, 1999; Bayani, 1999; Sajise et. al., 1992). This instability in food production and food availability results in localized and sometimes more widespread food shortages. Occupational groups, such as the *kaingineros*,¹⁷ who work mostly in upland agriculture, and hired fishermen, are among those with very poor calorie intakes (Florencio, 1993; Villavieja et al., 1999; Bayani, 1999).

Table 2.8 Per capita food supply and annual growth rate per capita food supply, Philippines, 1993-1997

Commodity Group	Net Food Supply (in kilograms)			Annual Growth Rate (in percent)		
	1993	1995	1997	1993	1995	1997
Cereals and cereal products	101.9	114.8	128.1	4.7	0.3	-4.5
Starchy roots and tubers	24.3	24.4	23.7	-2.4	1.2	-0.8
Sugars and syrups	16.9	14.3	14.9	-4.0	-21.9	-14.4
Pulses and nuts	12.4	13.6	13.2	2.5	6.2	8.2
Vegetables	35.6	33.5	36.8	8.5	-4.8	0.8
Fruits	80.3	85.6	98.9	13.3	4.6	7.0
Fats and oils	4.5	4.5	4.4	2.3	-2.2	-2.2
Miscellaneous	47.3	52.2	64.4	10.8	2.4	8.9
Meat and meat products	26.1	27.7	30.6	-0.4	3.7	4.4
Fish and marine products	35.1	35.4	33.2	-4.1	0.6	-2.9
Milk and products	2.3	2.9	2.7	-11.5	3.6	3.8
Eggs	3.4	3.3	3.5	6.2	3.1	6.1
TOTAL	390.1	412.2	454.4	5.1	0.5	2.7

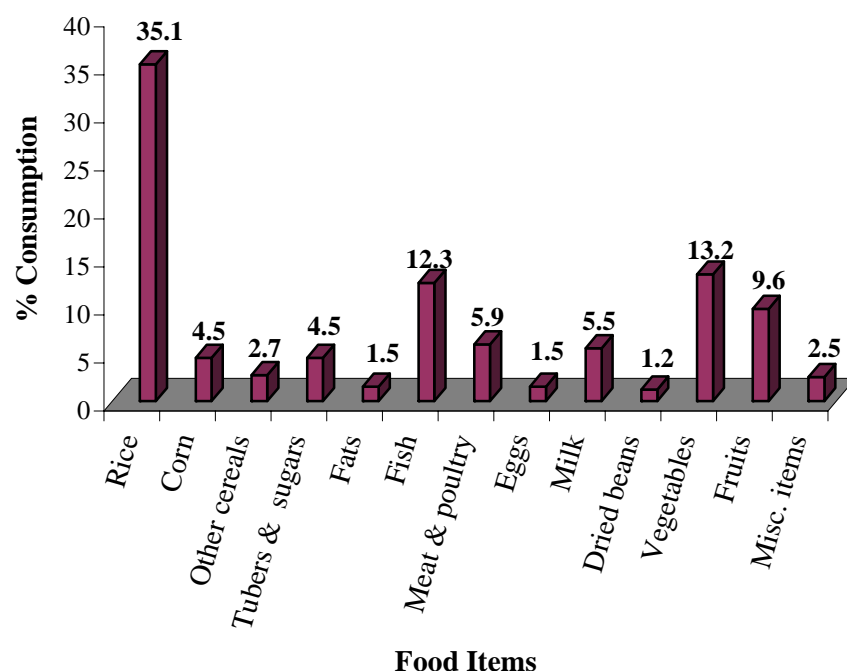
Source: National Statistical Coordination Board (1998).

Household food consumption pattern

Rice is the staple food of the Filipinos. It is the chief source of energy and, to a lesser extent, of protein for both the urban and rural populations. In 1993, the food basket of an average Filipino household remained a combination of rice, fish and vegetables. Rice, being the staple, makes up more than 1/3 (35 percent) of the total consumption vegetables 13 percent, fish 12 percent, fruits 9.6 percent, meat and poultry 5.9 percent, among others (Figure 2.2). These foods represented 87.8 percent of the total energy intake of the Filipinos (Barba, 1999).

¹⁷ *Kaingeneros* are slash-and-burn farmers who are engaged in upland farming in areas where they temporarily settle until the land they cultivate is no longer productive due to soil erosion and water leaching.

Figure 2.2 Food consumption pattern: Philippines, 1993



Total Food Consumed = 803 g (raw, as purchased)

Source: Barba (1999).

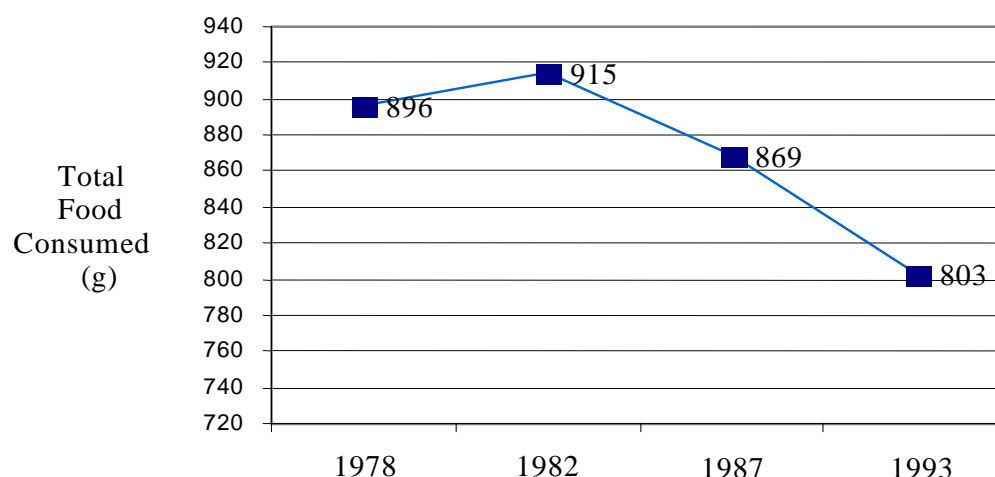
The trends in per capita food consumption show a general decrease (Figure 2.3). The total food consumption of 896 g in 1978, increased slightly in 1982 (915 g) and decreased to 869 g in 1987 and further dropping to 803 grams in 1993 (Barba, 1999). At the macro-level, poor economic performance of the country (1985-87 and 1997-200) and shortfalls in food production resulting in price increases or breakdown of distribution channels can explain the downward trend in food consumption. The latter was a consequence of several natural calamities during the 1990-91 and El Niño in 1997-98 that led to a decline of 24 percent and 12 percent in rice and corn production, respectively (Bayani, 1999). At the household level, large family size, economic dependency and seasonality of employment exacerbated low food intake (NNC, 1992; Villavieja, et al., 1999). It is expected that food and nutrition insecurity will continue to exist in the Philippines and will remain pervasive in rural areas for at least the next decade.

From the foregoing, one can see that food consumption is less than food supplies (Table 2.8). For example, between the net per capita food supply in 1993 of 1068 g (from 390.1 kg in Table 2.8) and the per capita food intake of only 803 g, a gap of 24.8 percent can be noted. The gap indicates the limitations of food supply data to assess the level of food security and adequacy of diets of people because the aggregated figure did not take into consideration three important factors; 1) marketing of food, 2) food distribution, and 3) the situation of the poor and malnourished who had no access to enough food (Bayani, 1999).

Compared to the RDA for the Philippines, the intakes of energy and other nutrients, such as iron, calcium and ascorbic acid, were found to be grossly inadequate in the Filipino diet (Barba, 1999; Bayani, 1999). Although protein appears to be the only nutrient available in

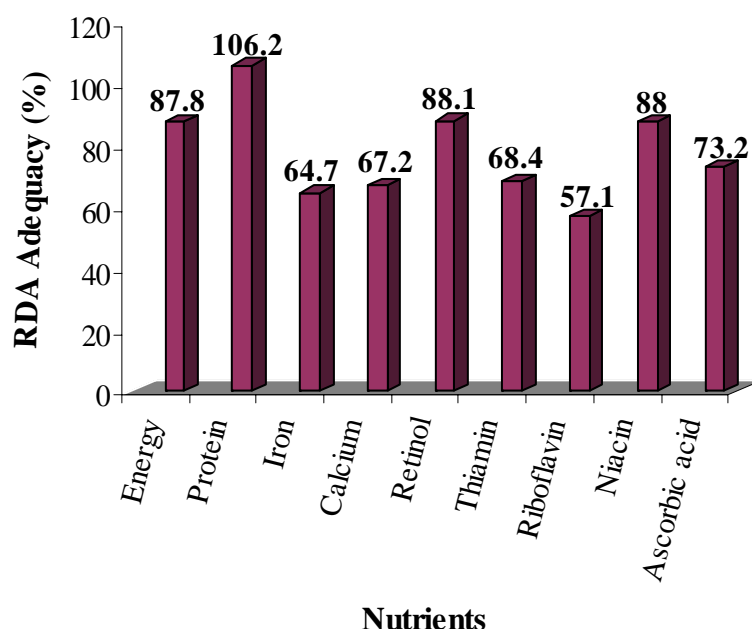
adequate amounts, the body will not adequately metabolize it unless energy requirements are met¹⁸ (Figure 2.4). If they are not met, protein is burned to cover the energy needs of the body. This reciprocal relation between the two requirements is clearly indicated by the Protein-Energy Malnutrition (PEM). Within households, the vulnerable groups are usually the

Figure 2.3 Food consumption pattern: Philippines, 1978-1993



Source: Barba, 1999

Figure 2.4 Percent adequacy of nutrient: Philippines, 1993



Source: Barba (1999)

¹⁸The calorie sources for the body are carbohydrates (cereals, roots, tubers, sugars), fat (visible and invisible, such as in nuts, pulses, fish, meat, milk) and proteins (from vegetable or animal food sources). As the body primarily needs calories to survive, protein is used as energy if the carbohydrates and/or fat intakes are insufficient to meet energy requirement.

pre-school children (3 to 59 months), the pregnant and the lactating women. Poor intakes of energy and other micronutrients, e.g. iron and calcium, have been reported in these groups (Table 2.9).

Table 2.9 Adequacy of intake of selected nutrients by preschoolers, pregnant and lactating women: Philippines, 1993

Nutrients	Percent Adequacy of Nutrients		
	Preschoolers (3-59 months)	Pregnant women	Lactating women
Energy	68.0	72.5	67.7
Protein	105.9	86.2	81.3
Vitamin A	66.3	125.7	53.9
Vitamin C	68.5	70.1	38.7
Iron	63.6	25.8	45.8
Calcium	47.6	40.9	39.4
Thiamin	63.0	58.1	50.4
Riboflavin	61.8	43.5	40.3

Source: Bayani (1999).

Nutrition situation

Data of the energy (and protein) status as assessed by body measurements are usually collected from under-fives only; in this the Philippines is not an exception. The 1998 National Anthropometric Survey results using FNRI-PPS Standards¹⁹ revealed that about 9.2 percent of under-fives are moderately and severely underweight, 5.4 percent are stunted, and 7.2 percent proved to be wasted.

The malnutrition prevalence rate was higher in rural than in urban areas. It was also noted that households of which the breadwinners are unskilled laborers, small fishermen and farmers had the highest prevalence of underweight preschool children (Florencio, 1993; Villavieja et al., 1999). This is not surprising since the highest incidence of poverty exists among households whose heads are employed in the agricultural sector (ADB, 2000). A comparison of the 1996 and 1998 survey results shows that wasting is apparently increasing, from 5.8 to 7.2 percent, respectively (Villavieja et al., 1999). The prevalence of stunting (chronic deficit) remained more or less stable: 5.1 and 5.4 percent.

The research for this thesis was conducted in Region IV and Region VIII. The distribution of malnutrition prevalence (based on FNRI-PPS standard) is shown by region in Table 2.10. The data show the disparity between regions. The regions of Eastern Visayas and Bicol, the most economically depressed regions, topped the list in 1996 and 1998. Of interest are Region I (Ilocos), Region II (Cagayan Valley), Region V (Bicol), Region VII (Central Visayas) and Region VIII (Eastern Visayas), where between 1996 and 1998 stunting decreased, while wasting increased significantly.

¹⁹The cut-off for severely underweight (weight-for-age) based on FNRI-PPS Standard = $\leq -3SD$ while moderately underweight = $> -3SD + \leq P5$. For severely and moderately underheight/stunted (height-for-age), the cut off points are = $\leq -3SD$ and $> -3SD$ to $\leq P5$. The same cut-off is used for moderately and severely wasted (weight-for-height) children. Because of lower cut-off points, the malnutrition prevalence of the country using FNRI-PPS Standard is always understated when measurement uses < -2 standard deviation of the international reference for growth (NCHS).

Given that stunting is generally regarded as a proxy of overall physical development, and wasting as an indicator of seasonal or calamity-induced food shortages, apparently short-term food deficits affected these regions more than the other regions.

Table 2.10 Malnutrition prevalence among 0-5 year-old children according to FNRI-PPS (local) standard by region in the Philippines, 1996 and 1998

Region	1996			1998		
	Under-Weight	Stunted	Wasted	Under-weight	Stunted	Wasted
Philippines	8.4	5.1	4.6	9.2	5.4	7.2
National Capital Region (NCR)*	5.6	2.8	4.8	7.1	2.7	7.1
I Ilocos	9.1	5.5	5.4	9.6	3.1	11.5
II Cagayan Valley	12.6	4.8	6.0	9.9	3.8	8.4
III Central Luzon	5.9	2.8	5.6	7.1	3.6	8.4
IV Southern Tagalog	6.5	3.3	3.9	7.0	3.9	5.6
V Bicol	10.3	7.7	3.8	9.7	5.7	6.8
VI Western Visayas	9.8	4.2	5.9	13.9	6.2	11.3
VII Central Visayas	8.8	7.4	3.6	8.4	6.5	4.7
VIII Eastern Visayas	12.1	7.7	6.0	11.1	6.4	6.5
IX Western Mindanao	10.0	6.2	3.4	11.1	7.1	8.2
X Northern Mindanao	6.4	6.6	3.1	7.7	6.5	5.0
XI Southern Mindanao	8.3	5.1	4.4	9.3	6.4	6.1
XII Central Mindanao	10.3	5.6	6.1	11.1	9.7	6.0

*includes cities of National Capital Region

Source: FNRI National Nutrition Surveys, 1996 and 1998, Department of Science and Technology.

The results of the 1993 nutrition survey also show that Vitamin A deficiency (VAD), iodine deficiency disorder (IDD) and iron deficiency anemia (IDA) still are the major micro-nutrients deficiency disorders. VAD, as measured by plasma retinol levels has only been assessed among children aged 6 months to 6 years. In this group, 10.4 percent were found to be deficient with serum Vitamin A (<10ug/dl) and 24.9 percent had low serum retinol levels. Likewise, the IDA, as evidenced by biochemical indicators, is highest among infants, aged 6 months to less than one year (56.6 percent), followed by pregnant women (50.3 percent) and lactating women (45.7 percent). In terms of IDD problems, the country's prevalence of goiter has doubled from 1987 with 3.5 percent to 6.7 percent in 1993. The goiter prevalence rates were higher among the female than the male population, particularly the pregnant and lactating mothers. The micro-nutrient disorders are partly diet-related²⁰ as habitual diets are predominantly composed of foods of vegetable origin that are known to have a lower bio-availability of iron and vitamin A carotene than diets with a significant amount of dairy products and foods of animal sources (Solon, 1997). From the foregoing discussion, we can conclude that the country has a serious problem of malnutrition in various forms.

²⁰The other factor is infectious diseases.

2.6 The National Nutrition Action Plan (PPAN)

Cognizant of the nutrition situation and the specific problems that exist, PPAN was formulated by the local multi-sectoral agencies. The PPAN is the country's blueprint for achieving nutritional adequacy for all Filipinos and consistent with the 1992 International Conference on Nutrition (ICN) goals of promoting, achieving and maintaining the nutritional well-being of individuals. Specifically, the PPAN aims to reduce PEM among children, chronic energy deficiency (CED) among adults and micronutrients deficiencies, particularly VAD, IDA and IDD deficiencies among all population groups. It calls for the integrated and concerted efforts of government both national and local, NGOs, private/business sector, academia, professionals and communities (NNC, 1992; Barba, 1999; Bayani, 2000).

The formulation of the PPAN is spearheaded by the National Nutrition Council (NNC) which also serves as the coordinating body for the implementation of the programs and projects, and monitoring and evaluation of nutrition- and related activities.

The PPAN has a nine-point agenda in order to realize the goals, the objectives and targets, which are summarized according to the letters from the word NUTRITION:

- N** ationwide salt iodization;
- U** nified efforts for micro-nutrient supplementation and food fortification;
- T** argeted assistance to ensure household food and nutrition security;
- R** einforced capacities for policy and plan formulation, advocacy, surveillance, research and its utilization;
- I** ntegration of nutrition consideration in development policies and programs;
- T** ri-media approach for effective nutrition information and education campaign;
- I** ntensified alliance among stakeholders towards increased investments in nutrition;
- O** rganization and management of local nutrition programs in poorest areas;
- N** on-wage benefits packages in labor and industry.

In order to achieve the goals and target of PPAN, several impact programs are implemented. These programs, which are also consistent with the government's thrusts of food security and poverty alleviation, are: home, school and community food program or home and community food production; micronutrient supplementation: the food fortification; micro-credit assistance for livelihood; food assistance and the nutrition education (NNC, 1992). Other support programs include: human resource development, advocacy, resource generation and mobilization, research standards and management, coordination and surveillance (Bayani, 2000; Barba, 1999).

The local chief executives (governors, mayors and village/*barangay captains*) manage and coordinate the planning, implementation, monitoring and evaluation of the local nutrition action plans as a component of the local development plans. Aside from the nutrition action plan, the community also prepares a local development plan according to the problems and needs of the people concerned.

PPAN adopts various strategies in the fight against malnutrition. It combines curative, rehabilitative, preventive and promotive services. The intervention projects vary across

communities but in general, these can be categorized according to the different sectors: agriculture, livelihood, infrastructure, health and nutrition and environmental sanitation, education and training, youth and sports development, and women welfare. Implementation of the projects requires human, material and financial resources. The trained *Barangay* Nutrition Scholars-Development Workers (BNS-DWs) undertake initiatives for community level actions. They are the frontline workers of PPAN.

The Local Government Code provides for the allocation of 20 percent of the Internal Revenue Allotment (IRA)²¹ of the municipality and *barangays* for the implementation of local development projects and activities embodied in the plan.

Considering the trends in nutritional deficiencies in the past decades, it is obvious that the NNC and the implementing government agencies face an enormous challenge. PPAN has to address the problems in a more effective and efficient manner. This does not automatically mean more of the same, but rather a need- and demand-driven action plan, implemented with joint commitment of all stakeholders, including the households.

2.7 The Philippine financial market

Credit can play an important role in the daily life of households and can help to make poor rural households less vulnerable and less food insecure. For the Philippine government, credit is a key measure to alleviate poverty (Bieding et al., 1998) and credit for the poor is given great attention in public pronouncements (ADB, 1997). Sadly enough, credit or more general financial services, including facilities to save money, is only available for a small percentage of households. Several studies at the end of the 1980's and early 1990's reported that only between 10-12 percent of households classified as poor had access to credit.

There are various actors engaged in providing (micro) financial services to consumers, who are differently motivated in providing their services. They can be primarily profit-oriented, as in the case of informal moneylenders, pawnshops and lending investors, or they can have development goals such as NGOs and cooperatives. They can also differ in the scale of operations and outreach, and the degree of complexity and permanency of the organizational structure (Chua, 1999).

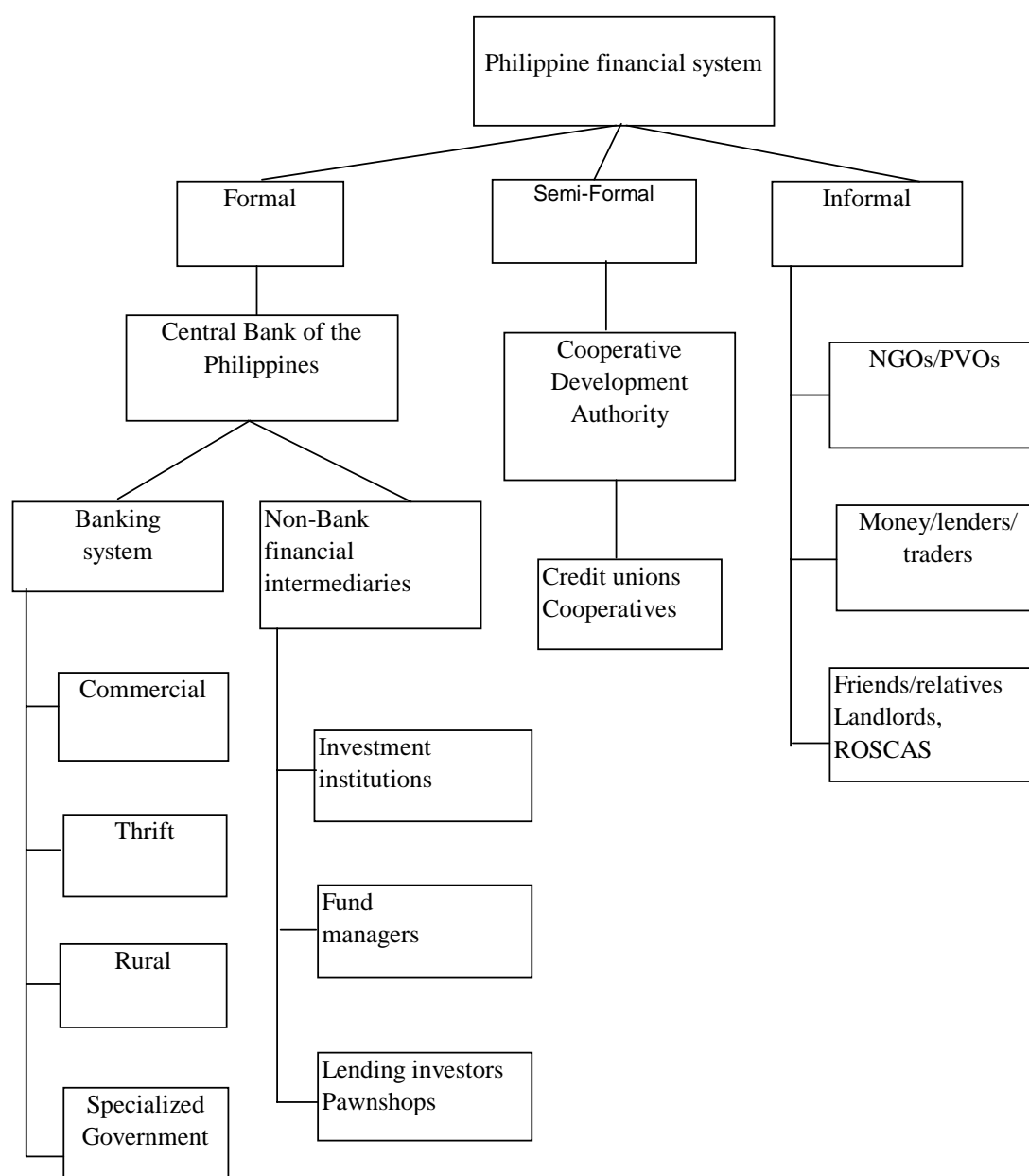
Although most types of micro-financial service providers have different objectives, they all more or less share a common set of components with regard to: financial services; core tasks related to the delivery of the financial service; skills to carry out the core tasks; structure, staffing and overhead; policies, systems and procedures.

The Philippine financial system is summarized in Figure 2.5 and can be subdivided into formal, semi-formal and informal sectors. The formal financial sector is composed of various types of banks and is supervised by the Central Bank of the Philippines. Major government lending agencies for the poor are: the National Livelihood Support Fund, the Department of Trade and Industry, the Department of Social Welfare and Development, the Agriculture Credit Policy Council (ADB, 1997). The semi-formal sector is comprised by credit coope-

²¹The 20% IRA is the proportion of money from the total Internal Revenue Allotment of the municipality or *barangay* allocated for development projects. For example, if the *barangay's* total budget allocation from the national government is P500,000, the IRA is equivalent to P100,000.

ratives, multi-purpose cooperatives with financial activities, and NGOs engaged in lending. The Cooperative Development Authority of the Security and Exchange Commission (SEC) supervises these institutions. By definition, the informal financial sector is not subject to government control. In the Asian region, the Philippines has a large number of vibrant NGOs as well as people-based organizations (POs), such as credit unions, cooperatives and unregistered associations. Each micro-finance institution supports several federations, networks, and umbrella organizations that exist next to each other, without a clear hierarchy. This makes the institutional context of Filipino micro-finance extremely complex (ADB, 1997).

Figure 2.5 The Philippine financial system and the flow of credit to the poor



Sources: Chua (1999); Bieding et al. (1998).

*Thrift banks include private development banks, savings and mortgage banks and stock savings and loan associations.

2.8 The Barangay Integrated Development Approach for Nutrition Improvement (BIDANI)

Historical Background

The Barangay Integrated Development Approach for Nutrition Improvement (BIDANI) Network Program traces its roots in the formulation of the Philippine Food and Nutrition Program (PFNP) in 1974. This program is the forerunner of the PPAN. It was established in 1978 as a response to the need for accelerating the improvement of the nutritional status of the Filipinos. From an action research project of the University of the Philippines at Los Baños (UPLB), BIDANI evolved into a community-based development strategy in 1982. Its main goals are improved nutrition, food security, poverty alleviation and good governance. BIDANI attempts to reach its ultimate goals through:

- a) strengthening good governance by capacity building of provincial and municipal administrators for rational planning and allocation of resources for poverty alleviation and nutrition improvement;
- b) creation of awareness, capacity building and empowerment of village administrators and the community;
- c) poverty alleviation through linkage of the village with various resources for development, income generating activities and micro-credits;
- d) improvement of knowledge and skills of nutrition- and health-related workers;
- e) participative approach for domiciliary nutrition rehabilitation (PDNR) for second and third degree malnourished children, 0-36 months of age.

Following a positive evaluation by the National Economic and Development Authority in 1982, the project became a program. In 1984, the BIDANI as a program and strategy was replicated in various regional State Universities and Colleges (SUCs), namely, University of the Philippines at Los Baños in Region IV, Central Luzon State University in Region III, Central Mindanao University in Region X, Leyte State University²² in Region VIII, Bicol University in Region V, and Isabela State University in Region II. In 1990, University of the Philippines Visayas in Region VI, joined as the 7th member. However, in the 1980s BIDANI was still a pilot project and coverage was low due to resource constraints.

From 1990-1995, with the support of the Dutch Government an effort was made to strengthen the BIDANI Network, specifically through the establishment of more pilot *barangays* and satellite BIDANI SUCs. The program could be expanded significantly, while a corporate identity with standard operation procedures could be established. At the end of this phase, the BIDANI Network covered 37 satellite SUCs, 38 provinces, 109 municipalities and 581 villages. BIDANI Phase II was approved in May 1996 following a positive evaluation of the external evaluation mission in 1995. Phase II aimed at the consolidation, professionalization and institutionalization of BIDANI in the municipal administrative units. The expectations were that by the end of the year 2000 the coverage would be 44 satellite SUCs, 51 provinces, 104 municipalities and 552 villages. The quantitative increase is apparently modest. However, in Phase II the corporate identity of BIDANI was established at all levels, and the basic components (see below) were implemented in a uniform way – thus greatly improving the quality of the BIDANI program.

²² Formerly Visayas State College of Agriculture (ViSCA).

Today, BIDANI is undergoing a process of full institutionalization. It is envisioned that each model project will become a regular extension program of the SUC to address the general and nutritional well-being of the rural poor in partnership with the LGUs.

BIDANI as a Program

Over the last 15 years, BIDANI developed and expanded into a network of academic institutions. Each academic institution has adopted BIDANI as an extension program to operationalize the nutrition-in-development policy and the local autonomy decentralization (Local Government Code) program of the government. In pursuit of its goals, BIDANI promoted several innovative project components to complement development projects identified by the people themselves, thereby enhancing existing programs of local governance. These components are the:

- 1) Barangay Integrated Development Approach - the process of implementing the BIDANI strategy by means of continuous advocacy and mobilization of groups and individuals to adopt the BIDANI strategy. It aims at creating awareness to empower local community people to actively participate in the development process, and to develop alternative strategies and approaches for institutionalizing BIDANI at the *barangay* and municipal levels.
- 2) Barangay Management Information System - involves establishing a data information system and center in the barangays through training and technical backstopping, situational analysis using accurate, reliable and retrievable data for program planning and implementation. Results of the situational analysis serve as basis for the preparation of the Barangay Integrated Development Plan (BIDP). This component also promotes a people based-participatory planning for the identification of vital linkages among line agencies.
- 3) Participative Domiciliary Nutrition Rehabilitation - is developed to reinforce the nutrition-related activities of the government particularly the Comprehensive Nutrition Program of the Department of Health, the growth monitoring and supplementary feeding of the Department of Social Welfare and Development and the Department of Education, Culture and Sports, and the home garden and livestock promotion of the Department of Agriculture. This component aims to prevent malnutrition and rehabilitate malnourished children using the BIDANI concept of self-reliance and joint responsibility with technical support from SUCs.
- 4) Food Security for Nutrition Improvement and Income Generating Projects - BIDANI, in collaboration with the government and NGOs, is involved in a variety of projects to increase food production for household food security, livelihood, income generation and employment.
- 5) Micro-credit Delivery Program - ensures that improvement of the minimum basic needs of the poor through the promotion of micro-credit delivery is sustainable and viable. It also promotes the empowerment of women through proper use of credit, thus assisting them to increase control over their lives and increase participation in the development process.

The above are essential features of the BIDANI corporate identity. The BIDANI areas, e.g. municipalities, villages and satellite SUCs staff and the communities are trained and supported over a period of 24 months, after which they are classified as “institutionalized.”

these mature partners continue with the BIDANI program with their own resources, but can tap BIDANI for specific support. At least once a year BIDANI staff assists in evaluations and preparations of updated village development plans.

2.9 Summary

The country of Philippines is endowed with many natural resources but is also confronted with a climate that annually poses threats to food and livelihood security. The macro-economic indicators are in general not unfavorable in comparison to the other countries in the region. Notably accomplishments in education and the democratic political system are conducive to improvements in the social sectors. On the other hand, high population growth and environmental degradation have a negative impact on food and livelihood security.

Agriculture still plays a dominant role in the country, and agriculture, forestry and fishery provide most jobs. At the same time, poverty in the country is predominantly rural, mainly because of the low productivity of the agricultural sector. The pace of poverty reduction has been disappointingly low compared to the rest of Asia. For the Philippine economy, three structural challenges have to be faced to achieve sustained growth: proper environmental management, adequate infrastructure and poverty reduction.

The major nutritional problems of the country continue to be chronic energy deficiency and micronutrient inadequacies that mostly affect the vulnerable groups, namely the preschool children as well as pregnant and lactating women. The trends in the country's nutrition situation followed those in economic growth, improving when the country achieved positive growth, and deteriorating when economic dislocations occurred. Nutritional disparities exist among the various regions of the country, between rural and urban areas, and across income and occupational groups. The less economically productive regions, the depressed rural areas, the rural households of subsistence fishermen, seasonal farm workers, common laborers, and those in large households were found to have higher prevalence rates for most of the nutritional deficiencies.

The National Nutrition Action Plan contains all the components to address food and nutrition insecurity but needs to be more effective and efficient in its implementation. Moreover, interventions should be need- and demand-driven to be successful. Collaboration between government line agencies, non-governmental organizations and the academe promises better returns of investment. BIDANI is given as an example. It is an innovation of the academe to help the government to work toward 'development with a human face', which means that economic development has a social dimension with good health and better nutrition as explicit goals.

Credit, or financial services, can also play a significant role in making rural poor households less vulnerable and less food insecure. The Philippine government even considers credit a major tool in poverty alleviation. However, for many reasons the formal credit market is hardly accessible to poor people. Most financial services take place in the informal circuit.

The Barangay Integrated Development Approach for Nutrition Improvement (BIDANI) is a program executed by a network of SUCs in partnership with local government and the village communities. The coverage of SUCs was nationwide at the time of the study. The BIDANI

presence in the villages and its program components related to food production, income generation and resource allocation for the improvement of the nutritional status of under-fives, offered the opportunity to conduct in-depth studies on food and nutrition security, as described in Chapters 3 and 4.

CHAPTER 3

THEORETICAL CONSIDERATIONS AND CONCEPTUAL FRAMEWORK

The Food and Agriculture Organization (FAO) and the International Food Policy Research Institute (IFPRI) mostly consider food and nutrition security from a macro-level i.e. a national perspective. Such a level of aggregation does not inform us about the situation at the micro-level, that of the household. As mentioned in Chapter 1, it is essential to know what happens at household level if interventions are to improve food and nutrition security of the needy.

This chapter will deal with the theoretical aspects of food and nutrition security at the micro-level, based on a selective literature review. It will be concluded with the formulation of the conceptual framework for this research.

In the 1980s, food security became a prominent issue and a topic that captured considerable attention among international and local researchers, policy makers and donor agencies. It continues to be a very important concern to this time, as exemplified by the World Food Summit in 1994 and the ACC/SCN document “Ending Malnutrition by 2020” (ACC-SCN, 2000). This is because food insecurity is widespread, and hunger and under-nutrition continue to be serious problems, not only in developing countries but in industrialized countries as well. In the current terminology of FAO the (chronically) food insecure or undernourished are: the number of people whose food intake does not provide the calories to meet their basic energy requirements. The number of undernourished people is calculated on the basis of data about (a) food production, trade and stocks, (b) figures for total population and distribution by age and gender and (c) consumption distribution (Sixth World Food Survey, FAO, 1996). The definition of nutrition security can only be deduced from the latest definition of food security by the World Bank (1986) and the International Conference on Nutrition (ICN, 1992) through their reference to consumption of foods to cover the nutritional needs of all individuals in the household. These needs cover energy, protein, and other micronutrients. However, foods sufficiently available in quantity and quality in the households are only one factor that determines the nutritional status of individuals. Additional factors are intra-household distribution of foods, health status of individual household members, and sanitation and health care (UNICEF, 1997; UNICEF, 1998). The link between food and nutrition security will be dealt with in section 3.4.

3.1 The household as a framework for analysis

Conceptualization of the household

In studying human adaptations households as units of analysis offer some distinctive advantages over larger units of analysis. This is especially so in rural settings where households are the primary units of production, consumption and exchange, as well as the locus of all transactions and decision-making that go into these operations (Sandoval et al., 1987).

Rudie (1995:228) states that the household is a “co-residential unit, usually family-based in some way, which takes care of resource management and primary needs of its members”. Especially the last part of this definition is relevant for this study because we see households as providing livelihood security through the generation, management, pooling and allocation of resources. In Rudie’s (1995) definition three important elements can be distinguished: kinship, residence and resource management for primary needs. Based on this definition she distinguishes support units, food units and the social network as part of the household context. More often than not, these elements interface (Mula, 1999). However, provision of food, the most important primary need, remains a core task of households. This makes the household an important unit of analysis.

The often-encountered assumption that households are homogenous units, having a single set of objectives and preferences, requires modification. Households are never neatly bounded, but rather consist of interacting individuals, who are not necessarily all biologically related and may not always share full-time common residence (Pottier, 1999; Pennartz and Niehof, 1999). These individuals to a certain extent have their own priorities and preferences. However, as Anderson et al., (1994) argue households have emergent properties, which can be treated as existing above the individual level. In this sense households can indeed have or at least be treated as having strategies that are more than the sum of the individual aspirations of their members. Pennartz and Niehof (1999), refer to the household as a context of 'condensed morality' because of its family base and the give-and-take economy of the household. To a certain extent household’s members are bound to each other by common moral principles. This moral content of the household explains care practices and the forming of support units.

Although being unity to a certain extent, the household is not an undifferentiated set of individuals who equally share all activities for its maintenance. It is a social organization, a microcosm of relations of production, reproduction (i.e. child bearing and child rearing) and distribution (Jelin, 1990; Piwoz and Viteri, 1985). The diversity of activities and tasks individual members perform, and the ways the good and services are distributed reveal the household's internal differentiation and stratification. Within the household there are joint activities and decision-making, but at the same time, individual members can have their own activities and make their own decisions either for their own benefit or for the household as a whole (Niehof and Price, 2001; Kabeer, 1991). As a consequence, conflicts may arise among household members about allocation of resources and distribution of gains, which sometimes cannot be solved (Chen, 1996; Garcia, 1990; Pahl, 1989). Internal division of labor and economic responsibilities are defined by age (generation) and gender (Piwoz and Viteri, 1985). However, because of its moral content, households to a large extent, coordinate the preferences, practices, resources and interests of their members (Niehof and Price, 2001; Pennartz and Niehof, 1999).

Many micro-economic studies postulate that the households possess a 'joint utility function' or that household behavior is motivated by a 'collective concern for economic efficiency'. Economic models stand to assume that resources are pooled and allocated to maximize the utility of the household, and the gains are pooled to meet aggregated needs of the members (Kabeer, 1991; Wilk, 1989; Becker, 1981). In this study the household is considered as a unit of consumption and production, without assuming it always maximizes joint utility. As said above, in this study we will also look into intra-household dynamics and differentiation, including the issue of power and authority in the relationship between household members and management of resources (Mula, 1999).

Household structure and decision-making

Food security and nutrition security are outcomes of complex and interacting processes within households, based on social relationships including power and authority relationships. Despite their relevance, these issues are not well studied (Wilk, 1989; Wilk and Netting, 1984). Confusion surrounds the terminology of power and authority and the concepts tend to be used interchangeably (Pennartz and Niehof, 1999).

A patriarchal authority structure is characterized by the dominant role in decision-making of the husband or father. The traditional view that the household economy is patriarchal in nature is thought to be responsible for the inequalities in power relations between men and women (Kabeer 1990; White 1992; Hartman, 1981). However, other authors have noted that power accrues to the partner, or any household member for that matter, who has the greater resources at his or her disposal and therefore has a better bargaining position (Pennartz and Niehof, 1999; Chen, 1996; Garcia, 1990).

With respect to the issue above, the situation in the Philippines is diverse. There seems to be a combination of patriarchal and matriarchal structures. Most Filipino households are nuclear, consisting of husband, wife and unmarried children, and embedded in kinship networks (Castillo, 1993). The kinship network is an important source of support for Filipino households (Mula, 1999). For example, in actual daily operations the generalized mutual support covers extra family assistance in cash or in kind. This takes place across both lineal and collateral relatives and encompasses cousins. Because of generalized reciprocity and the principle of *utang na loob*¹ or debt of gratitude, very few households are able to get along without helping others and being helped in return. In addition, proximity enhances close relationships between neighbors, relatives and friends. The culture of mutual assistance and *utang na loob* seem to play an important role especially during periods of food scarcity (Mula, 1999).

It has been reported that while patriarchy remains pervasive in many societies, its influence is being toned down by generalized poverty and the men's inability to meet economic expectations (Pottier, 1999). As poverty deepens, women are forced into situations that challenge the power base on which male authority rests. However, whatever the motivation that prompt women to break with the tradition and explore economic avenues, they need concrete opportunities to raise their position and increase their participation in decision-making both within and outside the household on issues that are important to them. Hence, a relevant aspect that requires serious consideration is the role of gender, a topic that will be dealt with in detail in section 3.6.

3.2 Household food security

The concept of food security has evolved considerably overtime since 1974 when at the first World Food Conference convened by FAO it was considered identical to food production. Since then, there is a vast amount of literature dealing with definitions and conceptual models, which has been reviewed by Maxwell and Frankenberger (1992). Three important and

¹ *Utang na loob* or sense of indebtedness; a very strong Filipino value whereby one is expected to bestow the same or at least equal support to a benefactor.

overlapping paradigm shifts can be distinguished in the evolution of the concept of food security. These are: (1) from global and national level to household and individual level; (2) from food first perspective to a livelihood perspective; and (3) from objective (quantitative) indicators to subjective perception. These shifts are reflected in successive definitions of food security listed in Table 3.1

Table 3.1 Selected definitions of food security

Author/Reference	Definition
UN (1975)	- availability at all times of adequate world food supplies of basic food stuffs... to sustain a steady expansion of food consumption... and to offset fluctuations in production and prices
Reutlinger and Knapp (1980)	- a condition in which the probability of a country's citizenry falling below a minimal level of food consumption is low
Siamwalla and Valdes (1980)	- the ability to meet target levels of consumption on a yearly basis
Valdes and Konandreas (1981)	- the ability to finance needed imports to meet immediate targets for consumption levels
FAO (1983)	- ensuring that all people at all times have both physical and economic access to the basic food they need
World Bank (1986)	- access by all people at all times to enough food for an active and healthy life
Barraclough and Utting (1987)	- an assured supply and distribution of food for all social groups and individuals adequate in quality and quantity to meet their nutritional needs
Sarris (1989)	- the ability ... to satisfy adequately food consumption needs for a normal and healthy life at all times
Eide (1990)	- access to adequate food by and for households over time
UNICEF (1990)	- the assurance of food to meet needs throughout every season of the year
Haddad et al. (1994a)	- availability of sufficient food at all times for all people in order to ensure an active and healthy life.
FAO (1996)	- one relevant level for food security analysis is that of per caput daily calorie supply equal to 1.55 times Basal Metabolic Rate .." (maintenance level plus needs for minimal activity

Sources: Maxwell (1996); FAO (1996); Haddad et al. (1994a).

One of the most influential definitions of food security is that of the World Bank in 1986. Food security was defined 'as access by all people at all times to enough food for an active and a healthy life'. In subsequent expert meetings, one refers to food security as the ability of the households to secure, either from production or through purchases, enough food to satisfy the dietary needs of its members (ACC/SCN, 1992) without being exposed to undue risk of losing access to resources (ACC/SCN, 1991). While food supply is a critical component of food security, the ultimate issue is access to food in a sustainable manner (ACC/SCN, 1991). Sen (1981) convincingly demonstrated the key role of access in his concept of entitlements to guarantee current and future access to resources and benefits. By adding "for an active and

healthy life”, the World Bank definition implies that food security is not only a matter of quantity (enough calories) but also of quality (protein and micronutrients). This concept is reinforced by Haddad and Kennedy (1994a), who included quality, and equitable distribution of food within households. The latest FAO (1996)² definition of food security reads ... “one relevant level for food security analysis is that of per caput daily calorie supply equal to 1.55 times Basal Metabolic Rate” (maintenance level plus needs for minimal activity).

Key-characteristics in the definitions of household food security are sufficiency, access, security, time and people’s perceptions (Maxwell and Smith, 1992). Access and entitlement are other crucial factors in food security. Access and entitlement relate to food distribution. Many developing countries have become food secure at the national level but the percentages of food insecure households and individuals remained largely the same, due to an unequal national income distribution and political institutions that sustain it (Griffin 1987; UNDP, 1999). Francis (1994) and IFPRI (1995) also emphasize that food problems are primarily associated with an unequal distribution of food supplies.

Access and entitlement are different concepts, but both access and entitlements are needed by households to achieve food security (Sen, 1981). In the Philippines, a large portion of the population, especially in the rural areas, is impoverished and food insecure primarily because of the lack of access to resources. Among the different working groups, the *kaingineros*, hired fishermen and the unemployed are unable to achieve adequate nutrition (Briones et al., 1999). The 1993 nutrition survey results showed that these groups had the lowest intake of energy and micronutrients (Table 3.2). For the *kaingineros*, the situation can be explained by their generally low agricultural production due to a poor resource base, where crops are cultivated on marginal lands, rolling hills and environmentally degraded mountains slopes, as well as inappropriate practices, lack of access to markets and public services. Hired fishermen generally lack the productive assets and skills, have low levels education, and a low income level that fluctuates by season. The situation is even worse for the unemployed because they cannot use their labor productively at all.

Poor people miss the entitlements that give them rights to access resources and enable them to collect assets. The entitlement relations of individual and households are determined by what they produce, can trade or exchange, and by what they inherit or are given. Swift (1989) sees assets as forms of investment, stores of value, or social claims. In time of food crisis households can draw upon these assets and convert them into resources or money (Niehof and Price, 2001). For example, livestock is an asset when kept for its value; it is a resource when used in agricultural and domestic production.

Adams (1993) emphasized the often overlooked importance of the transfer of entitlements for the food security of poor households in many societies. Oba (1994) pointed out that the survival mechanisms of reciprocal sharing, fostering relationships and creating social obligations are threatened by increasing individualism. Nevertheless, in rural communities where poverty is widespread, generalized exchange continues to be a vital source or safety net for the poor (Peterson, 1993). Apart from that, a network of informal credit relationships constitutes a measure of security and interdependence among the poor across communities. Borrowing has a moral dimension, because it operates on trust and a long-established relation-

² World Food Summit, Technical Background Documents 1-5, Rome FAO November 1996.

Table 3.2 Energy, protein and iron adequacy by occupation of highest income earner, 1993

Occupation	Energy	Protein	Iron
Professional/Technical	101.0	124.7	75.6
Administrative/Executive	99.4	125.7	74.7
Clerical workers	90.5	113.8	68.3
Sales workers and large entrepreneurs	100.6	146.1	70.4
Small entrepreneurs	87.3	108.2	66.2
Military workers	91.8	110.6	66.4
Large farm managers/owners	91.2	107.1	67.8
Small farm managers	91.3	109.2	72.1
Farm laborers	89.7	102.0	62.4
Shared tenants	86.9	100.9	60.9
<i>Kaingeneros</i>	73.2	70.9	40.9
Large fishermen	110.1	147.3	75.6
Small fishermen	85.8	106.3	55.6
Hired fishermen	78.5	106.8	49.7
Hunters/Loggers	89.5	108.0	96.6
Miners/Quarrymen	89.0	94.4	54.3
Workers in transport	84.5	102.6	61.8
Craftsmen	84.9	102.8	63.9
Service, Sports	82.1	99.8	62.9
Housekeeper	88.8	104.0	62.2
OCW (Prof.)	105.4	143.9	91.3
OCW (Non-Prof.)	87.8	110.3	65.3
No occupation	78.0	90.0	61.2

Source: Fourth National Nutrition Survey, FNRI, DOST (1993).

OCW = Overseas contract workers

ship between the provider and the borrower. Payment of interest is not part of the system, compared to formal credit where there are interest charges. These characteristics are part of what David Cheal (1989) has called the moral economy. Given this perspective, a more appropriate public policy to prevent and reduce the incidence of entitlement failure can be developed, referred to by Dreze and Sen (1989) as entitlement protection and entitlement promotion, respectively.

The third important issue in the definition is the notion of security. Household food security is determined by one or a combination of the following risks: fluctuations in crop production, food supply and food prices; on- and off-farm employment and wages; patterns of morbidity. Entitlements are important for households to be able to cope with these risks. When relating entitlements to risks, it is no surprise that Mula (1999) found that the degree of food insecurity was highest among households with minimal assets.

Even new technology can be a source of risk to food security. Several authors reported the high societal costs of the Green Revolution for the poor, and poor women, in particular (Pottier, 1999; Sharma 1985; Gerke, 1992; Shiva, 1988). The reluctance of small farmers to accept new technologies is a well-known phenomenon. This is well illustrated by farmers' reactions to the high costs and the risks of growing high yielding rice varieties in Pampangan, in the Philippines. The farmers continue to combine new and more traditional rice varieties (Banzon-Bautista in Pottier, 1999). In Arunpu, India, the replacement of traditional forms of labor by mechanized agriculture squeezed low-caste and resource poor women out of

agriculture and into the more laborious and less secure wage market. Also, an increase in the wage disparity between men and women was noted. Men who were considered more experienced and skilled in agricultural work received higher wages. This devaluation of women's labor had negative consequences for women's economic security. In all possibility, it also affected household food and nutrition security due to lower food entitlements associated with an increased work burden. Evidence from Asia, Africa and Latin America shows that there is a positive relationship between income of women, food consumption and nutritional status of children (Haddad et al., 1994b; NNC, 1992; Balatibat, 1988). The aspect of gender with regard to food and nutrition security will be discussed in Chapter 8. The last element to be discussed is the time dimension in the definition of food security. Seasonality will be discussed in detail in section 3.5

The technical (scientific) concept of food insecurity does not necessarily tally with the individual, household or community perception of inadequacy of habitual diets. Even if households have access to food that can meet the nutritional requirements, cultural and social factors may hinder their consumption (Frankenberger et al., 1992; Maxwell & Frankenberger et al., 1992). Food taboos governed by religion or by traditional beliefs are well known. Almost everywhere, there are foods that are considered unacceptable for infants and young children. The phenomenon of 'eating down' in pregnancy to prevent a difficult delivery due to a large baby belongs to this category of cultural-related food behavior (Niehof, 1988). Likewise, the people's idea of a 'full belly' as having eaten enough food is another example of misconception on food adequacy. Oshaug (1985) emphasized the importance of food as a vehicle for self-realization, communication and maintenance of social networks. The order in which food is served in the household and the intra-family distribution of food may also illustrate the status of the individual in the household or the community. Hence, questions or inquiries that can elicit perceptions regarding food security are important in understanding households' responses to food crises as well as interventions.

3.3 Livelihood security and vulnerability

Recent studies have indicated that food security can not be dissociated from livelihood security because sustainable food procurement is only feasible when the available resources are sufficient to cover other basic human needs, aside from food, as well (Maxwell and Smith, 1992; Oshaug et al., 1994).

The World Commission on Environment and Development (WCED, 1987) and Chambers (1989:1) define livelihood security as 'adequate stocks and flow of food and cash to meet basic needs'. This definition incorporates the notion of *security* that refers to ownership of or access to resources and income-earning opportunities, including reserves and assets to reduce the risks, ease shocks and meet contingencies. *Sustainability* refers to the long-term ability of households to maintain and enhance resource productivity. However, the assumption that households are always able to deploy existing resources to meet the food needs is not always valid. Wheeler (1986) criticizes the picture of household's access to food and a healthy diet as being constrained by women's ignorance and lack of skills. Such a picture fails to address the key determinants of food access, which have been presented earlier. She argues that often, women are blamed for the end result of processes over which they have no control.

Livelihood generation refers to the bundle of activities people engage in to provide for their

basic needs. They do so on the basis of their capabilities. The result of such activities is certain degree of livelihood security. So, livelihood is both about what people do and what they achieve by doing it (Niehof and Price, 2001). Equity includes adequate and decent livelihoods across income groups and generations (Cabanilla, 1999; Goodman, 1989). Livelihood security seems to be a precondition for food and nutrition security. The question then becomes how poor and less privileged households with limited access to productive resources and other income opportunities acquire a decent livelihood and are able to achieve food and nutrition security.

In examining the dimensions of livelihood security, the concept of *vulnerability* needs to be taken into account. Vulnerability can be seen as the opposite of sustainability. It refers to exposure of households to contingencies and stress, and the difficulty of coping with these without depleting the household's resource base (Chambers, 1989). Resources can be physical, natural, social, financial and human (Carney et al., 1999). Human resources are, for example, skills, knowledge, and good health. Financial resources or assets are income, savings, remittances or pensions. Social resources include social networks, membership of groups, and relationships of trust, kinship, and so on. Physical resources can be either natural or man-made. The former include soil fertility, water and biodiversity, the latter include infrastructure, production equipment, and so on. All these resources are essential for generating sustainable livelihood. In reality, not all households have the productive resources and entitlements they need in their pursuit of sustainable livelihood. There is the danger that households use too much of their resources to pursue short-term gains in food security at the expense of other basic needs such as education and housing, thereby foregoing structural benefits in the long-term. A study among 40 households in the dry zone of Sri Lanka on the effects of the 1996 drought (Senaka Arachchi, 1998) showed that households in distress sold their productive assets as a last resort. First, households tried to cope by exchanging food, participation in food-for-work programs and cutting down on meals. The opposite may also occur. The ability of households to reduce risks and resist shocks depends on the manner in which households balance competing needs and interests within existing constraints.

The vulnerability of households to risks may be affected by events beyond their immediate control, such as natural calamities, seasonality in food supply, fluctuations in food prices, pest infestation, loss of jobs and income, and domestic policy changes. Socio-cultural events such as weddings, birthdays and anniversaries, fiestas and other social obligations may also have negative impact on the food security of households. However, participation in such events can also be considered an investment to maintain the social network in times of distress.

The distinction between household livelihood and food security is extremely relevant in the assessment of the rationality of household resource allocations. When resources from which households draw their food and livelihood are constrained, food security is usually the first component to be affected. The degree of food insecurity will vary across households and communities, depending on their judgement of priorities in terms of expenditures, the sources of income in money or in-kind, and household members' access to resources. Another situation may exist where livelihood is sufficient for food, but allocating resources to non-essential expenditures jeopardizes food security. However, such spending, on jewelry and luxury household items, may also be a saving for harsh times.

3.4 Relationship between household food security and nutrition security and child nutritional status

As mentioned in section 3.2 different concepts of food security are used in the literature. Some authors use the concepts for food and nutrition security interchangeably (Swaminathan, 1986; Oshaug, 1992; 1994). Others argue that while food is central to both concepts and there is overlaps, food and nutrition security are two distinct concepts (Maxwell and Smith, 1992)

Haddad et al., (1994a:329) define nutrition security as the “appropriate quantity and combination of inputs such as food, nutrition and health services, and caretaker’s time needed to ensure an active and healthy life at all times for all people”. It implies that nutrition security is an outcome of different processes that take place within the household. It also denotes quality and equitable distribution of food within household.

While there are common elements in the concepts of food security and nutrition security like availability and access to adequate food, the various definitions that include the criterion of enough food for a normal and healthy life of all individuals, also create confusion (Smith et al., 1992; Maxwell and Smith, 1992; Mula, 1999; Maxwell, 1996).

The World Health Organization (WHO) (1985) defines nutrition as “the process whereby living organisms take in and transform solid and liquid substances necessary for maintenance of life, growth and the normal functioning of organs and the production of energy”. The scientific discipline that deals with nutrition in man is concerned with nutritional requirements, food consumption, the nutritive value of foods and diets, and the relationship between diet, health and disease (McLaren, 1972; ICN, 1992).

Thus the interface between food security and nutrition security is the *access to* calories and other nutrients. In contrast to food security, nutrition security relates to the *consumption* of calories and nutrients and, in relation to age, sex and physical activity, to specific *requirements* expressed as Recommended Daily Allowances (RDA).

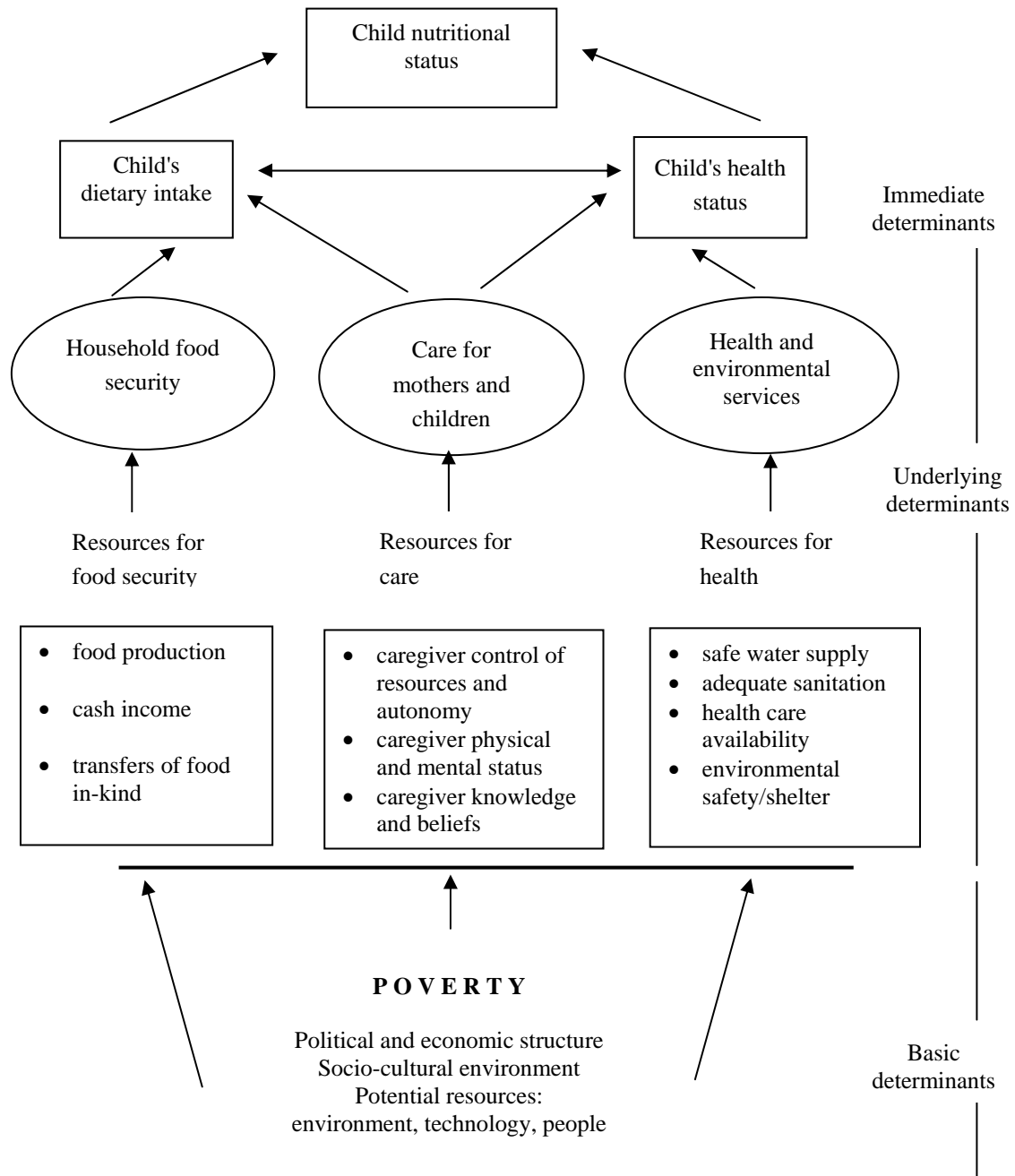
The processes and time frames for reaching calorie-adequacy of household diets are quite different from those for reaching nutrition security. Households only consider quality of diets after fulfilling the energy requirements (hunger). Furthermore, non-food factors (socio-cultural, knowledge etc.) determine what is actually consumed by an individual from the family pot (particularly for young children and mothers). Therefore, as operational definitions I used the FAO definition for food security³ and the WHO definition for nutrition security⁴.

Food and nutrition security at household level are preconditions for a good nutritional status (defined by anthropometric indicators) among the vulnerable population groups, e.g. under-fives and mothers. However, morbidity (health status) and lack of care are equally important determinants of malnutrition (underweight, wasting and stunting according to WHO cut-offs), particularly among under-fives. Hence, nutritional status is a composite outcome of immediate and underlying determinants (Maxwell and Smith, 1992; Haddad et al., 1994a).

³ average daily calorie supply $\geq 1.55 \times \text{BMR}$ or $\geq 80\%$ RDA

⁴ average daily intake of energy and nutrients $\geq 80\%$ RDA

Figure 3.1 Causes of malnutrition



Source: Adapted from UNICEF (1990 and 1998)

Several conceptual frameworks exist to depict the causes of child malnutrition (Mason et al., 1984; Pacey and Payne, 1985; Beghin et al., 1988; UNICEF, 1990). The most recent of these is an adaptation of the UNICEF models (see Figure 3.1). At the individual level, nutritional status is determined by the interaction of dietary intake and health status of a child. These in

turn, are influenced by three factors: (1) food security, (2) maternal and child care, and (3) health and environmental sanitation. At the community level, the root cause of malnutrition is poverty resulting from the unequal distribution of human, economic and organizational resources (Leemhuis, 1998). In the case of maternal nutritional status, additional factors play a role, such as gender in the context of productive and reproductive roles. Similarly, micronutrient deficiencies are partly diet and food-related and partly influenced by infections.

Summarizing the above, one can state that food security is a major but not the sole determinant of habitual diets of adequate quality. Intra-family distribution of available foods, socio-cultural values, knowledge about nutritional requirements ultimately determines nutrition security. Finally, it is relevant to consider adequate growth and nutritional status of under-fives in the context of food and nutrition security (ACC-SCN, 1997). However, it is a fallacy to focus solely on the dietary aspects for growth and nutritional status, while ignoring the leakages due to infectious diseases and/or the 4 A's of health and nutrition services: availability, accessibility, acceptability and affordability.

3.5 Seasonality

There are multiple and interacting effects of seasonality on food production, rural employment, household incomes and food prices, dietary intake and nutritional status (Chambers et al., 1981; Pacey & Payne, 1985; Sahn, 1989; EJCN, 1990). Yet, usually little attention is given to these effects in the relevant policies and programs.

In general, people living in regions with a bimodal climate pattern experience less seasonal food stress than those living in unimodal climates (Van Liere, 1993; Kigutha, 1991). The bimodal climate allows two annual harvests and thus reduces the period of food scarcity. However, also in a bimodal climate food shortages among households do occur (Foeken and Hartog, 1990) and are reflected in seasonal differences in nutritional status (Ategbo, 1993; Branca, 1993; Bantje, 1983; Chowdhury, 1987). This can also be observed in the Philippines. Landless farmers have more frequent but lower income peaks than farmers with reasonable landholdings. The availability and size of a harvest, the fluctuation in market price of rice or occasional farm jobs for wages in cash or kind are factors that influence food security (Ledesma, 1982). Fishing communities are generally more affected by seasonality than agricultural communities. Fish is a commodity that is highly perishable. A significant drop in prices usually follows abundant yields. Unless storage facilities, processing technology and a market network are introduced, good fishing seasons will only marginally benefit the poor. Raising of livestock and cultivation of some root crops may shorten the lean season. However, if the situation is bad, one or more members of the household migrate in search of work and food. They may also mortgage or sell assets, take debts that may or may not be repaid in the harvest season.

Seasonal fluctuations in energy intake, particularly of mother and young children, have been observed in many studies in Asia and Africa (Kardjati, et al., 1985; Paul and Muller, 1980; Kigutha, 1994; Ategbo, 1993; Schultink, 1991; Ferro-Luzzi, 1990). These fluctuations in dietary intake were reflected in cyclic patterns of weight losses between harvest seasons and a recovery in the post-harvest season. Among children, significant seasonal differences in intake of energy, calcium, thiamin, vitamin A and riboflavin were also observed (Kigutha, 1994). To

complicates matters, similar seasonal cycles in morbidity are observed, coinciding with the fluctuations in food availability (Chambers et al., 1981; Onchere and Slooff, 1981).

Such a seasonality requires using coping strategies, such as skipping meals, changing the composition of meals, and adjusting the distribution of available food between household members (Chung et al., 1997; Sacdalan et al., 1998; Van Liere, 1994; Pollisco, 1989; Chowhury et al., 1981). For example, in Northwestern Benin the households' consumption of tubers, pulses, and wild foods increased during the pre-harvest period (Van Liere, 1994). In Madura, Indonesia, the preferred staple foods of rice and corn will be replaced by cassava (Kardjati, et al., 1985). In the Philippines, a mixture of rice and corn or pure corn substitutes staple rice, followed by root crops and bananas (Pollisco, 1989). Due to food shortage brought about by El Niño in 1996-97, many Filipino school children in Mindanao were reported to eat less before coming to school, which affected their ability to concentrate (Robb, 1998).

The inequalities in seasonal burdens are embedded in social structures. There is a tendency for seasonal burdens to be shifted from dominant to weaker groups: from landowners to the landless, from employers to the laborers. Within the household, food is shared in a way which reflects the interest of the dominant members but which simultaneously favors survival of the whole group as a family. Productive workers are given preferential treatment. Of interest is the usual connotation of 'productivity' with earning wages. Women being highly productive in food production for household consumption are therefore often not considered to be productive (Pottier 1999; Safilios-Rothschild, 1990). Acknowledging their productivity could amount to an admission of the husband's inadequacy as breadwinner and could question his dominance. While in most cultures in developing countries women eat last, the effect of food scarcity on children differs by culture (Kabeer, 1990; Evans, 1989).

Many rural households live from harvest to harvest. When the fields turn green and the rice stalks begin to bend (pre-harvest period), many households begin to run out of stored rice and cash from the previous harvest. For those without land, the time of cultivation and harvest often is often the period yielding the highest wages of the year. However, for the poor these months of heavy physical work and higher energy requirements coincide with the hungry season. It is also the season with a higher incidence of illnesses. The poor tend to loose weight and become more vulnerable to diseases. Stress is passed on to the weakest in the community, i.e. the poor and old people, and, within the household, to the mothers and the young children. With harvest, food becomes abundant. Grain prices become lower to the advantage of those who buy their food, but this may at the expense of the small producers who have to repay debts. Expenditures for social obligations such as family and community celebrations and for school fees also compete with households' food expenses. The extent to which debts can be repaid and assets can be bought, depends on the savings put aside in the harvest season. Gradually, as the post-harvest months progress, food becomes scarce again, the cash reserves diminish and the cycle begins all over. More often than not, poor people live from hand-to-mouth. Among the rural poor, seasonal fluctuations do not so much reflect abundance and scarcity, but situations of less and more scarcity, perpetuating chronic dependency and food insecurity.

3.6 The role of women

The three pillars of food and nutrition security are sustainable production of food, economic access to and equitable distribution of available food and health/nutrition care. Women are involved in each of these as they produce, process, purchase and prepare food and take care of household in general and children in particular (Jaffry, 2000; Niehof, 1999b; ACC-SCN 1990; Brown et al., 1995; Quisumbing et al., 1995; Moser, 1993). The performance of these activities is based on the three roles women perform in the society: their reproductive roles, their productive roles and the work they do in the community (Moser, 1993).

Women's reproductive roles include childbearing and rearing, and caring responsibilities for all household members. In productive roles women may work as agricultural workers, farmers, or wage laborers to supplement the household income. They may be involved in economic activities such as petty trading, food and fish vending, or may work as a domestic helper. The third role includes women's social activities at the community level to ensure the provision and maintenance of social services for collective consumption, such as water, health care and education. In carrying out their triple role, particularly poor women are constrained by social, economic and cultural barriers (Quisumbing et al., 1995; Laier et al., 1996; Moser, 1993).

In developing countries, women contribute both to the national agricultural production and household food security, in their capacity as farmers, farm workers and natural resource managers (Chen, 1996; Quisumbing et al., 1995; Laier et al., 1996; Moser, 1993; Mc Guire and Popkin, 1990; FAO, 1989). Despite the significant contributions of women to agricultural productivity, they remain 'invisible farmers' as a result of the still limited recognition of women as productive agricultural workers (NSCB, 1995; Pottier, 1999).

Studies in Asia have shown that women who work as hired agricultural laborers or unpaid family workers contribute 10-50 percent of all labor for various crops. In many countries, women also contribute significantly to harvesting, post-harvest processing, and marketing of farm products. Yet, women's importance in agricultural production is not recognized because of their subordinated role to men and the much more visible domestic routine and child care labor (Moser, 1993; Kabeer, 1991). Women tend to be underpaid compared to men, and their lack of access to resources has been reported to persist because of legal, social and institutional factors as well as a combination of these (Quisumbing et al., 1995).

In sub-Saharan Africa, women farmers have traditionally been responsible for food production. Here they spent much time on processing food crops, providing water and fuel wood, food storage and transport, hoeing and weeding, and harvesting and marketing (FAO, 1989; Shiva, 1988). Gender disparities may be even greater in Africa than in Asia, certainly in Southeast Asia.

Women's decision to engage in income-generating activities involves complex trade-offs. There is sufficient evidence from Africa, Asia and Latin America that show women's employment and income, especially in poor households have positive effects on household food security and nutrition. Women tend to spend more of their income on food than men do (Quisumbing et al., 1995; Kennedy and Peters, 1992). Women's employment has a positive

effect on their welfare and that of the other household members, especially in low-income households (Kumar, 1995; Haddad, 1992). These trends are confirmed by studies that provide quantitative measures of the different effects of men and women's income.

In Rwanda, cash income earned by women positively and significantly associated with household calorie consumption. In Cote d'Ivoire, the share of household cash income earned by women in the household has a positive and significant effect on the budget share for food. In the Philippines, after controlling for overall household expenditures, female income share has been shown to have a positive association with household calorie availability, household budget shares of medical care and child's schooling (which are important non-food inputs into nutrition), and preschooler weight for age. The probability of preschooler fever and diarrhea is also lower in families where women earn higher incomes (Quisumbing et al., 1995:10).

But, also negative effects of women's employment on dietary intake and nutritional status of children have been reported (Vega, 1983; McGuire and Popkin, 1990).

Why do men and women tend to spend their income differently? Culture and social norms may assign women the role of 'gatekeepers' of family nutrition through the allocation of their time and income for the benefit of household members, especially children (Niehof, 1999a). It is likely that women cater more to children's needs because they supposed to take care of them. Men tend to spend their income on items outside the social sector because of their socially determined obligations beyond the sphere of the household (Hamilton et al., 1984). Furthermore, men tend to have larger incomes than women, who generally earn petty cash. Garcia (1990) demonstrates the importance of women's economic earning opportunities for the resource flows within the household. Results of his study in three provinces in the Philippines showed that the wage rate of the wife has a significant positive impact on the relative calorie allocation of both herself and her children and a negative effect on the husband's allocation.

A third aspect of food and nutrition security relates to food distribution and care. Women in poor communities are usually underweight, stunted and micronutrient deficient (McGuire and Popkin, 1990; Leslie, 1991; Kusin, 1998). As nutritional status has a significant effect on the outputs of physical labor, the economic costs of nutritional deficiencies among women are tremendous (Tinker and Green, 1994).

Women provide care in several ways: (1) through food preparation, almost universally a woman's task; 2) through the distribution of food among household members; (3) through feeding of children, i.e. breast-feeding and the preparation of nutritious foods for weaned infants, and (4) through health and hygiene practices. Caring practices are time-intensive. Hence, efforts to increase women's economic activities must take into account the conflicting demands resulting from domestic responsibilities. On the other hand, female employment outside the home may increase women's bargaining power within the household, which could also increase women's influence to achieve food and nutrition security (Pottier 1999; Quisumbing et al., 1995).

Women carry the burden of reproduction. Too frequent cycles of pregnancy, childbirth and

lactation often lead to maternal depletion with detrimental effects for the mother and the (unborn) child (Merchant et al., 1990; Kusin et al., 1994). During times of economic hardship, women often assume the burden of adjustment. They act as 'shock absorbers' at the expense of their own nutritional status, expand their already long working day, or reduce their own food consumption to give preference to other members of the household. In addressing nutrition security, support to women's practical needs to carry this multiple burden has been largely ignored (Moser, 1993).

What can be done to improve the nutritional status of women? In health, nutrition and other programs, women have been over-targeted rather than under-targeted. Yet, there is an important difference between being the intended target and being the beneficiary of an intervention. Most of the nutrition interventions are primarily designed to reduce malnutrition among children. Interventions in the agricultural sector aim at reducing food insecurity in the household, but usually they increase the workload of women without improving their access to resources (Leslie, 1991; Shiva, 1988).

Throughout their life-cycle, poor women are involved in a 'zero-sum game', balancing the household's food security, the care of children and other social duties (McGuire and Popkin, 1990; Moser, 1993). The food requirements for their biological needs during pregnancy and lactation often compete with the needs in calories and nutrients for productive and domestic labor. Consequently, in poor communities women are often undernourished and unhealthy. The justification for improving women's nutritional status is usually based on their responsibility for the next generation and household food and nutrition security. One could argue with equal justification that women are entitled to adequate health and nutrition in their own right.

3.7 Household coping strategies

Exposures to uncertain food supplies, whether regularly recurring (as in pre-harvest scarcity of food) or under exceptional circumstances (as in drought) have confronted millions of households of many nations. To bridge such difficult periods, rural households deploy a range of remedial responses and action. Various studies have looked into these actions, often referred to as coping strategies (Thomas, 1990; Beck, 1989; Chambers, 1989; Corbett, 1988).

Anderson et al. (1994:20) describe strategy as "the overall way in which an individual, and possibly collectivities consciously seek to structure, in a coherent way, actions within a relatively long term perspective". The term strategy implies a preventive measure that is carefully planned. Coping strategies are actions taken by households as an integral part of their livelihood system. A variation of coping strategies and mechanisms can be observed. In this study, emphasis will be given those that 1) prevent seasonal stress, and 2) meet actual food stress. Actions or measures to address the former will be referred to as 'coping strategies,' while the term 'coping mechanisms' will refer to responses to meet actual food shortage. Davies' (1993:60) definition of coping strategies as 'a relatively short-term response to an immediate and inhabitual decline in access to food,' and Niehof's (1999a) description of 'inhabitual' as a discontinuity of the usual situation seems to capture the nature of the food security problem in the study sites.

Households do not respond arbitrarily to variability in food supply. The pattern of households' responses involves usually three stages: risk minimization, risk absorption and risk-taking (Webb et al., 1992). The first stage involves ensuring protection before the crisis period, which includes measures of savings, investments, accumulation and diversification. The second involves disposal of investments. In this instance, the capacity for coping becomes a function of the assets base of the household that consist of materials, financial and human capital. The third and final stage may involve actions that go against prevailing social norms, which is justified by the need for survival. Whether the crisis is short or long-term term, not all coping actions are beneficial to the households or to its environment (Webb et al., 1992). For example, reducing food intake to minimal levels, altering food preparation, or breaking up a family to enhance chances of survival of individual members will all entail suffering. Similarly, desperate actions such as cultivation of marginal land or wholesale felling of trees to sell firewood will have serious consequences for the environment and for income generation (Holcome, 1989; Cekan, 1992). On the other hand, it is also possible that new resources will be generated and developed in a crisis situation. Hence, an examination of the range of strategies and/or responses of households, and identification of who among the household members pursues a particular strategy, is relevant for understanding why a household achieves food security or not, both in the short and long-term.

In the Philippines, many traditional practices exist which cushion the poor households against seasonal stress by re-distribution of wealth, the most popular of which are gifts of grains and other foods, loan of grains and lending of animals or farm equipment for plowing the land. Gift-giving is an investment both as a means of gaining prestige and as security to guarantee subsistence in hard times (Onchere and Sloof, 1981). It is also a means of spreading risks (Adams, 1993). Such practice could entail obligations to wealthier households, thereby reinforcing the dependency relationships in the community. The redistribution system is already threatened by increasing commercialization and mechanization of agricultural production. The system of indebtedness slowly dissipates and reciprocity and solidarity may no longer exist in the near future because the traditional agricultural activities and arrangements are increasing replaced by hired labor and mechanization. Labor-saving practices slowly erode the patronage system as well as the relative livelihood security of the poor that has been part it. However, it is also possible that a food crisis may result in strengthened social cohesion and may even generate new relations that will improve overall social capital as poor households find resourceful ways of overcoming the food problem.

3.8 The theoretical framework of the study

The theoretical framework used in this study is an adaptation of the framework used by the International Fund for Agricultural Development (IFAD) for studying household food security. The framework (Figure 3.2) elucidates the components and determinants of household food security and its relation to nutrition security and ultimately child nutritional status. In this study, the household members' intake of calories (food security) and the quality of diet (nutrition security) are depicted in box 2 and box 3. Household food security is directly or indirectly determined by many factors. It is influenced by food supply (box 8), storage and post harvest losses, household size and composition (box 7). Socio-cultural factors such as knowledge, attitude and practice (KAP), food preparation and intra-family distribution of food (box 6) influence the adequacy of habitual diets (nutrition security, box 2). As households will always try to meet their calorie requirements first, food security is assumed to precede nutrition security.

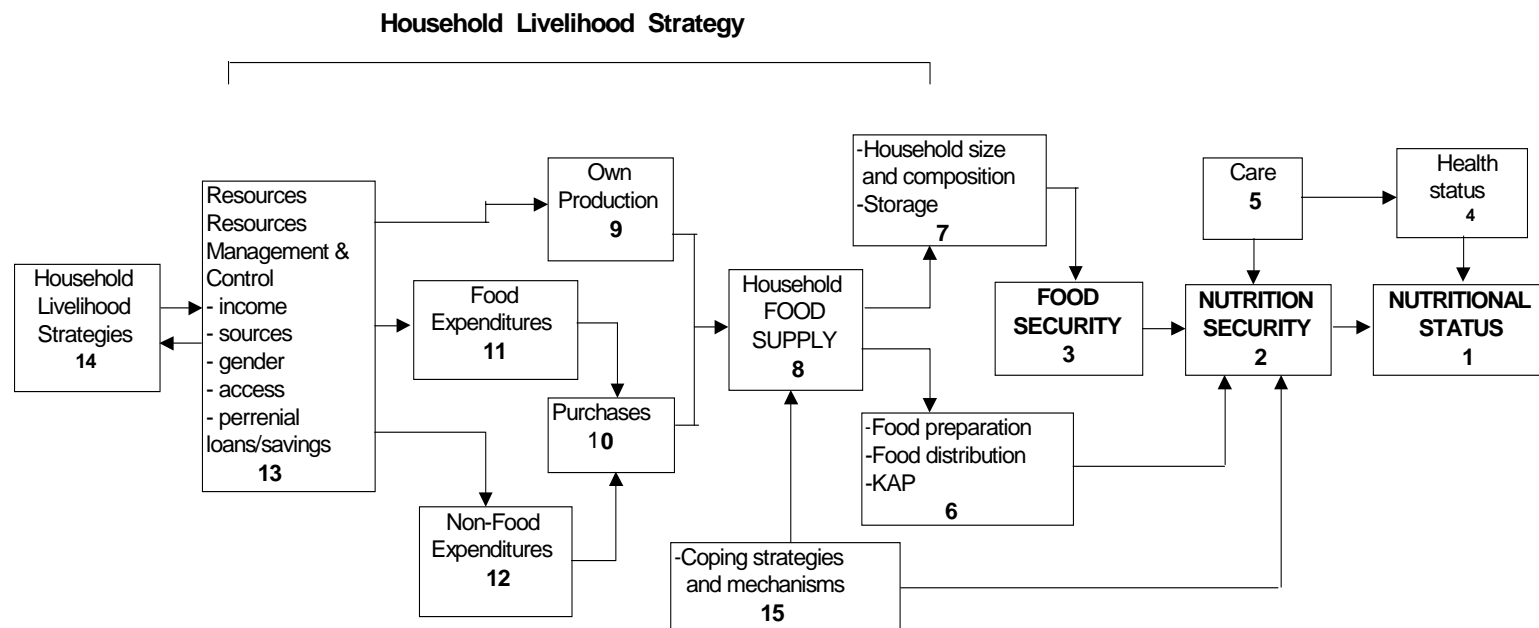


Figure 3.2 Determinants of Household Food and Nutrition Security

NOTE: Boxes 8 and 13 are adapted from IFAD Model For Household Food Security

(Source: Frankerberger et al., 1993)

Food production (box 9) and food purchases (box 10) are important factors in determining the food supply at the household level (box 8). Food purchases are affected by expenditure on non-food items (box 12) and price, which is not presented in the model but assumed to affect the type and amount of food bought (box 11). Household food production and overall expenditures are determined by socio-economic factors such as income and savings and other productive assets, including access to credit (box 13). Livelihood activities and the manner by which households manage their resources and other entitlements determine the resource base of the household. Livelihood strategies (box 14) refer to different income diversification mechanisms or activities of households aimed at improving the entitlements on a long-term basis. What people do, given their resources and assets, and what they achieve by doing (box 15) it is investigated in this study. Although seasonality is not directly visible in the model, the concept of seasonality is taken into account by collecting data at different times in the seasonal cycle. According to Sahn (1989), seasonal fluctuations in food production and in food prices are often important contributors to transitory food insecurity. In general, food insecurity and other adverse factors seem to operate synergistically during the wet seasons and tend to hit the poor people the hardest.

Ecological setting influences food supply and availability at the household level, including the seasonal nature of economic and agricultural activities. For this research project two ecological settings, were selected, namely, a lowland rice cultivating area in the province of Laguna and coastal area in the province of Leyte. Chapter 4 provides the description of the research areas.

The concept of gender is essential to understand the food-provisioning role of women because it is part of their reproductive gender role, which is extended to apply to the household as a whole. The significance of the household as a unit of analysis lies in the functioning as a resource- sharing and consuming unit. Within the context of household food and nutrition security, examining the role of gender in the division of labor, time allocation, and decision-making within the household, is very important.

Examination of the factors that determine the nutritional status of children can illustrate the relationship between food and nutrition security. Several conceptual frameworks exist to depict the causes of malnutrition (Mason et al., 1984; Pacey and Payne, 1985; Beghin et al., 1988; UNICEF, 1990). The most recent of these is an adaptation of the UNICEF model (see Figure 3.1). At the individual level, the nutritional status of the child (box 1) is determined by the interaction of dietary intake and health status of a child (box 4). The underlying factors are (1) food security (2) maternal and childcare (box 5), which determines the amount of food offered and quality of the child's diet and (3) health and environmental sanitation. This implies that food security is a necessary but not the sole component to achieve adequate nutrition (Maxwell and Smith, 1992; Haddad et al., 1994a). At the community level, the root cause of malnutrition is poverty resulting from the unequal distribution of human, economic and organizational resources (Leemhuis, 1998).

While there are other factors influencing nutrition security, such as among others, maternal and childcare, health services, this study focuses on the problem of household food and nutrition security and its effects on the child's nutritional status.

CHAPTER 4

RESEARCH DESIGN

In this chapter, the research questions, the research design, the sample selection, the time schedule of the research, the variables and indicators and the methods of data collection will be discussed.

4.1 Research questions

The research problem and objectives have been described in paragraph 1.3. In summary, the aim of this study was to gain insight into how households perceive food insecurity, the ways they seek to achieve food security, the traditional mechanisms used to face lean seasons, and the relation between food security and nutritional adequacy, particularly of mothers and their young children. To address this problem, clusters of questions were formulated:

1. *What is the magnitude of the problem of food security and malnutrition in lowland and coastal villages?* Who are at risk? What are the characteristics of households that are food insecure and/or have malnourished members? Specifying the location of food and nutrition security problems requires a situational analysis and quantification of these problems in the study areas.
2. *How do the people perceive food security?* Are there gender differences? What are the existing norms and values? Are these perceptions reflected in alternative actions and in allocating available resources for competing demands and goals of households? How do local people identify high-risk households or individuals? People's perceptions determine household strategies in acquiring food, distributing food between household members and the coping mechanisms of households.
3. *What are the consequences of seasonality for food supply and food consumption?* Are there variations across communities? Who is most affected? What is the quality of the diet in times of plenty and scarcity, and what are the consequences of change? One major concern of the research is to examine to what extent the seasonal fluctuations in food supply affect the level of household food security as well as the nutrition security of individual members of the household, particularly women and children.
4. *What coping strategies do households use to address the seasonal fluctuations in food supply?* On what are they based? Are these strategies adequate? These strategies are important in relation to food security through agricultural cycles.
5. *What is the role of gender in food and nutrition security of households?* How are the food provisioning roles shared by men and women within the households? Who makes the decisions on how resources are allocated with regard to achieving food and nutrition security. What are the effects of women's time allocation on food security and nutritional status of children?

6. *What are the implications of the observations of this study for intervention strategies and programs such as BIDANI?*

4.2 Research design

The problems of food and nutrition security are never more keenly felt than at household level. Researching the problem requires a combination of techniques that can be referred to as the 'etic' or outsider's point of view, and the 'emic' or insider's point of view (Chung, et al., 1997). The first concerns an objective assessment of the food and nutrition problems of the communities and households through surveys, to indicate the prevalence and magnitude of the problems. However, surveys are less appropriate for capturing the local perceptions and views on food and nutrition security, or the factors held responsible for these problems by the local people. Neither can surveys elucidate the behavioral aspects in coping processes within the livelihood context. The most appropriate way to answer the research questions is to combine the survey method with qualitative methods of data collection (Chung et al., 1997; Scrimshaw, 1990).

Anthropological methods, such as the case study method, can help frame meaningful questions, which are understandable to the local respondents and relevant to the situation at hand (Sandoval et al., 1987). In combination with structured interviews used in surveys, the social science methods can help illuminate the reasons behind the food and nutrition situation prevailing in households.

Three parts can be distinguished in the execution of the research: the preparatory stage, conduct of household surveys, and the case studies. Table 4.1 summarizes the activities and issues addressed in different parts of the study.

During the preparatory stage, it was necessary to finalize arrangements with two academic institutions in the Philippines to draw institutional support and cooperation regarding the implementation of the Ph.D. research. These were University of the Philippines Los Baños (UPLB) and Visayas State College of Agriculture (ViSCA)¹. Other activities at this stage included meetings with the Dutch researcher and the BIDANI research staff, particularly the PPEC staff. Points of discussion were technical assistance and access to BIDANI data and other relevant documents, provision of office space, free use of computer and other facilities. The support provided by UPLB- and ViSCA-BIDANI greatly facilitated the smooth conduct of the research.

The study was designed to assess the problem of food and nutrition security in two different ecological settings, namely, lowland and coastal areas. Two research assistants were hired, one in each of the two study sites, who could speak the language in the area. Households in Laguna province belong to a Tagalog-speaking group, while those from Leyte province speak Cebuano or Waray. The hired assistants, although experienced in field surveys, were informed about the survey methodologies specific to the design of the study. They were also trained in gathering and analyzing food consumption data, in measuring weight and height of children,

¹ Now Leyte State University (LSU).

Table 4.1 Components of the research

Components	Issues addressed
Part I – Preparatory stage <ul style="list-style-type: none"> • Visiting and meeting with academic institutions involved in the Ph.D. research projects • Hiring and orientation of research assistants • Selection of villages and sample households • Linkage with local official of two Ph.D. researchers • Development, pre-testing and finalization of questionnaire 	<ul style="list-style-type: none"> • Administrative and logistic arrangements for the Ph.D. project in two locations; complementation of PPEC and the two Ph.D. researches • Criteria for selecting villages • Support of local leaders and familiarity with the researchers • Determine topics to be covered in the surveys; examine/review PPEC results
Part II – Conduct of household surveys <p>1st Round Survey - May and September 1998</p> <p>2nd Round Survey - August to September 1999</p> <p>3rd Round Survey - November to December 1999</p> <p>Monthly monitoring of food consumed by households and sources of staple - One-day recording of food consumed by households and food sources as well as prices of selected food and non-food commodities</p>	<ul style="list-style-type: none"> • Household resource management and decision-making, food distribution, livelihood of the households and mothers' perceptions of food and nutrition security. • Changes in household composition, nature of support system, access to credit, people's definitions of borrowing and credit, social and other cultural practices/traditions which have implications on the food security status of household, and illnesses within the household. • Food production, food preferences and preparation, household savings capacity, social events celebrated by households, employment movement and aspirations of households. • Food consumption and procurement pattern of households; prices changes of selected food and non-food commodities; seasonality.
Part III – Case studies and FGDs <ul style="list-style-type: none"> • One-day food weighing of food consumed by case households during wet and dry season • Life histories of male and female household head • Division of labor and time allocation • Focus group discussions • Weight and height measurements of index children of case households; measurement of mid-upper-arm circumference of mothers 	<ul style="list-style-type: none"> • Adequacy of nutrient intakes of household and selected members • Seasonality • Intra-household resource allocation; decision-making; livelihood strategies • Gender relations within the households • People's perception of food security and its indicators • Nutritional status of index children • Nutritional status of mothers

and in conducting focus group discussion (FGD). The first two-day training consisted of lectures and practical exercises, including methods and techniques of actual food weighing and dietary analysis. The second two-day training covered lectures, a workshop and a field exercise for FGD in two locations.

Prior to selecting the villages, field visits were made to get an impression of the area, and to establish initial contacts with key leaders in PPEC sample municipalities and villages potentially eligible for the study. This process was very important because it provided insights on: 1) economic and social activities of the people, 2) major government programs and services, 3) distance and travel time between Los Baños (office base in Laguna) and Baybay (office base in Leyte) and the villages as well as 4) the willingness and cooperation of the people, and 5) the peace and order situation in the areas. In almost all the villages visited, there was a very positive response and interest in participation. The BIDANI staff was very instrumental in facilitating the fieldwork in this stage, serving as guides during the visits and facilitating informal interactions with some of the local leaders and workers in the areas.

In Part 2, the household surveys were conducted. To take into consideration the variable of seasonality, they were conducted at three times between May 1998 to December 1999. Each survey covered a set of topics to be probed. In all surveys the mothers were the respondents.

The first survey was conducted in May 1998 in Laguna and in September 1998 in Leyte. The time gap between the two locations was not important in the first round of the survey since the questions were not time-related. They covered general aspects of household resource management and decision-making, food distribution, livelihood of the households, and mothers' perceptions of food and nutrition security.

The second household survey was conducted in August to September 1999 simultaneously in Laguna and Leyte. The focus was on changes in household composition, nature of support system, access to credit, people's definitions of borrowing and credit, social and other cultural practices/traditions which have implications for the food security status of household, and illnesses within the household. These topics are important in examining social relations influencing household access to food at certain points in time.

The third survey, conducted in November to December 1999², covered aspects on changes in household composition, food production, food preferences and preparation, household savings capacity, social events celebrated by households, employment movement and aspirations of households. These topics are relevant in examining the food production activities and nature of employment of households and the households' priorities as well.

In Part 3 the case studies were conducted. As described in the Table 4.1, the results of the first round surveys formed the basis for selecting the case households and the major issues to be probed further. Case studies add a micro-perspective to the larger study and permit an 'emic' perspective to emerge through participant observation and qualitative information (Chung et al., 1997).

² Due to the long holiday season in December, the survey in Laguna was extended until first week of January 2000.

Within the case study approach, other ethnographic methods were employed to collect detailed, qualitative data on a sub-sample of the 200 households that originally participated in the PPEC survey. The approach was designed to complement and update the household surveys' data set. Referred to as update because it was expected that several changes had occurred, not only in the lives of the respondents, but also in the social and economic conditions in the study area. The methodology used was basically qualitative in nature, whereas the household surveys had been predominantly quantitative.

The methods included informal interviews, life histories and family profiles. Observations of activities of men and women provided valuable non-verbal clues as to what was actually happening in the household. It was ensured that at least five households were included with employed wives to assess the contribution of women employment to food security. There were also focus group discussions with wives, husbands and local leaders, which permitted elaboration on specific topics according to the participants' views. The case households were also used to collect detailed information about household food consumption and nutritional status of index children and their mothers.

4.3 Samples selection

As mentioned in section 1.3, the BIDANI program uses a built-in process evaluation system (inputs-outputs). For the evaluation of outcome, a system of pre-BIDANI (baseline survey) and post-BIDANI survey (after 24 months training and institutionalising the program) was set-up. This assessment is known as Pre-and Post-evaluation by Cohorts (PPEC) and was conducted in the lowland (UPLB) and coastal (VISCA) areas. The sample constitutes all households with children 0-36 months of age.

The selection of the research area and the sample households is summarized in Figure 4.1. The sample villages and households were selected from the PPEC sample. The PPEC baseline survey covered a total of 13 villages and 972 households in the lowland area and 15 villages and 961 households in the coastal area (Sacdalan et al., 1998). Two villages were selected in each of the PPEC research areas in the island of Luzon and in the Visayas (see Figure 2.1). These provinces are situated in Laguna and Leyte, representing the lowland area and coastal area, respectively. The villages were selected on the following criteria: 1) they had more than 50 PPEC sample households since a minimum of 50 households per village was required for the research, 2) they were homogeneous in socio-economic and physical attributes, 3) they were adjacent to each other and accessible from the office bases in Los Baños, Laguna (UPLB) and Baybay, Leyte (ViSCA). Furthermore, the villages in the two sites were basically rural communities because the focus in this study was on rural food and nutrition security. The villages selected are the following:

- Masapang and Banca-Banca, Victoria, Laguna
- Tabgas and Balugo, Albuera, Leyte

In the same manner, the sample households in this study were drawn from the PPEC sample households e.g. with a child, 0-36 months of age at the time of the baseline survey.

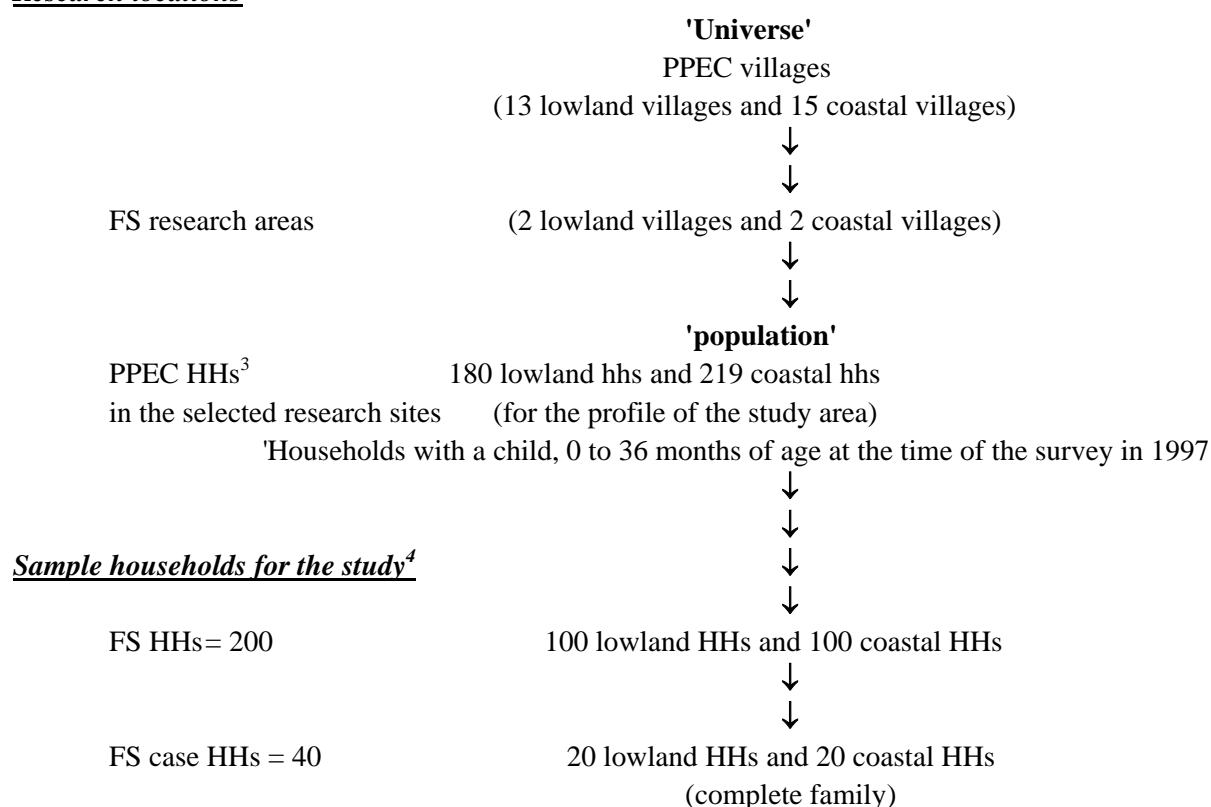
Households' survey and case study

Using the PPEC list, a stratified random sampling of households within the selected villages was done. Households were categorized into those with and without working wives, and a proportionate random sampling of households with employed and unemployed wives was done. This method assured the inclusion of at least five employed wives among the case households.

Fifty-five households per village were drawn randomly from the list of PPEC respondents. Prior to the selection, a statistician was consulted to determine the appropriateness of the proposed methodology and the criteria for choosing the households in relation to the research objectives and questions. Although the study aimed at only for 200 households, an additional of 20 (five households from each selected village) households with 0-36 months old children were selected to allow for drop-outs (Table 4.2).

Figure 4.1 Summary of sampling procedure

Research locations



³ HHs = households

⁴ Although the required sample was only 200 households, there were 20 additional households drawn to allow for drop-outs

Table 4.2 Distribution of sample by village and categories of households

Type of village	No. of HHs with employed wives	No. of HHs with unemployed wives	Total sample HHs
Lowland			
• Masapang	10	40	50
• Banca-Banca	15	35	50
Coastal			
• Tabgas	5	45	50
• Balugo	7	43	50
Total	37	163	200

Hhs = households

From the study population of 200 households, a stratified random sampling was employed to obtain a sub-sample of 40 households, so that each household had an index child and a school-age child, and 20 of them had employed wives. Note that assignment of households to their positions in this typology was based on their status in the 1997 pre-evaluation survey of BIDANI. However, several of the respondents meanwhile had changed employment status, implying some upward or downward mobility prior to the conduct of the case studies.

The main reason for choosing households with preschoolers is because food and nutrition security can be easily gauged by the nutritional status or well-being of these children, as they are most vulnerable to food shortages (Sacdalan et al., 1999; Martianto, 1999; Pollisco, 1989).

4.4 Time schedule of the research

The scheduling in time of the different parts of the research project, including preparation of the research proposal, can be seen in Table 4.3. Hired research assistants, one from each location, assisted the researcher. They assisted particularly in gathering data from the field e.g. household survey, food weighing, food supply survey and monitoring of prices of basic food commodities, among others.

4.5 Variables and indicators

In order to understand and explain the problems of food and nutrition security at the household level, both quantitative and qualitative variables were used according to the nature of the phenomena to be measured. As the word implies, variables are characteristics that vary over time and from unit to unit (Schacht, 1995). It is important to distinguish between dependent and independent variables, and their relations, in order to understand how socio-economic and cultural characteristics of food and nutrition problems relate to and potentially affect each other.

Table 4.3 Time schedule of the research

Activity	Time period
Preparatory period	
<ul style="list-style-type: none"> Gathering and reading relevant literature in the Philippines Research Proposal preparation in Netherlands Finalization and submission of research proposal to WU and NHF Approval of the research proposal by NHF 	<ul style="list-style-type: none"> June to July 1997 August to October 1997 November to December 1997 January 1998
Field work/data collection period	
Part I – Preparation for field work/actual data collection	
<ul style="list-style-type: none"> Meeting with academic institutions involved in the Ph.D. research projects; research sites visit; hiring and training of research assistants; selection of villages and sample house-holds; and presentations of Ph.D. research to local leaders Exploratory survey Gathering and review of literature and improvement of research design 	<ul style="list-style-type: none"> March to April 1998 May to June 1998 <p>Note: research framework and design were finalized in October 1998</p>
Part II – Conduct of household survey	
<ul style="list-style-type: none"> Examination/review of preliminary results of PPEC Development and pre-testing of questionnaire Conduct of surveys <ul style="list-style-type: none"> 1st round survey 2nd round survey 3rd round survey Training of research assistants on qualitative methodology Monitoring of food supply and prices of basic commodities Data encoding, processing and preliminary analysis 	<ul style="list-style-type: none"> August 1998 May and September 1998 August to September 1999 November to December 1999 August 1998 January to December 1999 November to December 1998, May to June 1999, February to March 2000
Part III – Case study	
<ul style="list-style-type: none"> Formulation of criteria and selection of case households using PPEC results and exploratory survey Contacts and observation of case households <ul style="list-style-type: none"> Two times one day food weighing and collection of nutritional status data (including checking of data) Collection of data for family profiles Collection of life history Time allocation observation Focus group discussions <ul style="list-style-type: none"> Laguna Leyte 	<ul style="list-style-type: none"> August 1998 September to October 1998; April to June 1999 July-October 1998 March to April 1999; September to November 1999 March to April 1999; September 1999; March 2000 May 1999; November to December 1999

Food and nutrition security, the dependent variables, are measured as outcomes of different conditioning factors, such as food supply, socio-economic activities, and intra-household dynamics (Figure 3.2). Food security is represented by household members' intake of calories, while nutrition security is measured by calories, protein and selected micronutrients intakes. The nutritional status of children was determined by weight and height measurements and measurements of mid-upper-arm circumference for mothers.

The determinants or independent variables assumed to directly or indirectly affect household food include household size and composition and food storage while food preparation and distribution and other socio-cultural factors such as knowledge, attitude and practice (KAP) are assumed to influence nutrition security. Other variables such as food production activities, income, and food expenditures determine the food supply of households. The resource base which includes human and material resources as well as social relations, determines the households' economic or livelihood activities.

The following are the operational definitions of the major variables and indicators used in the study:

Household - a group of people, usually related through kinship or marriage, living together under the leadership of the household head. The members contribute to the household's subsistence and maintenance and also share most resources produced within the household. Household membership may change over time, and household members pool at least part of their income or proceeds from employment, and participate in household activities.

Head of household - the person in the household who represents the household in the local community and at important social occasions. Household members point to him or her as the person who makes most decisions and usually, but not necessarily, is held responsible for the household as a whole.

Household membership - household membership was defined operationally as persons living under the same roof and one cooking arrangement. These persons may or may not be related with each other. Domestic helpers staying full-time in the household were counted as members as well.

Household food security – for the households of the PPEC sample the indicators “having had food shortages in the past year” and a per capita income below the Philippine food threshold were used to designate the household as food insecure. The information was obtained by questionnaire. The food thresholds were P8,301 and P6,583 for Region IV and VIII respectively in 1997.

In this study, the local and FAO definitions of food security are used to assess household food security. This implies that individual level of food security refers to dietary (energy) adequacy of at least 80 percent of the recommended daily allowances (RDA), specific for age and sex as well as mothers' physiological state (pregnant, lactating or not). Food consumption was only measured in the case study sample as part of the in-depth assessment of food acquisition and distribution dynamics.

Nutrition security - For the households of the PPEC sample the quality of the habitual diet of the household and index children was assumed to reflect nutrition security. The households or children who did not have a habitual diet according to the dietary guidelines of the FNRI were defined as having an inadequate diet or feeding pattern.

In the sample households, the adequacy of diet of households was determined using the frequency of consumption of various types of foods to complement the staple. A home diet is considered adequate if food sources of protein, vitamins and minerals are eaten 4 to 6 times per week.

In the case households, nutrition security was defined by the one-day intakes of protein, vitamin A and iron (major deficiencies in the Philippines) of selected household members in a similar manner as the energy adequacy.

Nutritional status of children 0-36 months of age – For PPEC survey, the indicators for nutritional status of an index child were weight-for-age, height-for-age and weight-for-height. The measurements were compared with the age- and sex-specific reference (WHO) values. The cut-off points to determine whether the preschooler is malnourished is minus 2Z-score, e.g. weight-for-age Z-score (WAZ) for underweight, height-for-age Z-score (HAZ) for stunting, and weight-for-height Z-score (WHZ) for wasting. Preschoolers above these cut-off points are categorized as nutritionally secure (with normal weight, and not stunted or wasted). Note that the assumption is made that these anthropometric indicators for macro-nutrient status also broadly reflect micro-nutrient status as no biochemical or clinical assessments were included in the study.

Determinants of household food insecurity and malnutrition - refers to socio-economic and demographic factors or variables that influence household food security and malnutrition. A factor is classified as determinant if it is significantly associated with dependent variable derived from the logistic regression analysis.

Food threshold - the amount needed every month by a family/household of six to provide for basic nutritional needs. The 1997 food threshold in Region IV and VIII where the study sites are located was recorded at P8,301 and P6,583, respectively. Households whose food thresholds fall below these amounts are referred to as below subsistence.

Poverty threshold - the minimum amount of money a family of six needs every month to satisfy all its food and nutritional requirements and other basic needs such as clothing, shelter, education and utilities. The 1997 poverty threshold in Region IV and VIII was recorded at P12, 507 and P8, 755, respectively. Households whose monthly income falls below these poverty thresholds are considered as poor (NSCB, 1999).

Time allocation - total time spent by wife and husband on various activities from 6:00 am to 8:00 pm recorded from actual observation.

Social networks – various types of relationships that exist between and among households or individuals from which support can be derived in times of food scarcity.

4.6 Methods of data collection

Both quantitative and qualitative methods were used in the data collection. The quantitative methodology used both socio-economic and nutrition surveys to collect data from 200 households over three rounds in 1998-99. The qualitative methodology used focus group discussion modules, ethnographic reports and case studies of selected households. These methods were useful for identifying location-specific indicators, such as local seasonal behavioral patterns. The data also provided a qualitative explanation on the results of the household survey. Table 4.4 shows the specific contents of data sets examined in the study, sample size and method of data collection.

Household survey

Household surveys were conducted to obtain a quantification of the food and nutrition problem in both locations. Three surveys, which were carried out during different periods between April 1998 and December 1999, covered on average 210 households. In one survey, the total number of households interviewed was less than 210 because some have moved in the mean time. In Leyte, one reason given for moving was a conflict with neighbors, whereas in Laguna, better job opportunities encouraged moving to another place.

In the first interview, it was found that one household in Leyte was listed twice with different names in the PPEC. This was uncovered only during the course of the interview. Sample households in Laguna were easier to approach and more cooperative than those in Leyte probably because of absence of a language barrier.

Case studies

As mentioned earlier, 40 case households were selected for the case-study approach. Case studies were conducted for a more in-depth understanding of the households' food and nutrition situation and how people organize their lives to address the food supply problem. Several alternative methodologies, utilizing participant observation and loosely structured interviews were applied to gather data on consumption, time allocation, life histories and perceptions of food security, coping strategies, among others.

Formal communication letters, endorsed by the barangay captain, were distributed to selected case households to inform them of their selection as a case study, and of the schedule of the different data collection activities. The initial meeting with each case household was to establish rapport and provide an explanation of the purpose of the case study, and to solicit their participation. Subsequent visits were conducted for the above mentioned data collection activities.

Table 4.4 Specific content of data sets by chapter.

Chapter (content)	Sample size	Methods and frequency of data collection
Chapter 5. Food insecurity and child malnutrition: prevalence and related factors Demographic variables: household characteristics = size, age, sex; economic variables = employment status of household members, education level of all members and level of income, household assets; food consumption variables = kind of food and frequency of consumption; health and nutritional status variables = child feeding, anthropometric data of index child; food security variables = food availability, storage of staple food and frequency of food shortage.	399 HHs	Interview, 1 time survey.
Chapter 6. Household food security: beyond household resources Perceptions of local people regarding food security, and characterization of food insecure households	20 mothers, 20 fathers, 12 cases for life history	FGDs; 1 time for each participant group. Key informant interview.
Chapter 7. Seasonal in food and nutrition security and related coping strategies Food security status Frequency of consumption of selected food items Sources of staple Coping strategies and mechanisms Case Studies	199 HHs average of 203 HHs same sample 40 case HHs 1 lowland and 1 coastal HH	Interview, 1 time survey. Interview; monthly for one year. Interview; 1 time and observation. Interview and observation; FGDs.
Chapter 8. The role of gender in household food and nutrition security Time allocation of husband and wife Decision-making in the households Food intake and energy status of mother, father, school children child and preschoolers Nutritional status MUAC measurements Intra-household food distribution	26 case HHs 40 case HHs 40 index children 40 mothers, 40 fathers, 40 pre-school children 40 case HHs	14-hour time allocation observation. Interview, 1 time and observation. Food weighing in two seasons, one-day dietary intake. Weighing of children in two seasons; MUAC of mothers. Food weighing in two seasons, one-day dietary intake and observation.

Food consumption

A food consumption study was carried out for the case households. The observed weighed record method (Cameron and Van Staveren, 1988) was used to measure one-day food consumption in 40 case households during the rainy season (September and November 1998) as well as during the dry season (March and April 1999). Meals and snacks eaten outside the home were recalled and recorded as part of the intake of each household member. Standard weights and measures used by the BIDANI Network Program in the Pre and Post Evaluation by Cohorts (PPEC) during the 1997 survey were utilized for the recalled food items eaten outside the home and were not weighed prior to consumption. The household member who consumed less than three (3) meals for both periods was dropped or was not included in the final analysis.

To minimize the influence of the researcher on food consumed, the schedule of food weighing in each household was not disclosed. So, households even they were neighbours did not know when the researchers would come. In fact, there was an instance where the researchers waited because there was practically no food to weigh in the household when they arrived.

All raw ingredients, cooked dishes, portions served to members of the household, leftovers and plate wastes were weighed and recorded. Weighing scales with 1 kilo and 0.10 kilo gradation were used for ingredients, portions, leftovers and plate wastes, and scales up to 4 kilos for the prepared dishes. The cooking and eating utensils such as cooking pots, plates and serving platters were weighed prior to cooking for easy determination of weight in grams of foods prepared or the cooked dish. The sources of food, whether store-bought, cultivated in one's own farm, gathered, or received from neighbors or relatives, were also recorded to provide insights into food procurement practices. These data can also shed light on the patterns of sharing within the community.

A table was used to record (Appendix HFC Table 4.1) relevant information before food consumption. These are the time of the meal, the name of the dish, the method of cooking, the ingredients used and the corresponding raw weights, whether as purchased or edible portion (after the inedible part was removed before cooking or serving directly on the dining table).

Appendix HFC Table 4.2 was used to record the actual food consumption of each household member. The beginning weight of each dish was based on the amount of food (in grams) in the serving platter or in the individual plate as the case maybe. For each household member, there were beginning and ending weights (mass before and after getting his/her share from the serving platter, respectively). The intake is the difference between the beginning and ending weight minus the plate waste or inedible portion of food (e.g. fish bones). The left over food in the serving platter plus the food in the pot were weighed to get the total left over food for each meal. This procedure facilitated re-checking of actual food intake of the household.

Anthropometric measurements

Two field workers were trained to take the measurements according to standardized procedures (Jelliffe, 1966). Weight of children was measured using calibrated Salter weighing scales with a capacity of 25 kilograms. Children, lightly clothes, were weighed two times, once in the rainy season and once in the dry season, which was done after the food weighing sessions. To minimize errors, weighing was done in the morning between 9:00 to 10:00 in all study sites. Each child was weighed twice with the aid of two persons, because it would be

very difficult for only one person to weigh a moving child. If the difference between weighing exceeded 100 grams, the measurement was repeated. All case children from 40 case households were given incentives for participating, such as noodles and biscuits. The participating households were given rice.

Height of children till age 24 months was measured using a locally made length board for supine length. The infant/toddler is laid on the board, which itself is on a flat surface. The head is positioned firmly against the fixed headboard, with the eyes looking vertically. The knees are extended by firm pressure. The sliding foot-piece is moved to obtain firm contact with the heels, while the feet are flexed at right angles to the lower legs. For older children standing height was measured with a microtoise, attached to a flat wall. After removing shoes the child stands on a flat floor under the microtoise with the feet parallel, heels, buttock, shoulders and back of the head touching the wall. The head is held comfortably erect with the lower border of the orbit in the same horizontal plane as the external ear opening. Measurements were recorded to the nearest 0.1 cm.

Mid-upper arm circumference of mothers was measured to the nearest 0.1 cm with a flexible measuring tape which is firmly but gently put around the hanging left arm at midpoint between the tip of the upper arm bone and the elbow.

Division of labor and time allocation

Time is a finite resource. Although skills and material resources may be available, attainment of goals may not be achieved if time is not judiciously used and shared by men and women. Assessment of the division of labor and time allocation provided insights into the gender relations within the household.

Each of the 26 out of 40 case families was observed one day from 6:00 am to 8:00 pm. Within this period, all activities of the wives and husbands were recorded by the minute. The major categories of activities include agriculture, fishing, livestock raising, petty trading, childcare, food preparation, solitary leisure, and social recreation. Special attention was given to social interactions involving exchange of information and goods between the respondents and other people in the community, which have implications for household food security. In cases when the wife or the husband went in separate directions during the day, the researcher and the assistant followed each one separately to keep track of their activities and social interactions.

In case of a duality of tasks, the two approaches described by Gordoncillo (1990) namely: the 'priority allocation approach' and the 'forced allocation approach' were used. For example, in the 'priority allocation approach', activities done simultaneously such as chatting while laundering, were classified with the latter. Cuddling the child became a priority over neighboring. In cases when respondents cooked and washed the dishes or swept the floor at the same time, the 'forced allocation approach' was used. This was used as a basis to estimate the time actually spent on the various activities. Since time allocation was assessed by actual observation using an activity guide list, the duality of tasks was resolved easily. The amount of time spent by husbands and wives were tallied to determine the average amount of time spent on each activity and social interaction. Itemized lists of activities engaged in by wives and husbands were prepared and the average time spent per activity was computed.

Life history of male and female household head

Using a loosely structured interview schedule, five households, two from Laguna and three from Leyte, were interviewed extensively regarding their life histories. The questions were directed at several important aspects of the key informant's life, namely: genealogy, migration history, occupational history, and aspirations for children, among others. The life history provided an overview of important events in the lives of male and female household heads based on their experiences, constraints and goals that influenced their decision and choice of livelihood strategies and food security. Informal semi-structured interviewing was followed in collecting life histories. The researcher had to return several times to talk to respondents until the data sets were completed. In Leyte, the hired assistant who could speak the local dialect conducted the interviewing of key informants.

People's perceptions of household food insecurity

The qualitative data on people's perceptions on food insecurity were gathered through focus group discussions conducted in separate sessions for different participant groups, e.g. wives, husbands, local leaders and workers. Guide questions for FGD were formulated and discussed with the facilitator (particularly in Leyte) and recorded for common understanding and interpretation. All FGD sessions were tape recorded and then transcribed. In Leyte, the facilitator checked the transcriptions. The researcher analyzed the contents according to the key questions and also facilitated the FGDs in the lowland area.

4.7 Data management and analysis

Editing of survey questionnaires was an integral part of data collection activities. All questionnaires in three household surveys were pre-edited prior to final editing by the researcher before encoding. Unclear information was marked and discussed with the assistants who had conducted the interview. All household survey data were encoded using the EPI Info version 6.0. Close coordination between the two assistants was necessary for uniformity in data encoding. During encoding, data were aggregated whenever necessary, depending on the nature and percentage distribution of the observations. The frequency distribution of each variable using the EPI Info program helped to locate missing data and other errors.

For food consumption, cleaning of collected data was done at the end of the day to check for errors or discrepancies between the total weights of the food items eaten by the household members compared to the total weight of the cooked dish. Also, cleaning of data involved checking missed or misplaced data. Preliminary editing of the food consumption records of each household member was done in preparation for the data encoding.

Food consumption data were encoded using DBASE III after all food ingredients were coded according to the Philippine Food Composition Table or FCT (FNRI, 1997). The nutrient equivalents of the food items were determined using the FCT computerized program. For food items with no corresponding "food item code" from the FCT particularly for cooked foods, conversion factor was used in order to convert cooked food items to their equivalent raw Edible Portion (E.P.) weights.

The Philippine Food Composition Table (FCT) 1997 was used as basis for coding of food items. For the food items with no corresponding “food item code” from the FCT particularly for cooked foods, conversion factor was used in order to convert cooked food items to their equivalent raw Edible Portion (E.P.) weights. Microsoft Excel 1997 was used in encoding the food consumption data.

The Revised 1989 RDA for Filipinos was used to come up with evaluation of adequacies. Statistical Application Software (SAS) program was used in the correlation of variables. All food items consumed by each household member were subjected to the FCT-file to determine the actual intake for specific nutrient. Percent adequacy was computed for each nutrient using the following formula:

$$\% \text{ Nutrient Adequacy} = \frac{\text{Actual food intake}}{\text{Recommended dietary allowance (RDA)}} \times 100$$

The degree of adequacy of dietary energy is one measure of household food security (Gillespie and Mason, 1991). In this study, the local and FAO definitions of food security are used to assess household food security. At the individual level, food security refers to dietary (energy) adequacy of at least 80 percent of the recommended daily allowances (RDA), specific for age and sex, as well as mothers’ physiological state (pregnant, lactating or not). For nutrition security, the concept of Haddad et al. (1996) is used. This refers to the quality and equitable distribution of food within the household. In line with energy, the threshold for dietary adequacy (e.g. energy and nutrients intake) is defined as ≥ 80 percent of RDA.

Descriptive analysis included frequency counts, averages and percentage distribution, depending on the type of variable. Statistical tests were applied whenever relevant. In this case, test of significance was not applied for food consumption data due to smallness of sample.

CHAPTER 5

FOOD INSECURITY AND CHILD MALNUTRITION IN THE STUDY AREA

This chapter discusses the relevant characteristics of the sample households to serve as background in the analysis of the linkages between food and nutrition security in the study area. It also examines the possible relationship between child malnutrition and food security and the related factors using the secondary data from PPEC survey (see Figure 3.1, page 40).

Data from 399 PPEC sample households from the chosen research areas (180 households from two lowland villages and 219 households from two coastal villages) were taken the list of households with 0 to 36 months old children in the two locations. The situational analysis included information on household characteristics, living conditions, employment and sources of income, sources of foods and habitual diets, child feeding and nutritional status. The choice of variables was guided by the conceptual model of child malnutrition, shown in Figure 3.1. The conceptual model of child malnutrition, shown in Figure 3.1, guided the choice of variables.

5.1 Characteristics of the study area

The lowland villages are located in Laguna province in Region IV and are situated approximately 90 kilometers south of Manila. The two adjacent villages were chosen from the municipality of Victoria, within a 20-kilometer radius of the provincial capital Santa Cruz. These villages are located along the main road leading to Manila (Table 5.1). The topography of these villages can be characterized as flat terrain with distinct rainy and dry seasons. The villages have basically agricultural economies, with rice and vegetables as the main crops. Rice is the staple food, supplemented with vegetables, legumes, and fish or meat of various sources.

Table 5.1 General characteristics of the study area

Location	Population (1997-98)	Number of households	Distance to main city or center (in kilometers)	General ecology
Laguna Province				
• Masapang, Victoria	3,537	1398	18	Lowland
• Banca-Banca, Victoria	1,913	433	15	Lowland
Leyte Province				
• Tabgas, Albueria	2,364	481	20	Coastal
• Balugo, Albueria	3,802	761	22	Coastal

The coastal villages are located in Albueria, one of the municipalities in the province of Leyte. The villages, also adjacent to each other, are located along the coast, about 13 kilometers from the provincial capital of Ormoc City (Table 5.1). Unlike the lowland villages, the coastal villages have a uniform annual rainfall distribution. Rain is experienced for most of the year. Typhoons are common in the area. Fishing was the major occupation in these villages but

households also are engaged in agriculture. Various cash crops e.g. coconut and sugarcane are cultivated in the area. Rice is the preferred staple food, complemented with maize and root crops.

In both lowland and coastal areas, the first harvest for paddy rice is in the dry period from March to May. With good weather conditions it is a period of abundance. Food shortage may occur in July through September and October, after which the second cropping for the rainy season is harvested. However, inter-cropping with other early maturing crops such as corn and tubers is common.

Based on the community survey in 1997-1998, the two lowland *barangays* have 5,450 inhabitants from 1,831 households, while the coastal areas have a total population of 6,166 from 1,242 households (Table 5.1). This implies an average household size of 2.98 and 4.96 in lowland and coastal areas, respectively.

5.2 Characteristics of the sample households

Household structure, size and education of household members

Lowland area

Most households are nuclear¹ (68.3 percent). Due to the sampling criterion (households with children, 0 to 36 months of age), the mean household size is well above the average for the area, namely 5.85 members. The majority of the parents are young; 48.7 percent of household members are less than 15 years of age and 32.8 percent of households had 4 or more dependent members. Thus the dependency ratio is high (Table 5.2-5.3).

The educational background of husbands and wives is more or less the same. The majority has more than 6 years of schooling; 17 percent of husbands and 16 percent of wives have more than 10 years of education (Table 5.4). Considering the current educational status of household members, in 1997 almost all children in the age group <12 years were attending school. Between the ages 12 and 19 years, when most children are supposed to be in school, the proportion actually enrolled decreases significantly (Appendix 5.1). However, more females than males are still at school between ages 16 to 19 years, possibly due to economic reasons as males are more needed in economic or livelihood activities (Appendix 5.2).

Coastal area

Compared to the lowland area, there are less extended² households (17 percent) and more nuclear households. Such a situation is likely due to the much better opportunities for education and employment in Laguna than in Leyte. In Laguna, some households have taken in relatives and friends as temporary boarders who are either students or employees in the nearby towns. Thus, in the coastal household size is smaller, namely 5.72 as compared to 5.85 in Laguna (Table 5.2).

¹ Defined as household consisting of father and mother with unmarried children, or a parent with children (NSO, 1999). However, in this research, a household with a domestic helper was still considered a nuclear family.

² Refers to the household composed of a nuclear family plus married children and grandchildren, or other relatives, including the husband's or wife's parents, brothers, or sisters (NSCB, 1999).

In general household members are younger in the coastal area, with 54.9 percent less than 15 years of age. There are more households with 2 or more under-fives and 4 or more dependents, resulting in a dependency ratio of 125 (Table 5.2-5.3).

Table 5.2 Household characteristics by ecological area

Particulars		Lowland Area		Coastal Area	
		N	Percent	N	Percent
Household size	3-4	62	34.4	72	32.9
	5-6	60	33.3	82	37.4
	7-15	58	32.2	65	29.7
Total		180	100.0	219	100.0
Range		3 - 15		3 - 12	
Mean		5.85		5.72	
Ages of household members	0 - 4	291	27.6	363	29.5
	5 - 9	141	13.4	181	14.7
	10 - 14	81	7.7	131	10.7
	15 - 19	80	7.6	74	6.0
	20 - 24	95	9.0	91	7.4
	25 - 29	119	11.3	131	10.7
	30 - 34	87	8.3	89	7.2
	35 - 39	56	5.3	67	5.5
	40 - 44	37	3.7	46	3.7
	45 - 49	21	2.0	19	1.5
	50 - 54	13	1.2	11	0.9
	55 - 59	12	1.1	12	1.0
	60 - 64	8	0.8	6	0.5
	>= 65	13	1.2	8	0.7
Total		1,054	100.0	1,229	100.0
Number of under-fives	1 only	91	50.6	103	47.0
	2 or more	89	49.4	116	53.0
Total		180	100.0	219	100.0
Number of dependents ³	1 only	36	20.0	47	21.5
	2-3	85	47.2	89	40.6
	4 or more	59	32.8	59	37.9
Total		180	100.0	219	100.0
Dependency ratio ⁴		100		125	

³ Are household's members belonging to age group < 15 years and ≥ 65 years old

⁴ Dependency ratio = [(n < 15 + n ≥ 65) / n 15-64 age group] x 100

Table 5.3 Age distribution of husbands and wives by ecological area

Age group (in years)	Lowland				Coastal			
	Husband		Wife		Husband		Wife	
	N	%	N	%	N	%	N	%
15 – 19	6	3.4	9	5.0	11	5.0	16	7.3
20 – 24	27	15.0	42	23.3	24	11.0	54	27.7
25 – 29	44	24.4	55	30.6	62	28.3	64	29.2
30 – 34	48	26.7	33	18.3	53	24.2	33	15.1
35 – 39	26	14.4	26	14.4	31	14.2	34	15.5
40 – 44	20	11.1	11	6.1	24	11.0	16	7.3
45 – 50	5	2.8	4	2.2	10	4.6	2	0.9
50+	4	2.4	0	0.0	4	1.9	0	0.0
Total	180	100	180	100	219	100	219	100

Educational attainment of husbands and wives is inferior to that in the lowland area. About 67 percent of husbands and 55 percent of wives have less than 7 years of schooling, and only 7 percent and 5 percent, respectively, had more than 10 years of education (Table 5.4).

Table 5.4 Educational attainment of parents by ecological area

Educational attainment (in years of schooling)	Lowland				Coastal			
	Husband		Wife		Husband		Wife	
	N	%	N	%	N	%	N	%
0-6 years	57	31.7	72	40.0	143	65.7	119	54.3
7-10 years	89	49.4	79	43.9	55	25.1	88	40.2
More than 10 years	31	17.2	29	16.1	15	6.8	11	5.0
No data	3	1.7	0	0.0	6	2.7	1	0.5
Total	180	100	180	100	219	100	219	100

Also the educational status of household members in 1997 in the coastal area is poorer than in the lowland area and fewer persons in the age-group 12 to 19 years are still enrolled in high school; 28 percent compared to 47.2 percent in Laguna (Appendix 5.1 to 5.2). However, similar to the lowland area there are more girls at school than boys (Appendix 5.2).

Employment, income levels and sources of income

Lowland area

Almost all husbands and other household members have a salaried job (93.2% and 78.3% respectively). The wives are mainly (70.2%) self-employed (Table 5.5). The main occupation of husbands and other household members is service-related, working for wages in the non-farming sectors. This illustrates the more varied opportunities in Laguna province. Wives are mostly involved in domestic labor and petty trade, followed by work in factories (Table 5.6).

The monthly household income was computed from incomes of all working members older than 15 years age. Income may be received in the form of wages, salaries and other earnings

from the main occupation, or as a lump sum from the sale of crops or livestock, or remittances from relatives and in some cases, as transfer such as food from friends and relatives.

Table 5.5 Employment status of husbands, wives and other members by ecological area

Household member	Lowland (N=180)				Coastal (N=219)			
	Employed		Self-employed		Employed		Self-employed	
	N	%	N	%	N	%	N	%
Husband	164	93.2	12	6.8	80	38.3	129	61.7
Wife	14	29.8	33	70.2	5	16.7	25	83.3
Other members	72	78.3	20	21.7	24	40.7	35	59.3

Table 5.6 Main employment of husbands, wives and other employed members by ecological area

Occupation	Lowland			Coastal		
	Husbands	Wives	Other members	Husbands	Wives	Other members
Service worker	114	10	56	23	4	16
Business/petty trade	11	32	17	5	20	7
Farmer	-	-	3	19	1	5
Agricultural worker	34	1	10	14	1	7
Fisherman	1	-	-	95	-	10
Fisherman/laborer	-	-	-	41	-	11
Employee	12	3	-	9	-	3
Factory worker	4	-	6	2	-	-
Practitioner	-	-	-	1	-	-
Retired with pension	-	-	-	-	-	1
Unemployed/unknown	4	133	-	10	189	-
Total	180	180	92	219	219	60

There is a large range in income, but in general households are poor, as attested by the median per capita monthly income of households of P820 that is far below the food threshold⁵ (P 8,301) as well as the poverty threshold (P12,507). Many households have an income below the food threshold, namely one in four households, while one in three households has incomes between the food and poverty thresholds. Likewise, one in three households have incomes below 1.5 times the poverty threshold (Table 5.7).

Table 5.8 provides a general picture of the contribution of earnings from husbands, wives and other members of the households. In households without additional working members, the husbands appear to be the breadwinner. Interestingly, if there are other working members, they contribute much more to the household income than the husband. As all households are young, this situation cannot be explained by the head of household being of old age or incapacitated.

⁵ The calculated annual per capita income was classified by food and poverty threshold (see Table 5.7). Households with an income below the food threshold were the poorest of the poor. The relatively better-off households are those with incomes of at least 1.5 times the poverty threshold.

It is possible that the additional household members are better educated and have better paid jobs. Overall, mothers contribute only 7.3 percent to monetized household income from poultry and livestock raising or to a lesser extent from labor on their own farms.

Coastal area

In contrast to the lowland area, in the coastal area most husbands are self-employed, i.e. 61.7 percent versus 6.8 percent. Only few wives are employed in both locations but the proportion in the coastal area is two times less than in the lowland area (Table 5.5). In the coastal area, 62 percent of the husbands are fishermen, either owning the boat or as hired fishermen. About 15 percent are engaged in agriculture and 10 percent have a paid job. Wives are usually engaged in domestic labor and petty trade. Other members are more involved in fishing (35 percent) while some are engaged in wage earning activities, e.g. 27 percent (Table 5.6).

The data show that households earn substantial amounts from secondary jobs. Several husbands who reported fishing as their main occupation also work on farms. Likewise, a substantial number of wage and salary workers are also engaged in part-time backyard livestock production, the most popular being swine-raising.

Table 5.7 Income characteristics of households by ecological area

Particulars	Lowland		Coastal	
	N	%	N	%
Per capita monthly income (in pesos)				
• Mean per capita	1140.00		874.00	
• Median	820.00		594.00	
• Range	125.00 - 6,250.00		62.50 - 5,845.00	
Category of per capita income				
• Below food threshold (FT)	45	25.0	75	34.2
• \geq FT to less than poverty threshold	54	30.0	36	16.4
• 100-149 % poverty threshold	53	29.4	58	26.5
• \geq 150% of poverty threshold	28	0.6	50	22.8
Total	180	100.0	217	100.0

Reference thresholds:	Laguna (lowland)	Leyte (coastal)
Poverty threshold	P12,507.00	P 8,755.00
Food threshold	P 8,301.00	P 6,583.00

Table 5.8 Contribution of working members to household income by ecological area

Number of working HH members	Lowland				Coastal			
	N (HH)	Father	Mother	Other	N (HH)	Father	Mother	Other
Only husband and wife	128	93.3	6.7	0.0	179	95.0	4.6	0.1*
Plus 1 member	24	54.8	11.1	34.0	24	42.3	6.9	50.1
Plus 2 members	21	38.2	9.0	52.8	14	23.7	3.8	71.7
Plus 3 members	4	18.5	0	81.5	1	0	0	100
Plus \geq 4 members	3	29.1	0	0	1	0	10.9	88.3
Total	180	78.8	7.3	13.9	219	83.8	4.8	11.0

*One household member retired with pension has an income but was not counted as working

As far as fishing is concerned, two types of fishermen can be distinguished. Subsistence fishermen are small-scale fishermen who either own or rent small, motorized boats (called *banca*) to fish in the sea. The catch is partly for own consumption and partly for the market. They are comparable to subsistence farmers (Garcia, 1990). The second type of fishermen are those who are hired workers in larger fishing boats, called *sensuro*, that sail the high seas for commercial fishing. The operation of a *sensuro* involves a hierarchy of workers from the pilot (navigator or captain of the boat) to the *ultimo* (hired hands or fish collectors). Workers on a *sensuro* are paid in cash and in the form of fresh fish. Owners of a *sensuro* are usually a source of credit for the hired workers in times of emergency. Owners can be very influential and powerful in the area.

The median per capita monthly income of households in the coastal area is lower than in the lowland area, i.e. P594, but the costs of living is much lower in Leyte as compared to Laguna. The income distribution in the fishing villages is significantly different from that in the lowland villages. In the lowland area, households are almost equally distributed over the three categories ultra-poor, poor and less poor, with few in the category relatively well off (≥ 1.5 times poverty threshold). In the coastal area, however, there is an almost equal proportion of ultra-poor but the proportion of the relatively affluent is bigger (Table 5.7).

Similar to the lowland area, in coastal households without other working members, the main source of income is from husbands, with wives contributing only a small proportion to cash income. Particularly in households with two or more other working members, the latter are the main providers of household income (Table 5.8).

Housing, assets, water and sanitation

Lowland area

Permanent homes with concrete or semi-concrete walls and galvanized iron roofing are common in the lowland area. While 71% own their houses, only 26% of the sample households in lowland villages own the residential lot. Another 13% shared tenancy, and 5.5% lived in houses owned by their parents or relatives (Table 5.9). Almost all households (97 %) have electricity (Table 5.10).

In terms of ownership of assets, only few households own productive assets such as farmland (5.0 percent), motorcycle (4.4 percent) and jeepney (2.8 percent). About two-thirds of households have a radio, television and LPG⁶ stove. About half have an electric fan, and only one-fifth a bicycle (Table 5.10). In spite of the low annual per capita income still households spend money on consumer goods like radio, television and electric fan.

Table 5.11 shows the water and environmental conditions of households. Safe water includes water from a piped system, water from an artesian well, a public faucet and a protected spring. In general, these water systems are also the source of water for cleaning and washing in the study sites. Almost all households derive their water from an artesian well. Environmental sanitation seems to be adequate, with the majority of the households using a water-sealed toilet (82.2 percent) and practicing the 'burn and throw in open pit' method of garbage disposal (98.4 percent).

⁶ LPG means light petroleum gas.

Table 5.9 Type of housing and ownership of residential lot by ecological area

Type of housing	Lowland		Coastal	
	N	%	N	%
• Concrete & iron roofing	60	33.3	11	5.0
• Semi-concrete & iron roofing	55	30.6	13	5.9
• Semi-conc. & nipa thatched	6	3.3	21	9.6
• Wood and iron	47	26.1	17	7.8
• Wood thatched	9	5.0	70	32.0
• Bamboo thatched	2	1.1	85	38.8
• Shanty	1	0.6	2	0.9
Total	180	100	219	100
Residential lot ownership	46	25.6	20	9.1
Housing ownership				
• Owned	128	71.1	170	77.7
• Rented	13	5.5	6	2.7
• Shared	24	13.3	29	13.2
• Borrowed	15	8.8	14	6.4
Total	180	100.0	219	100.0

Table 5.10 Type of assets by ecological area

Particulars	Lowland (N=180)		Coastal (N=219)	
	N	%	N	%
Electricity	174	96.6	87	39.7
Productive assets				
• Farm land	9	5.0	8	3.6
• Motorcycle with side-car	8	4.4	3	1.4
• Jeepney	5	2.8	0	0.0
• Motorized banca or boat	0	0.0	5	2.3
• Non-motorized banca or boat	0	0.0	6	2.5
Liquid assets				
• Radio/karaoke	121	67.2	153	69.9
• Electric fan	126	55.2	42	19.2
• Television	134	61.2	50	22.8
• LPG stove	121	67.2	26	11.9
• VHS/Beta	22	12.2	10	4.6
• Refrigerator	48	26.7	18	8.2
• Bicycle	38	21.1	53	24.2

*Percentage is calculated over total sample

Table 5.11 Water supply and sanitation by ecological area

Particular	Lowland (N=180)		Coastal (N=219)	
	N	%	N	%
Source of drinking water				
• Water pipe system	0	0.0	33	15.0
• Artesian well/jetmatic	176	97.8	163	74.4
• Deep well	1	0.6	15	6.8
• Spring water	3	1.7	6	2.7
• River	0	0.0	2	0.9
Method of garbage disposal				
• Burned	156	86.7	179	81.7
• Thrown in open pit	21	11.7	25	11.4
• Thrown anywhere	3	1.7	8	3.7
• Thrown in the sea	0	0.0	7	3.2
Toilet facilities				
• Water sealed/flush	148	82.2	153	69.9
• Antipolo	3	1.7	1	0.4
• Open pit	11	6.1	3	1.4
• None	18	10.0	62	28.3

Coastal area

There is a clear difference between the two ecological settings regarding the type and quality of housing. Bamboo, nipa and coconut are mainly used in the coastal area. The majority of the households own their houses, and less frequently than among lowland households their houses are rented or borrowed. However, only 9% of the households own their residential lot, in contrast to 25.6% in lowland. The small proportions (2%) that have makeshift houses are usually migratory workers (Table 5.9). Only 40% have electricity compared to 97 percent in lowland villages (Table 5.10).

Also in the coastal area, smaller proportions of households have productive assets and it is even two times less than in the lowland area. As expected, ownership of boats is only found in the coastal area, but only 5% of households own a boat indicating that the majority of fishermen are laborers. Ownership of radio and bicycle in the coastal area is similar to that in the lowland area, but fewer coastal households have other electrical appliances (Table 5.10). The poorer quality of houses, and the fewer owned, as well as the lesser access to electricity of coastal households seem to be in agreement with the overall poorer living conditions as compared to the lowland area (Table 5.7). At the same time, as we saw above, the number of relatively affluent households in the coastal area is higher as compared to that in the lowland area. Income disparities in the coastal area are much greater than in the lowland area.

Artesian wells are also the main source of water in the coastal area (74.4%), followed by piped water (15%). Fewer households have a water-sealed toilet (69.9% versus 82.2%). Similar to the lowland, garbage is burnt or thrown in an open pit (Table 5.11). This situation is rather exceptional, in the positive sense, as communities living near the sea commonly use the latter as toilet and for garbage disposal!

Food production, utilization of produce and habitual diets

Lowland area

As shown in Table 5.6, about 19% of households reported farming as their major source of income, being agricultural workers, which in the Philippines includes animal husbandry. Yet, 37.8% mentioned that they have backyard gardens for vegetables, 35.0 percent produced cash crops, such as coffee, eggplants, watermelon, and 41.1% raise animals (Table 5.12). Almost all of the harvest or yield is consumed rather than sold (Table 5.13). To gain an impression of the quality of habitual diets, the frequency of consumption of non-staple food items was recorded (Figure 5.1 and Appendix 5.3). It is noteworthy that bread and snacks are most frequently eaten at least once daily (75.6% and 33.3% respectively), followed by eggs (22%). Beans, leafy and other vegetables, pork, poultry and to a lesser extent fish are usually eaten 1 to 3 times per week – most likely alternately. A large proportion of households seldom or never eat beans and beef. Thus, in general the daily diets are of poor quality, while people indulge in snacks, a common habit in the lowland area and most of the Philippines.

Coastal area

Rice is also the preferred staple in the coastal area, but corn or root crops complement it, particularly in times of scarcity. About 15 percent of households are engaged in farming (Table 5.6), but many more households reported having food production activities, as in the lowland area (Table 5.12). About 33 percent have backyard gardens, 69% produce staple foods and 66 percent raise animals. Almost all of the food produced is consumed, except fattened swine and cash crops that are sold at the market (Table 5.13). Qualitatively, the food consumption pattern is better in coastal than in lowland villages (Figure 5.1 and Appendix 5.1). Households consume less bread and snacks (12.3% and 35.2% respectively), on a daily basis. Leafy vegetables and fish are also consumed at least once a day. The other food items are eaten 4 to 6 times per week. Fish and eggs are the most important sources of protein. However, the information on the variety of the food basket must be interpreted with caution. More variety does not necessarily imply adequate quantity.

Table 5.12 Households according to food production activities and ecological area

Activities	Lowland (N=180)		Coastal (N=219)	
	N	%	N	%
Household with backyard garden	68	37.8	72	32.9
Households that produce crops	63	35.0	74	33.9
• Staple and root crops	23	36.5	51	68.9
• Cash/commercial crops*	38	60.3	17	23.0
• Mixed	2	3.2	6	8.1
Households which raised animals	74	41.1	144	65.8
Households engaged in fishing	32	17.8	168	76.7

* i.e. coffee, coconut, watermelon.

Table 5.13 Utilization of harvest from food production activities by ecological area

Food commodities produced	Lowland (N=180)						Coastal (N=219)					
	Consumed		Sold		C & S*		Consumed		Sold		C & S*	
	N	%	N	%	N	%	N	%	N	%	N	%
Backyard crops	67	98.5	1	1.5	0	0	69	95.8	2	2.8	1	1.4
Farm crops	59	93.7	0	0	4	6.3	51	68.9	5	6.8	18	24.3
Animal husbandry												
• Poultry**	38	79.2	1	2.1	1	2.1	101	84.2	8	6.7	4	3.3
• Swine	9	30.0	18	60.0	1	3.3	21	39.6	29	54.4	3	5.7
• Carabao, cow and goat***	2	22.0	6	66.7	0	0	0	0	0	0	0	0
Fish catch/share	31	96.9	1	3.1	0	0	14	8.3	1	0.6	153	91.2

* C & S means consumed and sold.

** Eight households in lowland and seven in coastal raised poultry for production purposes and cockfighting.

*** One household used a carabao in the farm.

5.3 Food insecurity and associated factors

Two parameters, comprising objective and subjective measurements, are used to determine the prevalence of household food insecurity in the study area. The first parameter compares the annual per capita income with the food threshold level, specifically for the regions where the study sites are located. The second parameter is a subjective one, recording whether the household experienced food shortage or not according to the opinion of the respondents themselves.

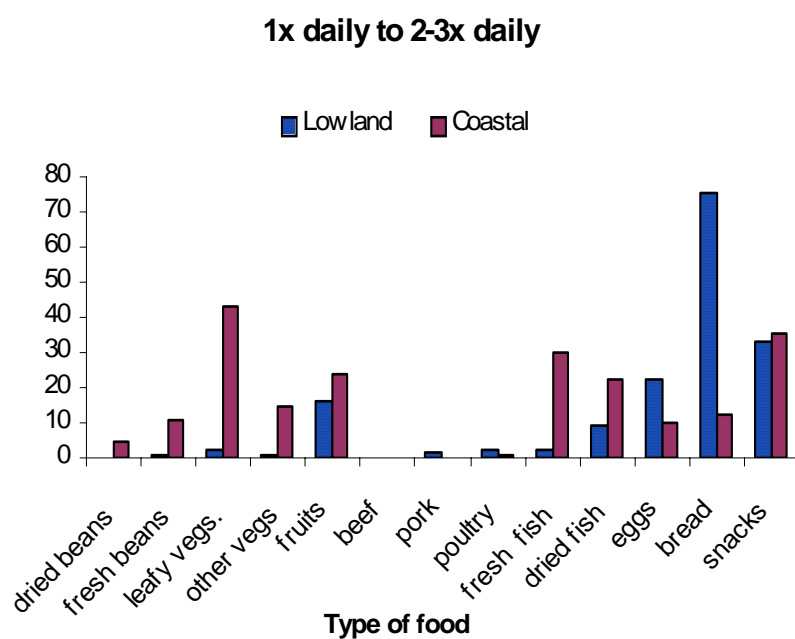
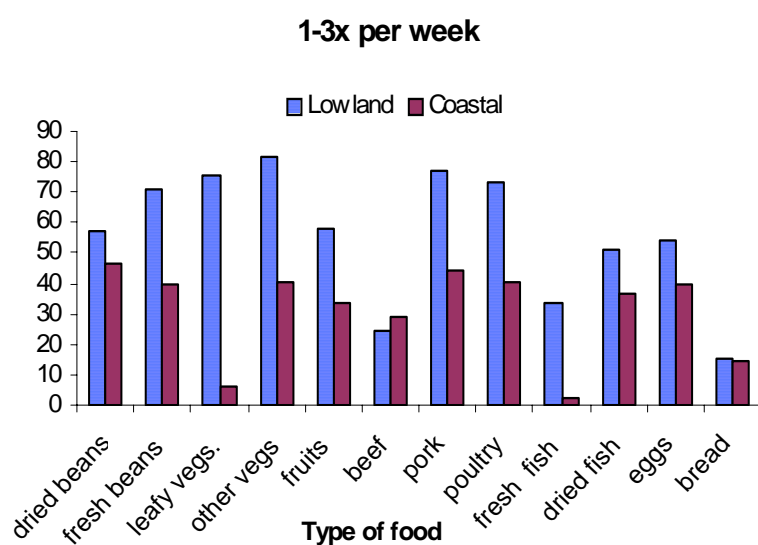
Lowland area

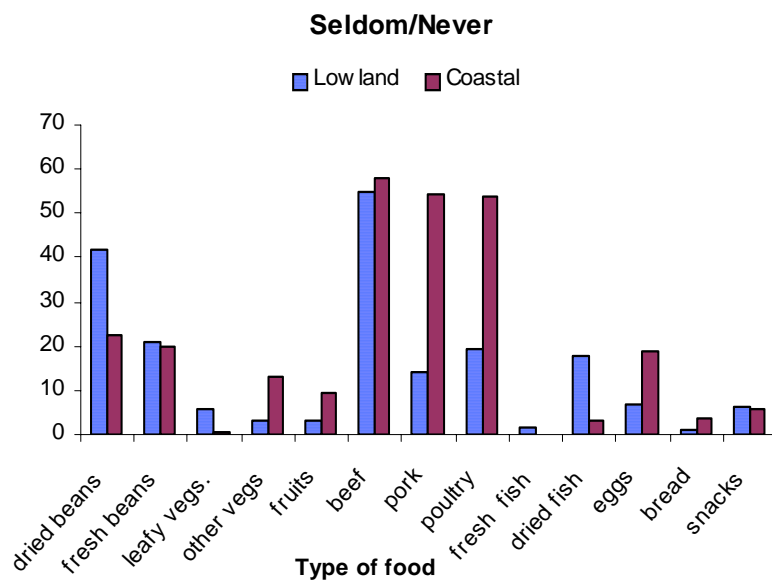
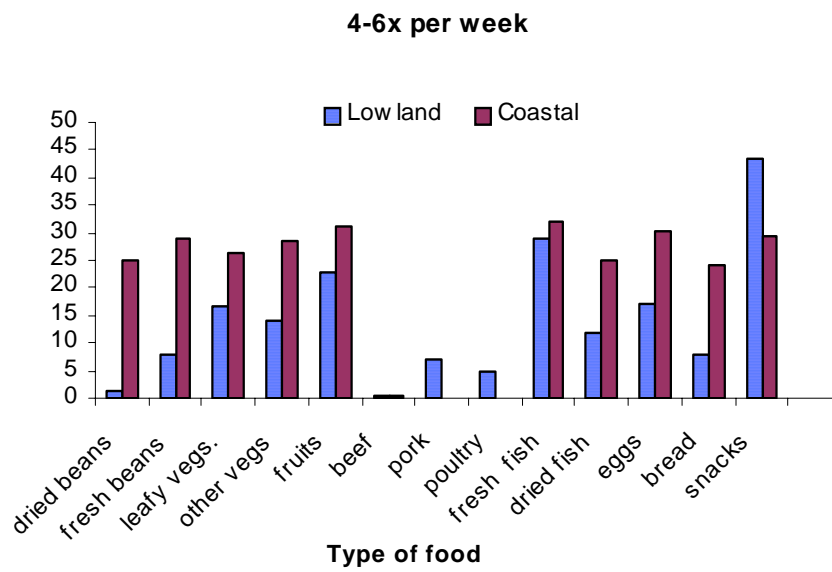
It appears to be very common to have staple food (rice) in store, but most households either have only small harvests or can only afford to buy the staple food in small quantities at a time, sufficient for 1 to 2 weeks or at most one month (Table 5.14). Households were asked whether they experienced food shortage in the year preceding the survey (1996). About 51 percent of households reported food shortage, 14 percent once, 9 percent twice and 20 percent even six times or more. To get an impression of the relation between perceived food insecurity and income, households with self-reported and without food shortage were classified by income category (Table 5.15). There is the expected difference between the objective and the subjective measurement.

For example, two thirds of the ultra-poor (income below food threshold) reported to have experienced food shortages versus 46.3 percent and 47.2 percent among households with an income below and just above the poverty threshold, respectively and 39.3 percent in the income category 150 percent of poverty threshold. However, this gradient is not significant⁷. The analysis of characteristics of food insecure households shows four major factors determining food security, namely: 1) number of dependants, 2) mother's education and 3) household wealth

⁷ Based on Mantel-Haentzel test of linear association.

Figure 5.1 Food consumption pattern of households by area





(assets) and 4) sources of income. Food insecure households have more dependents, usually young children, mothers are less educated (more elementary and less college education and vocational training). They also have fewer assets for productive and non-productive purposes, and members are to a lesser extent self-employed (Table 5.16a).

Yet, even among the better-off households an appreciable proportion perceives food insecurity as a problem. The question remains why their income was not spent on food. As mentioned in Chapter 3, livelihood security does take precedence over food security and the lowland villages seem to illustrate the competing demands. The case studies will elucidate some of the processes involved in decision-making and priority setting.

Table 5.14 Food availability by ecological area

Particular	Lowland (N=180)		Coastal (N=219)	
	N	%	N	%
Number of HH that store staple food*	179	99.4	206	94.1
Number of HH that store rootcrops	48	26.7	7	3.2
Storage of staple food				
No storage	1	0.6	13	5.9
< 2 weeks	87	48.4	123	56.2
2 weeks to <1 month	34	18.8	40	18.3
≥ 1 month	58	32.2	43	19.6
Food shortage in 1996	91	50.6	100	45.7
Frequency of food shortage				
No food shortage	89	49.4	119	54.3
1 time / year	26	14.4	14	6.4
2 times / year	16	8.9	26	11.9
3 times / year	11	6.1	18	8.2
4-5 times / year	2	1.1	10	4.6
6 or more times / year	36	20.0	32	14.6

*Rice is the staple in the lowland area, whereas in coastal areas it is rice mixed with corn or pure corn.

Table 5.15 Perceived food insecurity by income category and ecological area

Income Category	Lowland			Coastal		
	N	Self-reported Insecure HHs		N	Self-reported Insecure HHs	
		N	%		N	%
Below food security (FT)	45	30	66.7	75	49	65.3
≥ FT to less than poverty threshold	54	25	46.3	36	18	50.0
100-149% poverty threshold	53	25	47.2	58	24	41.4
≥ 150% poverty threshold	28	11	39.3	50	9	18.0
Total	180	91	50.6	219	100	45.7
MH lin association		p= 0.025			p= 0.000	

Table 5.16a Characteristics of households with or without self-reported food shortages in the lowland area

Characteristics	No shortage	With food shortage	p value* Chi-square test
Number of dependants			
• 1 only	26	14	0.019
• 2-3	51	44	
• 4 or more	24	42	
Mother's education			
• 0-6 years	33	48	0.005
• 7-10 years	43	45	
• more than 10 years	25	8	
Mother's age			
• less than 25	26	27	NS
• 25-29 years	32	30	
• 30 and above	40	42	
Income per capita			
• below food threshold	17	33	NS
• below poverty threshold	33	28	
• below 1.5 poverty threshold	32	28	
• ≥ 1.5 poverty threshold	19	12	
Number of assets			
• none	2	11	0.000
• 1 item	3	21	
• 2 or more items	94	68	
Storage of staple			
• no food storage	0	1	NS
• with food storage	100	99	
Food production			
• backyard gardening	36	40	NS
• crop production	37	33	
Sources of income			
• wages	92	87	NS
• self-employment	23	9	0.020
• farming	6	12	NS
• livestock	10	6	
• fishing	11	9	

NS = not significant.

Coastal area

As in the lowland area, almost all coastal households store staple foods but they do so in smaller quantities, in general lasting for less than two weeks. Food shortage in the past year was as common and as frequent as in lowland households (Table 5.14). In contrast to the lowland households, there is a significant association between the objective and the subjective measurement of food insecurity. Of those who perceived themselves as poor or food insecure,

65.3% are in the category below food threshold, 50.0% below the poverty threshold and only 18.0% in the category above 150% of poverty threshold (Table 5.15). Many more variables are significantly related to food insecurity. In addition to those in the lowland area, in the coastal area the risk factors are: 1) older age of mothers, 2) lower per capita income, and 3) poor sources of primary income (Table 5.16b). Coastal households are less involved in

Table 5.16b Characteristics of households with or without self-reported food shortages in the coastal area

Characteristics	No shortage	With food shortage	p value Chi-square test
Number of dependants			
• 1 only	29	13	0.000
• 2-3	46	34	
• 4 or more	25	53	
Mother's education			
• 0-6 years	40	72	0.000
• 7-10 years	53	26	
• more than 10 years	8	2	
Mother's age			
• less than 25	42	19	0.000
• 25-29 years	29	30	
• 30 and above	29	51	
Income per caput			
• below food threshold	22	49	0.000
• below poverty threshold	15	18	
• below 1.5 poverty threshold	29	24	
• ≥ 1.5 poverty threshold	35	9	
Number of assets			
• none	20	36	0.000
• 1 item	41	48	
• 2 or more items	39	14	
Storage of staple			
• no food storage	2	10	0.041
• with food storage	98	90	
Food production			
• backyard gardening	34	32	NS
• crop production	38	29	
Sources of income			
• wages	32	14	0.003
• self-employment	17	6	0.024
• farming	22	16	NS
• livestock	22	15	NS
• fishing	65	82	0.007

NS = not significant.

salaries occupations, while income from fishing is low. They have fewer assets and little storage of staple food compared to lowland households. When comparing food secure and food insecure households, mothers in food insecure households are far less educated and much younger (less than 25 years old) than those in the food secure group. They also have

more dependents. Among the coastal households, livelihood security and food security appear to more or less coincide.

5.4 Child feeding pattern

Households with children 0 to 36 months of age were the sample for the PPEC survey. If there was more than one eligible child in the household, the youngest child was selected, defined as the index child. Thus, the number of index children per area was equal to the number of sample households in the area.

Lowland area

Table 5.17 shows the breast-feeding pattern by age groups. Prolonged breastfeeding is still common, about 71% of infants 6 to 11 months and 48.5% of age-group 12 to 23 months are still breastfed. However, few mothers breast-feed exclusively in the first months of age and already 15% of 39 young infants were taken off the breast.

There are apparently no food taboos for children. In general the (additional) foods included beans, leafy vegetables and foods of animal origin. Young children are even prioritized if there are 'luxury' foods in the family diet, such as eggs, fish and fruits (Figure 5.2 and 5.3).

Coastal area

For infants less than 12 months of age the breast-feeding pattern in coastal villages appears to be better than in lowland villages, while for older children it is comparable (Table 5.17). On the other hand, the proportion of children given various food items as (additional) foods is smaller than in the lowland households. Banana and fruits, other vegetables, bread, fresh fish and eggs were mentioned by more than 50% of the mothers (Figure 5.2 and 5.3 and Appendix 5.2).

Table 5.17 Breastfeeding pattern of index children (0 to 36 months) by ecological area*

Age in months	Lowland			Coastal		
	N	BF	%BF	N	BF	%BF
0-5 months	39	33	84.6	54	49	90.7
6-11 months	32	22	70.9	55	43	78.2
12-23 months	71	33	48.5	67	29	43.9
24-36 months	38	5	13.5	43	6	14.0
Total	180	93	53.1	219	127	58.2

* In the lowland area, five children in age groups 6 to 36 months received mixed feeding, while on one child in both areas there was no information on breastfeeding.

Figure 5.2 Food consumption pattern of index children (0 to 11 months) by ecological area

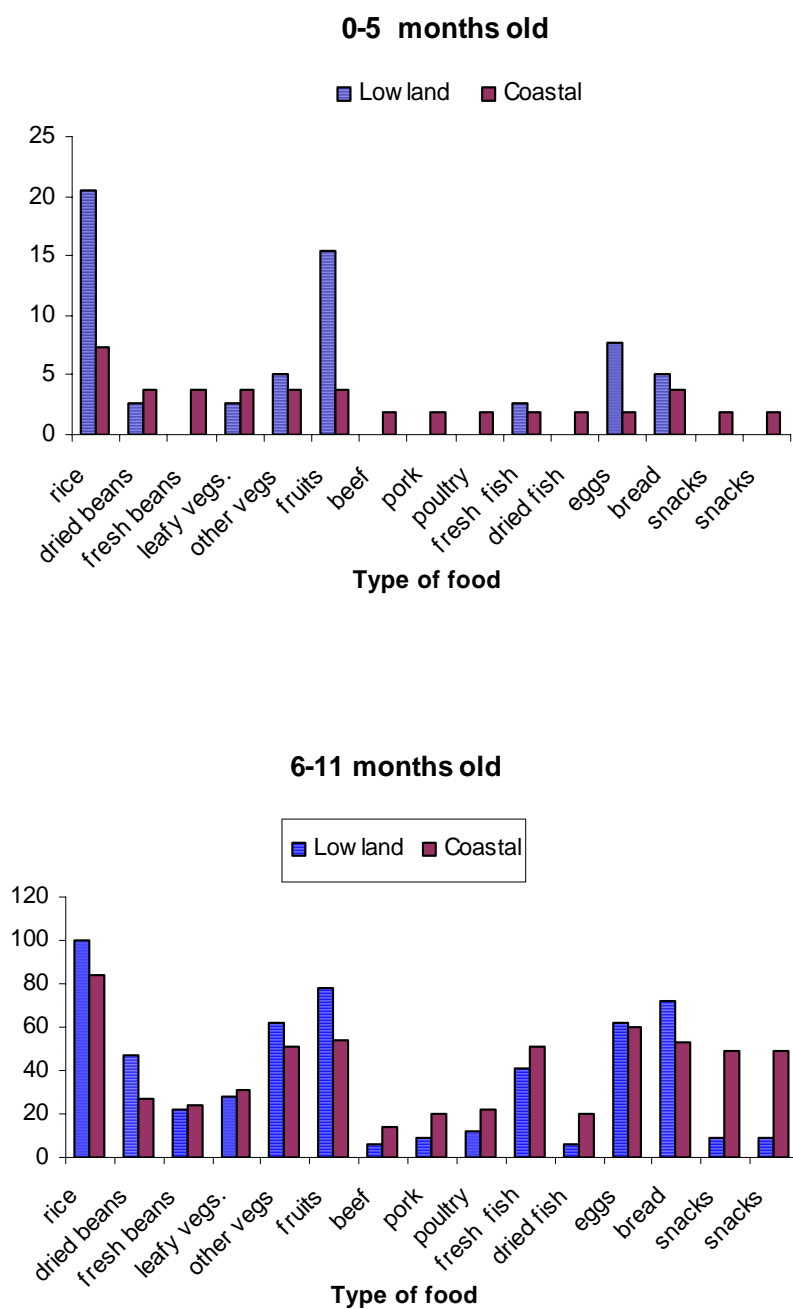
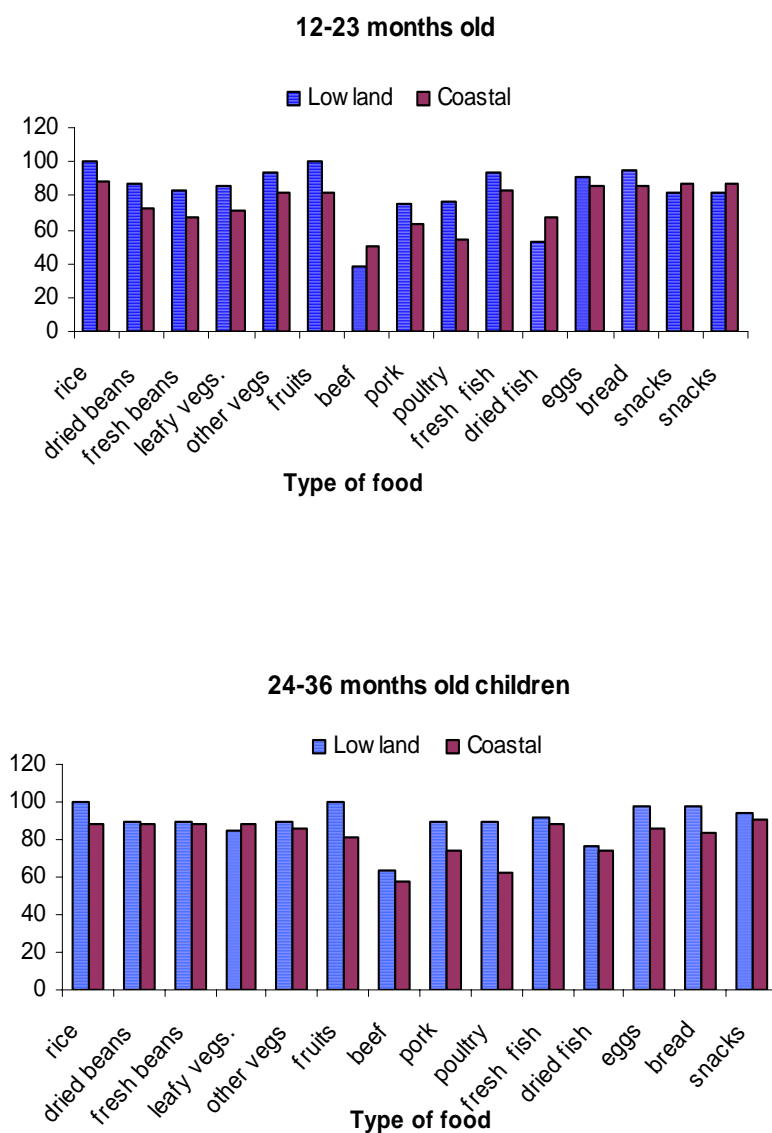


Figure 5.3 Food consumption pattern of index children (12 to 36 months) by ecological area



5.5 Child malnutrition and associated factors

Growth and the current nutritional status as measured by anthropometry (weight and height indices) are the most common indicators used to assess the physical well-being in children. Poor growth is a reflection of limited energy and nutrient availability or poor utilization of nutrients at the cellular level, while the prevalence and severity of infections increase food requirements (Monteiro et al., 1997; Martorell, 1994).

Mean weight (kg) and height (cm) by age of index children are presented in Figure 5.4 and 5.5 and in Appendix 5.5 and 5.6. The comparison with the international (WHO/NCHS) growth reference illustrates the deviation from normal growth. A better impression of growth patterns is obtained when weight and height are expressed in Z score (standard deviation scores) of the international NCHS reference. No deviation is shown as a horizontal line, equal or parallel to the reference. Increasingly downward trends from positive Z-score towards or crossing the horizontal line or from less negative to more negative Z-score indicate faltering growth. A trend in the opposite direction illustrates catch-up growth. The cut-off level for malnutrition is a minus 2 Z score for underweight (weight-for-age WAZ), for wasting (weight-for-height WHZ) and for stunting (height-for-age HAZ). The prevalence of underweight, stunting and wasting in children is presented in Table 5.18 and Figure 5.6. The growth patterns according to Z-scores are shown in Figure 5.7 for WAZ, HAZ and WHZ and in Appendix 5.10-5.12.

Lowland area

The lowest prevalence of malnutrition by the three indicators underweight, stunting and wasting was recorded among the youngest age-group 0-5 months (Figure 5.7). Yet, faltering growth in weight and length already starts at this early age. This resulted in a high prevalence of malnutrition in children, 6 to 36 months of age, e.g. 26.9% underweight, 19.9% stunting and 7.1% wasting (Table 5.18). The critical period extended as far as 15 to 18 months of age, after which growth stabilized (Figure 5.7). On average, the deterioration in WHZ did not reach the minus 2 Z score, and a relatively low percentage of children (7.1%) were indeed wasted (Table 5.18). Children adapted to the hostile environment by growing slower in height while maintaining an adequate weight for corresponding height. They were short but not lean.

Table 5. 18 Prevalence of underweight, stunting and wasting among index children (6 to 36 months old) by ecological area

Type of malnutrition*	Lowland (N=141)		Coastal (N=165)	
	N	%	N	%
Underweight	38	26.9	67	40.6
Stunted	28	19.9	45	27.3
Wasted	10	7.1	10	12.1

* For 0-5 months age group, only six children were found to be malnourished – one child was underweight in each area while four children were stunted in the coastal area.

Figure 5.4 Weight (kg) curve of index children (0-36 months) by age group and area

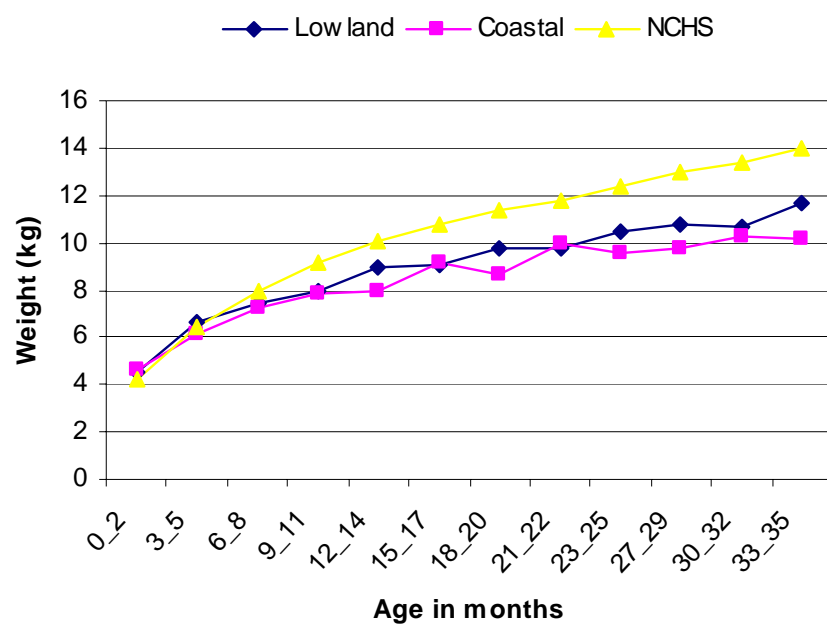


Figure 5.5 Height (cm) curve of index children (0-36 months) by age group and area

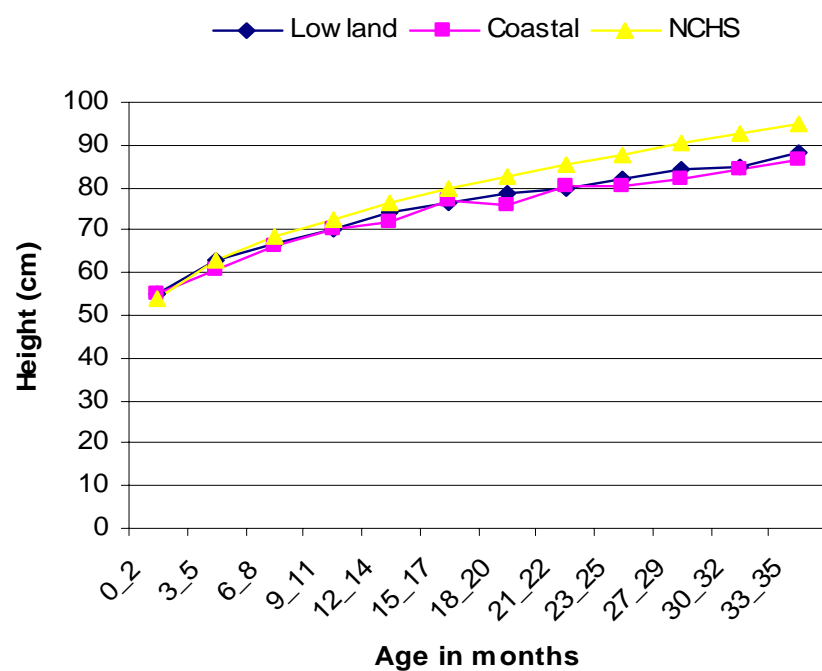


Figure 5.6 Prevalence of underweight, stunting and wasting among index children (0-36 months) by age group and area

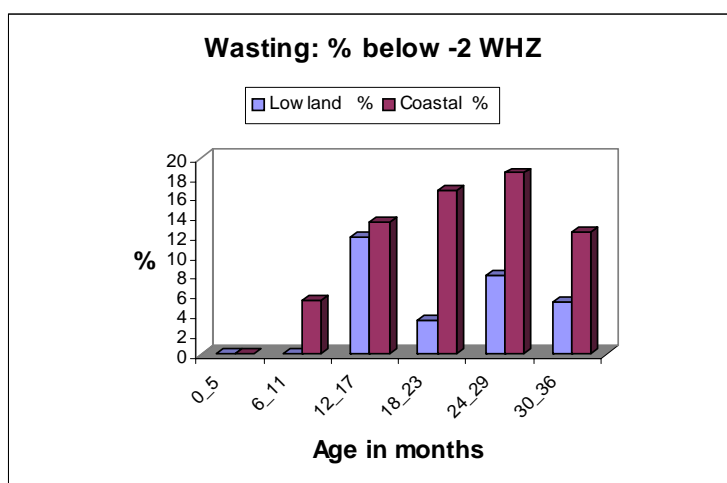
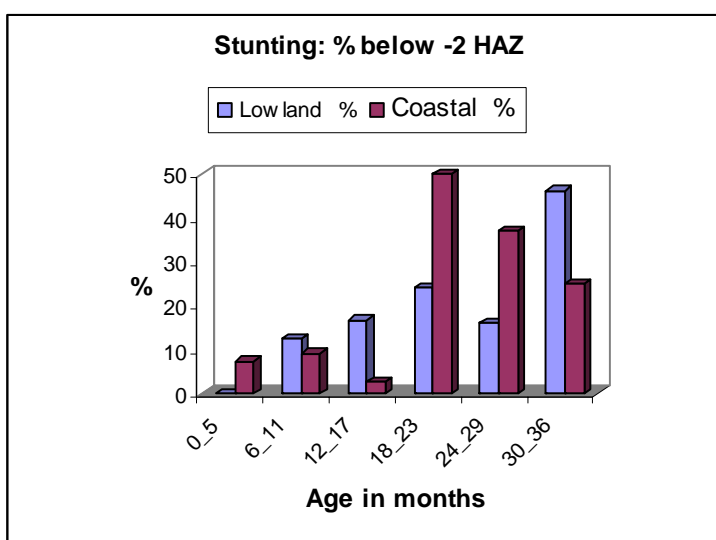
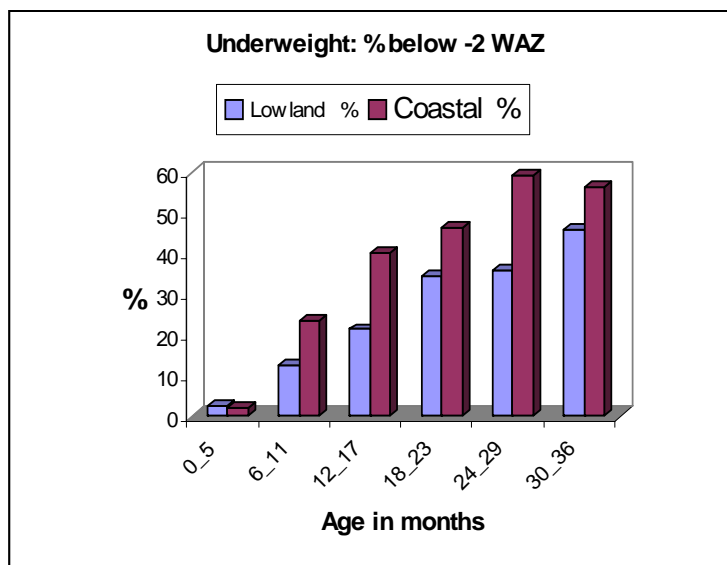
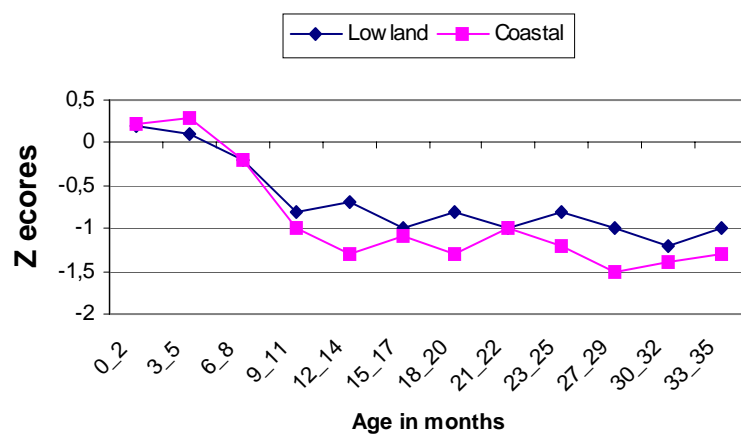
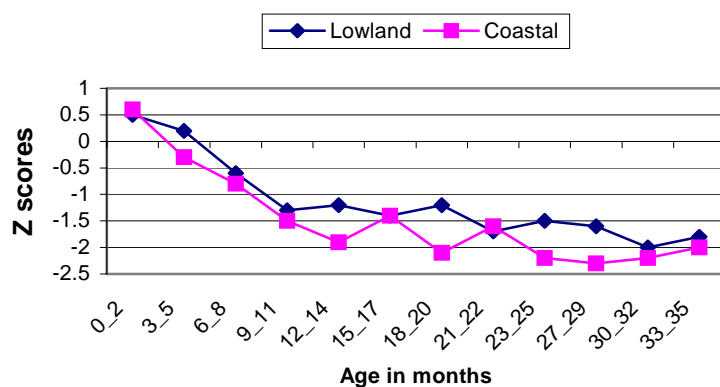
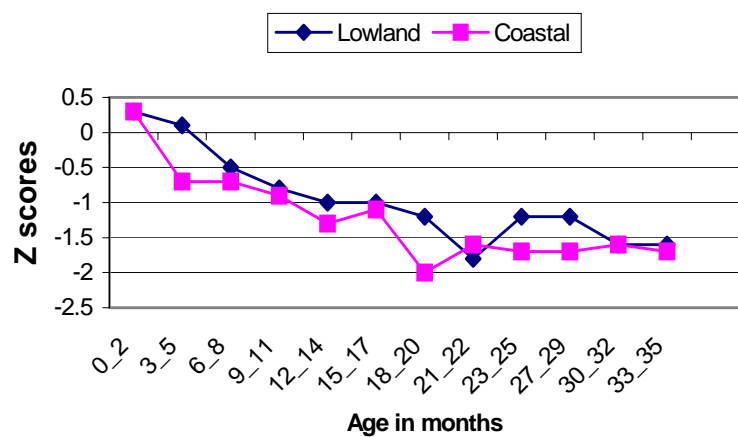


Figure 5.7 Weight-for-age (WAZ), height-for-age (HAZ) and weight-for-height (WHZ) of index children expressed in Z scores of NCHS by age group and area



Coastal area

The growth curves in the coastal households are comparable to those in the lowland area, but the deviation from the reference was far greater in the coastal area (Figures 5.4 and 5.5). There was 51 percent more underweight, 37 percent more stunting and 70 percent more wasting in the coastal area than in lowland (Table 5.18, Figure 5.6). In contrast to lowland children, faltering growth continued after 18 months of age, albeit at a slower rate (Figure 5.7). More important, the high prevalence of wasting indicates that slowing growth in length was not sufficient to cope with inadequate food intake relative to needs. Wasting is an indicator of synergism of malnutrition and morbidity. Children were not only short they were also emaciated.

5.6 Factors associated with child malnutrition

To identify the factors contributing to child malnutrition, a stepwise regression approach was followed to identify a subset of the independent variables associated with child malnutrition. A detail of the multiple regression analysis is presented in Appendix 13. Since the prevalence of malnutrition among infants 0 to 5 months of age is very low⁸ and the causes of malnutrition in this age group differ from those in the older children, the statistical analysis excluded the young infants.

Table 5.19 summarizes the variables associated with underweight (WAZ), stunting (HAZ) and wasting (WHZ) in children, 6 to 36 months old in the two ecological areas.

Lowland area

Underweight is an overall indicator of poor growth, which does not indicate whether the child is still undernourished at the time of measurement; neither does it indicate the duration of under nourishment. Wasting is the indicator of current under nutrition while stunting illustrates the continual exposure to too little food for the requirements.

None of the independent variables are significantly associated with wasting. In general, wasting is caused by a very low food intake, either due to lean periods or more commonly due to decreased intake during and after illness, and increased requirements due to illness. The fact that no determinants could be discerned can be attributed to a number of factors: (a) the survey method was too crude to quantify dietary intake and morbidity; (b) a structured interview did not capture the mothers' knowledge, attitude and practice, and (c) the population was too homogenous. Most likely all these factors have to be taken into consideration. More important is the absence of an association with food security indicators, suggesting that different processes operate for food security and child malnutrition. Age of the child, household size and breastfeeding are determinants of stunting. Age clearly indicates the vulnerability of young children, and is a worldwide observation. Household size can be a proxy of different boxes in the causal models (Figures 3.1 and 3.2), such as too many mouths to feed, overcrowding and a higher risk for infections; overburdened mothers, and thus, less time for childcare. Being breastfed appears to be a risk factor in age-group 6 to 36 months, which seem contradictory to common knowledge of the advantages of

⁸ Lowland = 2.6 percent underweight; coastal = 2 percent underweight and 7 percent stunting.

Table 5.19 Determinants of child malnutrition among index children aged 6 to 36 months by ecological area

Area, age groups and type of malnutrition	Determinants*
Lowland area	
Age > 6 months	
Underweight (WAZ)	Age of child Still breastfed
Stunting	Age of child Household size Still breastfed
Wasting	None of the variables were significant
Coastal villages	
Age > 6 months	
Underweight (WAZ)	Age of child Number of underfives (2 or more)
Stunted (HAZ)	Age of child Number of underfives
Wasting (WHZ)	Mother's age, Age of child, Still breastfed Income < food threshold Number of dependants (2 or more)

* Set of factors that significantly influence malnutrition among index children aged 6 to 36 months using stepwise regression analysis.

breastfeeding. What it illustrates is actually the weaning process. Mothers assume that breast milk is sufficient for the child and tend to give additional foods either too late or too little. It is again noteworthy that income below food or poverty threshold did not emerge as determinants.

Coastal area

Many more determinants of malnutrition emerged in the coastal area. Wasting is much more prevalent in this area. It is associated with mothers' age which in combination with number of dependents suggest that younger mothers having children too soon may be undernourished themselves and thereby less able to care for the child and/or to produce sufficient milk. Similar to the lowland area, being breastfed appears to be a risk factor. In contrast to the lowland area, there is a relation between food insecurity and wasting. This is likely due to the fact that the coastal households are not homogenous. An appreciable proportion of households falls within the extremes in per capita income thereby allowing contrasting of the ultra-poor and the better-off (Table 5.7).

5.7 Discussion

The UNICEF model can be used as a framework to explain the underlying factors of child malnutrition, e.g. the causal model for malnutrition (Figure 3.1) while the adapted IFAD model serves as the conceptual framework for the pathways of household food security (Figure 3.2). The present study attempted to take the subject one step further by looking at possible relationships between food security and malnutrition in two different ecological settings.

The prevalence and type of malnutrition as well as the timing and duration of growth faltering found among children 0 to 36 months of age in the present study are generally consistent with those reported for poor communities in developing countries (Gopaldas et al., 1988; Kusin et al., 1991; Adair et al., 1993; Devi and Geervani, 1994; Kolsteren et al., 1996; Rivera and Ruell, 1997; Saccalan et al., 1998; Garza and de Onis, 1999; Villavieja et al., 1999; Shrimpton et al., 2001). Results of the study also confirm reports that the prevalence of malnutrition - as measured by three indicators: underweight, stunting and wasting - is lowest amongst the youngest age group (0 to 5 months), probably due to their being able to satisfy their nutritional needs through breast milk. It also implies that birth weight and lactation are not compromised among poor mothers.

However, growth faltering does start in early infancy. Biologically, well-nourished mothers should be able to produce sufficient milk to support adequate growth in the first 5 months. According to UNICEF's causal model, the three main causes of growth retardation and malnutrition among toddlers are inadequate diet, morbidity and care. Food intakes were not measured but the child feeding patterns suggest that young children are prioritized. The quality of their diets is better than the habitual diets of households, particularly among coastal households. Could food insecurity be a cause? Table 5.16a and b show that it is unlikely for the lowland area, but quite probable for the coastal area. No data on morbidity and care were collected. The contribution of morbidity to child malnutrition can only be assumed from the information on living conditions (housing, water supply and sanitation). They were much better than among lowland households compared to households in the coastal area suggesting that morbidity is a more important determinant of malnutrition (especially wasting) in coastal villages. The case studies will elucidate the significance of care in the causal linkages.

While the onset of malnutrition is similar in lowland and coastal villages, the duration and progression of impaired growth are shorter and less severe in the lowland area than in the coastal area. Coastal children are also wasted. Besides, HAZ is lower in the coastal area from as early as 3 to 5 months and decreased steadily until 36 months. On the other hand, WHZ is comparable to that in the lowland area till the end of infancy, after which it plunged below the level of the lowland area at most measurement points. As mentioned earlier, younger children in lowland households adjusted to the hostile environment by becoming short but with adequate weight-for-length, while those in coastal households are not only shorter (stunted) but also leaner (wasted).

This different picture of magnitude and severity of stunting and wasting between the two areas appears to validate the conceptual framework for food security (Figure 3.2). In the lowland households, none of the independent variables are significantly associated with food insecurity

or wasting. This is in contrast to many studies that identified income as an important determinant (Norhayati et al., 1997; Devi and Geervani, 1994). There may be income, but it is not spent on food. There may be food but it is not nutritious food as shown by the preference for bread and snacks. In addition, income is mainly cash income earned by the husband or men who are known to spend the available money on large expenditures, such as school fees, repair of the house, household appliances, not to mention their expenditures on vices and gambling. It illustrates the competing demands of households, because even among the better-off an appreciable proportion perceived food insecurity as a problem. As in other studies, the nutritional status is not solely determined by dietary intake but also by factors associated with care and environmental sanitation (Pacey and Payne, 1985; Beghin et al., 1988; UNICEF, 1990; Haddad et al., 1996). This observation suggests that livelihood security takes precedence over food security. As in other studies, the nutritional status is not solely determined by dietary intake but also by factors associated with care and environmental sanitation (Pacey and Payne, 1985; Beghin et al., 1988; UNICEF, 1990; Haddad et al., 1996).

In contrast to lowland households, in the coastal area the expected determinants of food insecurity emerged. The link between income and food security can be largely explained by the fact that income is not in cash but mainly own production in-kind (which was monetized for the analysis). Findings of this study confirm results from other surveys in the Philippines and the PPEC survey that the poor are mainly engaged in the primary sector (food production) and that they tend to have multiple jobs as part of their coping mechanisms. They are usually simultaneously engaged in farming, livestock raising, fishing and forestry (Intal, 1994). Despite their multiple jobs, they remain poor and food insecure because the jobs are marginal and not remunerative enough. Subsequently habitual diets were of poor quality. Furthermore, also more direct determinants of wasting were identified. Yet, wasting is also associated with mothers' age, which in combination with a high number of dependents suggest that younger mothers having more young children may also be undernourished themselves. The poor nutritional and health status of mothers have serious implications for their ability to provide appropriate care for the child and or to produce sufficient milk for the child's needs.

In summary, food insecurity and child malnutrition are quite common but the relationship between the two differs according to ecological setting, which in turn is differentiated by sources of income, food and poverty thresholds, living conditions and assets and habitual diets. In the wage-earning households in the lowland area, income and food availability is less related to child malnutrition. Late introduction of complementary foods or too little additional foods of poor quality to breastfed infants appeared to be more important contributing factors to underweight and wasting. In the coastal area, where household income is equal to food produced, food insecurity and the children's malnutrition. Hence, the questions remain why lowland households do not spend more of their income on food and how coastal households allocate the little resources available. The qualitative data from case studies will be used to identify the processes involved in decision-making and priority setting with regard to resource allocation. The next chapter will elucidate people's perception on food security.

CHAPTER 6

HOUSEHOLD FOOD SECURITY: BEYOND HOUSEHOLD RESOURCES

This chapter explores the Filipino men and women's ideas about food security. It also describes the characteristics of food insecure households from the perspective of the 'insiders'. Individual households are examined to elucidate the processes involved in decision-making and priority setting in order to understand the household food security problem.

Traditionally, an assessment of food security relies on standardized quantitative measures such as those described in Chapter 5. While such aggregate data are important for policy purposes, they do not necessarily correspond with the people's perception of food needs. Even less do they elucidate the process of decision-making and priority setting if resources are scarce. The most suitable way of understanding the problem of food security requires an approach beyond a quantitative assessment, based on a household's resources. Furthermore, food insecurity varies across households and communities, its contours and dimensions being contingent on time, place and social group.

Focus group discussions (FGD), participant observation, key informants' reports and case studies were used to probe local perceptions of the characteristics of food insecure households. Men and women were asked to identify households at risk of food insecurity according to their local standards or perceptions. These characteristics can serve as emic, or locally defined indicators of food security. The FGDs were conducted separately with men and women to determine gender-differentiated perception of risk and ideas of food security. Participant observations and free interviews were used for the case households. For the case study method the team of researchers utilized a checklist of guiding questions.

6.1 Characteristics of food insecure households as defined by the respondents

Triangulation and snow-balling of information among various qualitative methods yielded indicators of household insecurity as the respondents see them. Each indicator mentioned by respondents is discussed in this chapter. The indicators are summarized in Table 6.1 and 6.2.

Employment and income

Households who do not experience food shortage have better-paying jobs and better income compared to poor ones like us; my income from fishing is very dependent on the amount of fish caught. - A fisherman from Albura.

Table 6.1 Characteristics of food insecure households in the eyes of women in the lowland and coastal area

Particulars
Lowland area
<ul style="list-style-type: none"> • Dilapidated houses; no assets • Households with both husband and wife unemployed • mothers with young children work outdoors for wages • cannot send young children to school • children are sickly or malnourished • buying staple just before cooking time • substituting cooked rice with rice porridge (to stretch consumption) • both parents have vices or gambles regularly
Coastal area
<ul style="list-style-type: none"> • barely any assets or household appliances • no regular income • distressed sales or mortgage of valued assets, such as fishing gear or jewelry • taking small loans especially from informal sources (neighbors, relatives and friends) • substituting preferred staple (rice) with banana and/or root crops • husband gambles or drinks alcohol regularly

Table 6.2 Characteristics of food insecure households in the eyes of men in the lowland and coastal area

Particulars
Lowland area
<ul style="list-style-type: none"> • no permanent job • large household size with few income earners • main income earner suffering from physical disabilities or chronic illness • frequent borrowing from stores and from money lenders • both parents have vices • father is lazy
Coastal area
<ul style="list-style-type: none"> • dilapidated houses • no regular income • working as hired labor when not fishing • no assets to dispose or sell • children have no proper clothing • skinny and sickly children • unable to send young children to school • substituting preferred staple (rice) with banana and/or root crops • lazy husband

In lowland and coastal areas, both men and women identified unemployment and low income as two important characteristics of food insecure households. They mentioned that landless families (include both landless agricultural workers and subsistence fishermen) are uncertain, living day-by-day, not knowing whether they will find work for that day. Breadwinners in

these households could not think of sitting at home for a single day because if they did not earn money they would have no food to eat the next day. To ensure a daily income, landless workers will accept different kinds of jobs. They are usually simultaneously engaged in crop farming, fishing, and forestry (Intal, 1994). They also work in construction, receiving the lowest pay for unskilled jobs; menial jobs as digging and carrying are very poorly paid.

In both areas, the respondents identified the wage earners with no other source of income as often food insecure. In lowland areas, the food security of households followed a seasonal pattern. The period right after harvest especially during the dry season (when the harvest of paddy rice is usually bountiful) is a time of relative food security. Conversely, the months preceding the harvest are relatively lean. Similarly, household food security in coastal areas depends on the fishing season, which is strongly influenced by the weather conditions.

Productive assets

Although unemployment and poor income were the most commonly cited reasons for food insecurity, interviews and observations revealed that disposal of livestock and other valued assets are good indicators of risks, both in lowland and coastal areas. The most common asset in this category was small livestock, e.g. swine, goat, and poultry, which a number of households acquired through the *iwi* system. The researcher observed that the local custom of *iwi* or share-rearing¹ still prevails in both study areas. Rearing or raising of animals is also considered a form of savings because animals can be sold easily or mortgaged. When households sell their livestock, they do so because they have no other choice. For example, a woman from a coastal case household got a cash advance loan of P600.00 from a neighbor as equivalent selling price of one gilt for her pregnant sow. This is far lower than the prevailing market price of a piglet of P1,000. The money was used to purchase medicine for her ill son and several kilos of corn. She also paid creditors who were already demanding their money and who did not provide new credit as in the case of a *sari-sari*² shopkeeper. While it is a common knowledge that there is hardly any profit for raising one or two swine, people continue to do so as a form of security.

Sale of assets and mortgages

Women in both locations cited mortgaging and or selling of jewelry, household appliances, farm tools and fishing gears as indicators of continuing household food insecurity. Although jewelry adds to a woman's or her household's status, in case of crisis jewelry is often sold or mortgaged. According to some men, when the few valuable assets are sold, e.g. farm tools and fishing gears, this indicate the growing distress condition of the household. For example, when the husband of one of the cases in Leyte lost his job unexpectedly his wife was forced to sell her golden ring as well as two sheets of new-galvanized iron (intended for the leaking roof). Mortgaging labor is also popular among food insecure households. Mortgaging of labor is payment in advance for services yet to be rendered (Carino, 1989). It is also viewed as payment in-kind. This practice was commonly observed between an employer and trusted workers.

¹ This system allows the household to acquire an animal by taking care of another household's animal at least for one year. After the animal had offspring, the caretaker is given one goat or two piglets. Villagers reported that swine and goats were assets that could be sold easily whenever money is needed for some big expenses or to repay a debt, not to mention other emergency expenses.

² Small variety shop that sells food and non-food commodities, which are commonly needed by the villagers.

Women's work

Local customs dictate that mothers should stay home with their children, particularly if they are still breastfed. Women working outside the home are thus a sensitive indicator of the necessity to augment the income of husbands. One man commented that if his income were enough for the family, he would not allow his wife to work. Women participants in the FGD cited their own experiences of having to work and leave their young children under the care of elder siblings or their in-laws. In Laguna, for example, an ambulant vendor of native snacks and delicacies, leaves her two young children in her mother-in-law's care while she is away vending. In return for tending the children, she has to give her in-laws some snacks and money. Another woman, Mely, was a helper in a small eatery in the nearby town. Her father-in-law was the only person at home and too old to take care of the children. As a consequence, her children often wandered in the village while she was away for work. Sometimes, she would not send her eleven year-old daughter to school to let her take care of the younger siblings.

In the coastal area, a woman claimed that she could not afford to rest after fish vending because she had to immediately prepare lunch. She usually comes home from fish vending between 10:00-11:00 in the morning and her children, who usually have little food during breakfast, are already hungry. She is always worried of the kind of care her five-months-old baby will receive from her 13-year old son.

From personal observation, it could be noted that there is generally poor childcare in coastal areas, particularly for households with working mothers. In these households, sibling care-taking is very common. Childcare by siblings becomes a real problem when they are young (under twelve years of age). These children are too young to physically care for another child, and they are also inexperienced in childcare. In the lowland area, the situation is much better because members of the extended family, such as the grandmother, usually take care of infants and toddlers. This is not surprising since grandmothers in many societies are the most frequent caregivers and providers for support of children when mothers work outside the home (Van Esterik, 1995).

Family celebrations and fiestas

None of the men and women in the FGDs mentioned the often extravagant celebrations of holidays, birthdays, and fiestas as a characteristic of food insecure households. This may be attributed to the fact that almost everybody considers them social or religious obligations.

In Leyte, for example, a woman in the FGD recalled that her family had to eat corn and dried fish for several days after the village fiesta to stretch the money left. She was also ashamed to talk with their *Compadre*³ who is the owner of their boat, for their failure to remit the two-month amortization. Her husband had used the money to celebrate the fiesta with friends and relatives.

In Laguna, Clarita's husband took a P2,000.- loan from the credit cooperative of his employer as capital for food vending during the fiesta, the next month. She earned P1,800.- but spent

³ Relations that are formalized between kin and non-kin when one of the principal actors stands as sponsor for baptism, confirmation and wedding ceremonies. A female sponsor is called *comadre*.

P1,000.- during the fiesta food. Two days after the fiesta, instead of paying P2,300.- for loan and interest, she only paid P1,600.-. She used the remaining money to celebrate her son's birthday. As a result she had to do with her husband's lower take-home pay as the loan was automatically deducted from his salary.

Vices

It is interesting to note that in the lowland area, both men and women participants in the FGD identified gambling and/or drinking as characteristics of food insecure households. In the coastal area only the women mentioned these vices, although many couples there indulge in gambling, such as *hueteng*⁴, *jai-alai* and cockfighting. A woman in Leyte said that she almost abandoned her husband when he lost his ten days' wage on a cockfight. Another woman in Laguna mentioned that it was only after the harvest that she noticed that her husband had taken a loan for gambling. Loans especially taken from usurers become a big burden on the household's financial condition because of the high interest rate. Several male key informants remarked to their defense that gambling, particularly betting, is perceived as the only way to get a large lump sum of money.

However, the researcher also observed that women in both areas also gamble and play bingo and card games, even when realizing that they neglect their children by doing so. These women also have little time for cleaning and food preparation. As a result, these women would often purchase cooked food instead of cooking it themselves.

Several women in both areas also claimed that because of their gambling the men usually take loans without the knowledge of their wives. Loans especially taken from usurers become a big financial burden for the household because of the high interest rate. Failure to pay these loans back in time has negative consequences on a household's resources and on its food security as well.

Loans

The villagers did not identify a small loan as an indicator of food insecurity, but they did mention frequent and simultaneous loans. Households often take a new loan to pay back outstanding loans. In Leyte, six of the eight families interviewed for the life history were heavily indebted. One of them mentioned said that she and her husband had several loans. In fact, she only remembered the most recent ones, like the one from a *sari-sari* store, a merchant, a neighbor, a moneylender, and her employer. When asked how she will repay the loan, she said they would have to borrow again to repay their other loans.

The situation of multiple debts was commonplace, not only in Leyte but in Laguna as well, where the strategy of juggling small debts from neighbors, shopkeepers, friends and relatives was a remarkably robust finding among the food insecure. Deep in debt, food insecure households take small loans (20-25 pesos) to purchase 1 kilo rice, enough for one meal.

⁴ A kind of lottery game where a person bets on two numbers between 1 and 37. The bet can range from P1-200. The winning pot ranges from P350 to P40,000 depending on the number of people who bet on the winning combination. To determine the winning combination, small wooden numbered balls are placed inside a rattan container. One ball at a time is rolled out the container for each of the two numbers representing the winning combination. *Jueteng* is derived from the word *hue teng*; *hue* for flowers and *eng* or to bet. *Jueteng* or similar forms of the game have been around since the Spanish era.

'*Utang sa palay*' or cash loan to be repaid in-kind at the rice harvest, is a common practice in rice-producing villages. For example, an agricultural laborer claimed that before the harvesting period, when off-farm employment is not available, he had several '*utang sa palay*' or cash loans from farm owners where he had *gapasin*⁵. He said he had an easy access to this kind of loan because most farm owners provided this loan for two reasons: (1) there is an assurance of payment after one month, immediately after the harvesting of rice, and (2) the 'hidden interest'⁶ is substantial, between 40-50 percent. Last dry season (March-May 1999), he had 15 *cavans*⁷ harvester's share and used eight *cavans* to pay his debts to three farm owners.

Another common reason for taking a loan is illness. For example, Rosa Dunsay (one of the participants in the FGD) took out a loan for P1,000 when her child was hospitalized. After six months, the interest and the principal amounted to P2,323. She was able to pay back the loan by selling the welding machine of her husband. As a result, her husband had to seek another job because he could no longer operate his small repair shop. Loans for gambling are usually kept secret by men from their wives. Once the wives discover these loans, they become a source of conflict and disharmony between couples. From the information gathered, it became clear that debt is a web from which it is difficult to extricate oneself.

Staple food

Storing of staple (rice in lowland and corn in the coastal area) for most poor households proved to be (no longer) feasible. Results of the FGDs and observations provided consistent evidence that purchasing of staples on a daily basis is a strong indicator of food insecurity. Women claimed that traditionally, households would aim to stock rice that would last for months. However, in neither area could poor people afford to buy enough food to last longer because of the daily nature of their income. In Laguna, food insecure households bought the cheaper broken rice, or rice which has been stored for a long time. When households did not have enough of even the inferior rice they often resorted to consumption of rice gruel. In Leyte, consumption of banana and root crops (e.g. cassava, sweet potatoes, yam and others) was considered a sign of stress. In normal times, these foods are cooked or eaten as snacks. Likewise, the consumption of fermented salted fish instead of fresh fish as viand, is another sign that the household is in great distress. Indeed, buying poor quality staples, substitution of the preferred staple, or changing the preparation of the staple, such as not boiling it but turning it into porridge or gruel, are other indicators of food insecurity.

Morbidity and malnutrition

Except for men in lowland households, the participants in the FGDs identified households with frequently sick and malnourished children as being food insecure. When asked why

⁵ Refers to the weeding operations done by landless workers. Under this arrangement, whoever does the weeding is given exclusive right to harvest the same plot and receives a share from the harvest. The share is usually 1/6 if the crop is also threshed and cleaned by the harvester. If not, 1/7 sharing will be applied (Ledesma, 1982). Although Sandoval (1995) refers to the system as *hunusan* from the word *hunun* (share), the sharing arrangement is the same. In this thesis the term *hunusan* will be used.

⁶ "Hidden interest" means that there is no actual interest charge on cash loans but integrated into the lower value or price of one *cavan* of palay. For example, for every P200 loan, the borrower pays one *cavan* of palay during harvest time. The selling price of one *cavan* of palay during harvest time is usually P330 to P350.

⁷ A unit of measurement of rice where one *cavan* has a capacity of 45-50 kilograms.

these children were malnourished, they mentioned three reasons: (1) they did not get enough food; (2) they were prone to illness and (3) they were not taken care of by their mothers. In the coastal area, the key informants also cited poor living conditions as one of the factors that contribute to illness of young children.

The men and women cited colds, coughs, fever, flue and diarrhea as the most common type of illnesses among young children. According to the midwife, parasitism is also prevalent among young children due to poor environmental conditions. It has been observed that even in households with toilets, some members, including the elder ones, defecate along the seashore, especially at night.

Housing condition and environmental sanitation

Although the men and women did not consider poor housing conditions as an indicator of food insecurity, the researchers observed that the poor who are also food insecure have poor living conditions. For example, in the coastal area only one of the twenty case households has a concrete and iron roofing type of housing. The dilapidated houses usually have only two improvised rooms, which are divided with walling made of either pleated bamboo or coconut leaves or pieces of light wood panel or plastic sacks. At the back of the house is a makeshift kitchen with a firewood-cooking stove. In addition, food insecure households have also few pieces of furniture. They have old wooden benches or chairs, a dilapidated wooden or slated bamboo dining table and old cooking and eating utensils. This condition was also observed in several poor case households in the lowland area.

Also, while the majority of the households in the coastal area have a safe source of drinking water, such as an artesian well and jetmatic pump, these sources do not guarantee safe and clean drinking water because of poor water storage facilities. Most poor households use uncovered plastic containers and glass bottles for storing drinking water. While there is a water pipe system, several households complained that water coming from the pipe was not potable due to high presence of colloidal particles. Hence, households are compelled to buy gallons of water for drinking⁸, which is an additional burden on the meager household budget. The researcher's personal observations confirmed this situation. The deficiencies in the potable water supply and the sanitary waste disposal can result in illness, such as parasitism and diarrhea.

Laziness

In both areas only men reported laziness of the husband in the list of indicators. 'There is always work if you are not choosy'. According to the local leaders these lazy men are also the gamblers and drunkards. They are not only a burden to the family but also to the community, as they often become violent.

Summary of the indicators mentioned by the respondents

In summary, villagers (men and women) in lowland and coastal areas identified households with poor housing, few assets, and undernourished, sickly and poorly clothed children as food insecure. The main causes mentioned were irregular income or unemployment: 'our food

⁸ One five-gallon container of drinking water costs five pesos.

security for a particular day depends on whether we got work on that day'. As a result, mothers work outside the home even when they have young children, assets are being sold or mortgaged or loans negotiated. If these actions are insufficient to cover basic needs, children are taken from school and finally the households economize on food. Hungry-season staples, such as banana and root crops are substituting rice.

The nature of employment and income appeared to be very important in determining the food security status of the households. Those who do not have secure jobs are engaged in informal, casual and daily wage labor with no security and low earning. They are also net food purchasers, so their purchasing capacity is highly affected by prevailing market prices. The lack of regular off-farm work during the lean seasons was also often exacerbated by increased morbidity among children. Hence, they face greater risk of food insecurity in this period.

The above indicators of food insecurity and the evidence for each indicator can help to explain the complexity of the problem of food security. The interlocking dimensions of food insecurity became evident in people's ideas about food insecure households. Understanding the characteristics of food insecure households is important for interpreting standard indicators of food stress. Relevant questions are: does a particular pattern of migration signifies a normal or abnormal activity, is gambling the cause or the consequence of poverty and food insecurity? The evidence presented describes the pattern of vulnerability of poor households. The ability to mitigate this vulnerability depends on the households' ability to adapt. What households do to overcome food insecurity will be pictured in the cases described in Chapter 7.

6.2 People's perceptions about food security

The scientific concept of food security does not necessarily tally with people's perception of it. People's experience in a continuously changing environment shapes up their understanding and interpretation of food security. While the first section discusses the characteristics of food insecure households, this section explores men and women's perceptions about food security.

An overview of the perceptions of women and men about household food security in the lowland and coastal area is presented in Tables 6.3-6.4. As can be seen from the table there are gender differences as well as similarities in these perceptions. Local differences can also be noted.

Table 6.3 Women and men's perceptions of food security in the lowland area

Particulars
Women's perceptions
<ul style="list-style-type: none"> • having three meals a day • having sufficient budget to buy food for all members • stored rice available • having nutritious food for children • able to budget properly the husband's income • having backyard garden and extra income from raising animals like swine and poultry • having cash savings
Men's perceptions
<ul style="list-style-type: none"> • having permanent job • having a regular income • adequate harvest of paddy rice; can pay debts and some paddy rice stored for consumption • having adequate food everyday (with adequate rice and viand such as fish and vegetables) • high wages • having some assets, like animals and land

Table 6.4 Women and men's perceptions of food security in the coastal area

Particulars
Women's perceptions
<ul style="list-style-type: none"> • there is always available rice even without viand • having three meals a day • meals rice and fish everyday • husband with permanent job and income so the household can eat daily • proper budgeting or stretching income • having plenty of fish catch • having a 'full belly' after the meal
Men's perceptions
<ul style="list-style-type: none"> • having plenty of fish catch so that there will be more income • having another job when not fishing • having a permanent job • able to eat three meals a day • meals with rice or corn and fish and extra money for miscellaneous expense • enough money to buy foods and clothes for children • higher prices for fish

Women's perceptions of household food security

In both areas, women associate food security with food availability or 'having three meals a day' and 'having adequate income or budget to buy food'. For example, women revealed that as long as their households have food for every meal, regardless of the kind of meal, they are food secure.

Remarks of mothers from the coastal and lowland areas on the subject yielded interesting information about their experience and perceptions:

The most difficult part of mothering is when there is not food to feed my children during mealtimes. I almost go mad wondering what they are going to eat. So, when we have three meals a day, everybody is happy. My children are not choosy because they are accustomed to a simple meal, rice and fish or corn or fish. Sometimes I also cook vegetables with dried fish. - Mother from a coastal area.

I have five young children and our daily food expenses amount to about P100.00 a day. This is already a very tight budget for food. So my husband should earn more than P100.00 per day because we have other expenses such laundry soap, kerosene, school allowance for the children, etc. If my husband gives me less than P100.00, I am in trouble. Given the budget constraints, I have to think of much cheaper food to buy so that everybody can eat. For instance, I just serve my children with instant noodles for breakfast. Instant noodles are not only cheap, they are also easy to prepare. - Mother from a lowland area.

Women, as ‘household managers’ and ‘purse keepers’ are responsible for food purchases. As a consequence, they carry the burden of stretching the budgets when the household income is insufficient. Hence, it is not surprising that some women in the coastal area associate food security with ‘wise use of money’.

Storage of rice is central to women's idea of food security in the lowland area. Women feel secure if adequate stocks of rice are stored. The remark of a poor woman in the coastal area illustrates this idea:

Whenever I have money, I immediately buy several kilos of rice and keep it in our storage can. As soon as I can touch the bottom of the container, I feel uncomfortable. If my husband did not give me new money, this could mean borrowing rice or corn from our neighbor or serving rice porridge to my family. As long as we have a stock of rice, I am happy, even if there is no decent viand in our meal.

Other women have a broader perspective of food security. They said that the available food must be adequate and nutritious for all members of the family. Adequate food means that each member of the household gets enough food, while ‘nutritious food’ is having vegetable and fish and sometimes fruit.

Usually, the household members eat together. The elder members help themselves to whatever is put on the table (if they own one) or on the floor. The mother usually serves the young children their food, a common practice that helps to ensure proper sharing of food within the household. Children are encouraged to eat on time because this is ‘important for their health’.

Women also believe that having additional sources of income like backyard gardening and animal husbandry, improves the food supply of the household. The comment of a mother in Laguna indicates the potential benefits from these activities.

From our garden, we can eat different types of vegetables, without having to buy them. So, we are not only saving our money but we have more variety of foods in our diet. The money that we generate from selling of swine, we can use for the school fees and other family expenses.

In both types of research areas, households also invested in items that could be liquidated rapidly and without trouble, the most common asset in this category being small livestock like swine, goat and poultry. As mentioned earlier, the local custom of *iwi* or share rearing allows a household to acquire an animal by taking care of another household's animal for at least one year. After the animal has offspring, the tender receives one offspring in the case of goat and two piglets in the case of swine. These animals can be sold or mortgaged and, hence, used to mitigate an impending food crisis.

It is interesting to note that some women associate food security with having a 'full belly'.

Our hunger is appeased when our bellies are full, even if our dish is very simple, like dried fish or ginamos⁹.

Men's perceptions of household food security

In both areas, the men participating in the FGDs claimed that having a permanent job leads to better income and access to food. They expressed that their food supply is regularly affected by the seasonal nature of agriculture and fishery. One man wanted to stop fishing because his meager income could no longer support his family. However, he did not succeed in getting off-farm and off-fishing jobs, which became scarcer in their community. He believes that access to dependable wage labor is critical to the food security of his household, saying: "If only I had others skills, maybe I could easily look for a better-paying job".

For fishermen, having plenty of fish catch means having a higher income, more food, better housing conditions and good education for their children. This could also mean some savings (when there is enough money left) for the future. Although they also understand that having abundant fish catch leads to lower prices of fish, the large volume of fish catch can compensate for this. Most men who participated in the FGDs expressed concern about their livelihood due to continuing decline in fish catches. This situation was associated with El Niño and the destruction of marine resources due to water pollution and over-fishing. This observation is consistent with the finding of Sajise and team members (1992) who noted a productivity decline of the marine and coastal ecosystem brought about by the factors mentioned earlier. In addition, the regular *habagat* between the months of August to October and during *nagbara*¹⁰ pose regular threats to household food security. In these periods, the fishermen have practically no income because of the suspension of fishing operations because bad weather and the regular necessary repair and maintenance of fishing boats and nets. Hence, for households whose livelihood is dependent on fishing, food security largely depends on the fishing season.

⁹ A fish paste made from small salted fish.

¹⁰ The period when fishing operations is temporarily suspended for the annual necessary repair and maintenance of fishing boats and nets.

In lowland areas, bountiful harvest of paddy rice for farmers and agricultural laborers means higher incomes, increasing ability to pay debts and reserve or store more paddy rice for consumption. Harvest is also the time to reciprocate with relatives and friends who extended support during previous seasons of poor harvest due to El Niño and La Niña. In coastal areas, La Niña was not cited as problem that affected livelihood. This is probably because Leyte is situated in a region where rainfall is distributed throughout the year with the peak in rainfall occurring between August and November.

An agricultural worker said that because of the seasonality of the agricultural cycle, their food security status also followed a seasonal pattern. Several waged workers who participated in the discussion agreed that the period immediately after harvest, especially during the dry season (when paddy rice harvest is usually bountiful), was a time of relative food security. They did not have to look for jobs because there is abundant work in the village at that time. Sometimes they have to harvest or thresh paddy rice in the evening to earn additional money. However, in doing so their bodies get tired, and they must also protect their health to ensure future income. Conversely, the months preceding the harvest are relatively lean.

The perceptions of men and women about food security encapsulate several core concepts of food security. These include availability, and security. As can be gleaned from the responses in the FGDs, the women - as homemakers, regardless of the ecological setting - indicate that they have a broader perspective on food security. The saying that 'as long as you can eat three meals a day and have rice in store', indicates the importance of food being available at all times in people's ideas about food security. Some women also have ideas on the sufficiency of available food for the household's members, which are most relevant, particularly from a nutrition point of view. These ideas are parallel with some definitions of food security (UN, 1975; UNICEF, 1990, Eide, 1990). The importance of adequacy (the household's members getting enough nutritious food) in the ideas of some women illustrates the overlap between food and nutrition security, an observation that is consistent with some literature (Swaminathan, 1986; Oshaug, 1992; 1994).

It is interesting to note that the importance of household resource management, particularly regarding money, was fully borne out by the responses of women. This can be explained by the role women play in the household, which requires them to manage the household's scarce resources properly by economizing and budgeting. In the household women are involved in food production, food preparation and childcare, for which they need resources (Jaffry, 2000; Niehof, 1999b; ACC-SCN, 1990; Brown et al., 1995; Quisumbing et al., 1995; Moser, 1993).

In general, people's perceptions and ideas are affected by their condition in life (Ardales and David, 1986). In particular, their experiences in securing a livelihood shape their ideas about food security. Compared to women, the men's perceptions about household food security revolve more around food availability through stable food production and a permanent source of income. To men, food security is perceived in terms of economic status and one's living environment. For instance, whereas, fishermen link food security to having plenty of fish catch, farmers link it to bountiful harvest of paddy rice, and skilled workers to high wages and low market prices of food. This indicates that food security hinges on the type and the nature of a household livelihood activity. The households' ability to generate resources from their livelihoods will determine what they will own, what they will produce, what they will trade or exchange, and finally what they will consume. While adequate livelihood security is a

precondition for economic security, the presence of the latter does not automatically lead to household food security. A situation may exist where livelihood is sufficient for food, but the misallocation of resources to non-essential expenditures may jeopardize food security. The three cases below will elucidate the households' experience with food security.

6.3 The struggle of women

The following three cases will show how household food security relates to power structures and priority settings within households. To protect the privacy of the individuals concerned, all names have been changed.

Case 6.1 The enterprising Esmeralda

Esmeralda Bernabe, or Esmy as her friends and neighbors call her, was born and raised in Santa Cruz, Laguna. Most of the people in the neighborhood know her because every morning and afternoon, she vends native snacks and delicacies around the village. The eldest among five siblings, she was 15 years old when her mother died. She recalled that one year after her mother died, she already had a stepmother who was also a market vendor, just like her mother. She remembered that since she was seven years, she had already been helping her mother vending. Before going to school, she used to carry a basket full of vegetables to the town market for her mother to sell. At the age of ten, she was vending vegetables on Saturdays and Sundays in the nearby village. After vending she would take care of her younger brother and sisters.

By early puberty, up to the time she got married, she had been rendering services, first as a housemaid, a waitress, and later on as a saleswoman in a grocery. Her father and stepmother would look for a possible employer for her and her brother. When they worked, their father claimed their salaries in advance. Frustrated with their working conditions and the persisting economic dependence, both she and her brother got married at an early age.

Esmy, now twenty-three years old, is the mother of three. She considers herself still struggling with her role as mother and partner to Oscar, her husband, in pursuit of a livelihood. After she got married, she sought many ways to augment the income of her husband as well as to continue providing support to her younger sisters. Being the eldest, her father expected her to continue to support his family. In fact, this arrangement became a source of conflict between her and Oscar.

As an ambulant vendor, Esmy is engaged in food vending of native snacks and delicacies that she cooks or sometimes purchases on a wholesale basis in the town. She wakes up at 4:00 in the morning to cook the snack dishes she intends to sell in the morning. She has a wide selection of recipes, which she compiled when she was a volunteer health worker. She also accepts orders and, occasionally, she trades fruits and vegetables.

Before 7:00 in the morning, she brings her two younger children to her mother in-law to take care of them while she was away. For tending, she gives her mother in-law some snacks or money. Sometimes, she also buys fresh fish or meat for her. Together with her eldest son,

who is in grade I, she goes to the village elementary school to sell until all the children have entered their classes. Then, she vends around the village until 11:00 a.m. Before collecting her children, she cooks their lunch or at times, just buys cooked dishes. The short time she worked as a volunteer health worker made her aware of the type of food she should serve to her children. At 2:00 in the afternoon, she again delivers her children to her mother-in-law's house, which is only across the road. Usually, she is at home not later than 5:00 in the afternoon. 'I usually first go the town market to buy fresh fish or meat and some fruits for the children. But Oscar seems not to appreciate my action. He even calls me extravagant', narrated Esmy.

On the average, she earns about P130-160 a day. When there are orders, her income is about P250. She earns more in buying and selling fruits and vegetables (about P500) but that transaction requires more capital.

Despite her contribution to the household's income, her husband does not approve of her economic activities. He considers his salary as fishpond caretaker to be sufficient for their food and other needs. Esmy does not understand her husband. She endures the hard work for a better future of the children. She wants her children to have a college education but her husband does not share these aspirations. Every time she tells him that she is tired from vending, her husband scolds her. Often, her husband tells her to stop vending since he is providing for their foods and other needs. To avoid an argument, she occasionally hires a neighbor to help her prepare and cook snacks, especially if there are food orders.

Esmy can partly explain her husband's attitude. He probably feels threatened in his position as head and provider of the family. She remembers that when she bought a new dining table to replace the old dilapidated wooden table, her husband did not seem to appreciate it. Since her mother died, she had always wished to have a small business of her own. 'I owe a lot of my trading skills to my mother. I always remember my mother who worked hard as a market vendor in order not to be too dependent on my father. But my father was always against it, which I probably now understand. He was afraid of losing his authority just like my husband. I love my husband and I don't want him to feel insecure', expressed Esmy. She also cannot blame Oscar for not helping her in household chores. Some people in the neighborhood tease him if he would assist her in housekeeping and childcare.

Case 6.1 clearly illustrates Engle's (1990) analysis of power and decision-making within the household. Engle claims that men, usually the more powerful partner, tend to use direct and interactive means of achieving power, such as stating their goals clearly and trying to persuade their partners. The case shows a woman caught between tradition and aspirations, the challenge of achieving food security now and an upward social mobility (economic security) in the future. Esmy's strong desires for a better future to ensure stable economic and food security conflicts with the conservative attitude of husband, who does not share the same priorities and aspirations. While her contribution to the household's income gives her some power and economic security, it results in conflict and disharmony. It can be seen from Esmy's case how marital power dynamics can suppress livelihood security, which is a precondition to food security. Esmy's way of just doing everything on her own is a strategy to avoid conflict with her husband, who appears reluctant to accept changes in the patriarchal pattern of decision-making in the household.

Case 6.2 The conflict between old and new

Patricia was five months pregnant when I met her in 1998. She was the first mother I became friendly with, being able to speak my Tagalog language although she is a Leytena. She learned Tagalog when she worked in Manila for almost ten years. She met her husband in Manila, also a Leyteno, and they came back to Leyte in 1986 before Patricia gave birth their first son.

Although barely in her mid-thirties, the traces of harsh life are evident on her face and emaciated body. Rey, her husband, is one year older, and a fisherman. They have six young children, only three in grade school.

Patricia's parents were originally from Batanes but they migrated to Leyte when she was five years old. She was the third of nine siblings. In 1976, she worked with her mother as a domestic helper in Manila. While in Manila as nanny of two young children, she continued her secondary school taking night classes in one of the public schools. Her mother was the driving force behind her studies. She would take over some of her tasks when she had exams or assignments, as her mother wanted her to finish high school to get a better job.

Being a nanny and a student was very difficult for Patricia. As a nanny she would wake up at 5:00 in the morning to prepare the breakfast and school uniforms of the children. Although she never liked to take care of children, she had no choice. She had to bathe and dress them before going to school. At seven, she would accompany them to school and collect them at 3:00 in the afternoon. She would also help her mother cleaning the house after she had breakfast at 8:00 in the morning. Occasionally, she would also help these children with their assignments. Only after 10:00 in the evening was she able to study, exhausted from the day's work - often crying before going to bed. When she finished high school, she got a job in a factory through the help of her former employer.

However, life had never been good for Patricia. When she got married in 1986, she was already pregnant with her first child. This clearly annoyed her mother who did not talk to her for several months and no longer accepted money from her. The couple lived in a small rented room close to the factory where they worked. It was very difficult for the couple to live in a very small space. Hence, the couple decided to settle in Rey's hometown in Leyte before Patricia gave birth.

With their savings and with the help of Rey's family as well as through the *bayanihan* system or exchange labor, Patricia and Rey were able to build their own house in Rey's uncle lot. Rey, who learned fishing as a child, joined fishing expeditions and had a good income, especially when they fished for tuna. Rey was hardworking and had a good reputation in the community. Since, the couple acquired a fishing boat on an installment basis, Rey goes fishing on his own or sometimes with his elder brother. The couple's relationship was in quiet waters but some changes began in Rey's behavior.

Rey would always observe family celebrations and the village fiesta. In this respect, he was not different from other men in the village. While they were not strictly religious, they did observe their village fiesta in honor of Saint Anthony. However, Rey celebrated fiesta extravagantly and this became a growing source of disagreement. For example, during the last

village fiesta, the couple failed to pay P1000.00 equivalent to two-month worth of installment fees on their boat as her husband had used the money to celebrate the fiesta. In addition, her husband spent his two-day income of P350.00 from fishing on several gallons of *tuba*¹¹, bottles of gin and soft drinks. Patricia was very disappointed that she had not been able to convince her husband not to buy new clothes for their three children since they had recently received them during their birthdays. She wanted to save the money for school uniforms and fees. She remembered that they had to eat corn and dried fish for several days after the fiesta to stretch the little money left.

Another source of disagreement is the issue of family planning. Patricia wanted only three children but she became pregnant again with the fourth child. Patricia almost died of severe bleeding when she gave birth to her fourth child. The doctor advised her to avoid another pregnancy because of her poor health condition. Her plan to go to the Rural Health Clinic for consultation on family planning was strongly opposed by Rey, using religious reasons. Her husband would tell her *Huwag mong pangunahan ang Diyos* [do not go against God's will] and *Baka lalo kang magkasakit dahil magagalit sa iyo ang Diyos* [you will be more sick because God will curse you]. Patricia was astonished because she had never known Rey to be a very religious person. He only went to church on fiestas and baptism of their children. He did not even attend the mass on Christmas day.

During the last two years, despite hard work, the El Niño and the man-made destruction of marine resources had taken a toll on their income. Rey's volume of fish catch had declined tremendously due to continued dwindling of fishery resources. There were instances when he would return from fishing with empty buckets because there was practically no fish to catch.

Patricia had several reasons for wanting family planning: for her own health; to take care of the children and give them a better life ; to resume fish-vending to augment Rey's income; and to be able to support her aging mother, who had been through many ordeals in raising her nine siblings. Patricia recounted that her husband refused to understand and threaten to abandon her if she pushed through with her plans without his permission. Since then, the number of children and family planning has been a constant source of conflicts between them. But her husband's decision always prevailed, which was the reason that they had six children. One day, Patricia was surprised when she overheard her mother-in-law talking to a neighbor about the bad experiences of some women who used contraceptives, like pills and intra-uterine devices. Hinting that she was also against family planning, Patricia just ignored them and pretended not to hear anything. She felt very bad because her husband became suspicious. Upon her husband's instructions, her mother-in-law would always accompany her whenever she would visit the Health Center for children's consultations.

An informal talk with some women and an interview with the Rural Health Midwife confirmed the truth of Patricia's statement. In fact, Mylene, the midwife assigned in the village, confided to me that she would avoid going around the village alone, because some husbands are very suspicious about her activities in the community. Some of them think that the midwife would only campaign for family planning.

Patricia's case demonstrates how traditional family values and religion can work against achieving livelihood, food and nutrition security. Her case exemplifies how women struggle

¹¹Is a local liquor made from coconut sap

with traditional values, e.g. social obligations and power dynamics within the household with regard to reproduction and reproductive health.

Case 6.3 The enduring Marissa

Barely in her late twenties, I met Marissa in 1998 when I made my first on-site visit in Albuera. She was talking with the midwife when we visited the Rural Health Center in the village. She was there for the regular immunization of her three-month-old baby. She seemed friendly and her friendly smiles made it appear as though she never had any problems.

According to the midwife, Marissa was a constant visitor of the Rural Health Center because of her two sickly children. Pablo, her husband is five years older than his wife and is a permanent factory worker in the nearby city. After eight years of marriage, they had three children, one of them in grade school.

Marissa, although coming from a poor family, was able to finish secondary school by working in her aunt's grocery store. Her husband, Pablo, who came from a middle class family, finished a two-year vocational course. When she married in 1990, she said many young ladies in her village were jealous of her because her husband had a permanent job. After the wedding, as is common practice for a newly wed couple, they also stayed with her in-laws in order to save some more money for the construction of their house. She claimed she did not have a difficult time with her in-laws. However, she was very uncomfortable with her brother in-law's gambling habit and his frequent arguments with his parents.

Like other young couples in the area, they were given a piece of residential land by Pablo's parents, where they built their own semi-concrete house using their savings. In the beginning Marissa was very apprehensive that her in-laws would ask them to build their house close to them. She felt relief when Pablo chose to build their semi-concrete house in another lot given by his parents. She had heard a lot of stories about relational problems with in-laws from her married friends. Because the couple did not have a child yet, Marissa wanted to work as a saleswoman again in her aunt's shop in the city. However, her husband rejected the idea. She did not insist because her husband's salary was more than enough to live a modest life. Sometimes, her in-laws would give them rice and fresh fish.

Without consultation, her husband put up a small variety shop for her to manage. Her job as saleswoman for almost four years in her aunt's grocery store helped a lot in managing their variety store. The earnings of the variety shop provided for their subsistence. She was able to save some money that she spent when she delivered her first baby. Since she had income and did not demand money or ask for the salary of her husband. She believed her husband would manage his income well. Her husband purchased a stand fan and a 16-inch color television set. She had mixed feelings when her husband bought them because Pablo had again ignored her request for the installation of an artesian pump. For Marissa, the pump was more important than the television. She got tired of collecting water from their neighbor's pump.

Many things changed after she gave birth to her third child. She had to close their shop to attend to her three young children of seven, five and two years old. Life became very difficult for Marissa after spending her savings on their family needs. When she started asking for his salary, her husband shouted at her and told her that she did not need the money because he

provided everything. 'But the food he buys is not enough for us. He always buys dried fish, which I could not always serve to my children', according to Marissa. Against her will, she had also stopped giving milk to her youngest child because Pablo stopped buying milk for him. Every time she asked for some money, Pablo always tells her 'he did not have any'. If she probed further, where he spent his salary and why he always came home late, the couple ended up fighting.

One day Marissa went to her sister in the nearby village to borrow some money to re-install their variety store, her only option to earn money. She was very much disturbed to find out that her husband had big debts with several people in this village. Realizing that her husband would not tell her the truth, she went to their *compadre* to get some information about Pablo's activities. She was shocked to find out that her husband was very much in gambling. She did not know that Pablo gambled a lot in cockfights and that he had lost thousands of pesos in it, not to mention his regular bets in *jai-alai* and *jueteng*. She realized that her husband was deeply indebted and moneylenders would collect payments every payday at his office.

Marissa's dream of a happy family crumbled after the revelations. She also found out that Pablo had mortgaged their small piece of land. When Marissa confronted him about his gambling habit, she got all sorts of lies and alibis. One day, a man came to see her husband. Her husband did not invite the man to come inside their house. Half an hour later, she saw her husband giving their electric fan to the man. Three days later, when she came home from the health center, she was surprised that their television was also gone. Pablo told her that he had to give their television to one of the moneylenders to stop her from complaining with the *barangay* captain. The moneylender threatened to complain with the *barangay* captain if he could not pay his long overdue debt. Marissa kept her anger inside.

Since then the couple's house was emptied because their valued assets were disposed of by Pablo to pay some of his debts. 'Whenever I talk to him, he will always tell me that I have no right to stop him because those household appliances were purchased with his salary', said Marissa. She wanted to abandon him but her husband threatened that he would keep the children. 'My children also suffer because since my husband started gambling, we have too little food to eat. They became sickly too. I almost went mad when my second child was very ill and I could not bring him to the doctor'. It was a big relief for Marissa when her sister came and took her son to the doctor. She said, she often cried when she served rice or corn porridge to her children. There were times that Marissa would skip her meal. During the food weighing, she would only eat after her children.

The last time the couple talked, her husband promised that he would stop gambling. Now, he gives her money, but he takes it back at another time. If the sums do not tally he gets angry. Marissa got tired of fighting over money. Instead, she accepted laundering at home because nobody would take care of her three young children. Although she receives a meager pay for it, she believes it is better than nothing. She hopes to reopen their shop but she does not have the capital to start. Her neighbors are confused about what is going on. She knows that some of their neighbors are aware of Pablo's gambling, but very few would believe that Pablo does not provide for their needs. She does not want to talk about her problem with her neighbors out of shame and embarrassment for her husband. Stretching small amounts of money drives her mad. 'I think I will go crazy if this situation continues. I thought my family would be secure because I married an employed man'.

Case 6.3 shows how food insecurity can occur in a household with a secure livelihood. The discovery of the gambling habits of Pablo was a big shock to Marissa. When her husband could no longer provide for their needs, she took over. She accepted laundering work in addition to her domestic responsibilities. The gambling activities of Pablo depleted their resources and pushed their household into food insecurity and poor health status of children. Gambling had not only created a devastating and long lasting drain on the household's resources but also put severe emotional and psychological stress on Marissa. Marissa's case illustrates how power relations and poor priority setting can threaten food security as well as the economic security of a household. Marissa's lack of power and access to resources made her vulnerable. Vulnerability made her fearful.

Discussion

Although the three women in the cases were different individuals, they shared the Filipino culture and values. In carrying out their productive and reproductive roles, they are confronted with marital power relations that influence most aspects of their lives as well as household food security. They have to balance between conformity to cultural norms and their aspirations for a better life - now and in the future.

As revealed by the cases, the patriarchal relations in the household explain to a large extent the allocation of resources and food- and non-food expenditures. The experience of these women does not conform to the notion that the household has a single ordering of preferences where members all agree on the strategies and means to be used to maximize household welfare - one aspect of which is household food security. This notion has been criticized in the literature (Pottier, 1999; Pennartz and Niehof, 1999; Kabeer, 1991; Jelin, 1990; Piwoz and Viteri, 1985). There are gender-differentiated needs and preferences, which are often not in harmony (Niehof and Price, 2001; Chen, 1996; Kabeer, 1991; Garcia, 1990; Pahl, 1989). Household welfare including food security, is achieved through a series of compromises and accommodations among individual household members according to their interests and needs. The bargaining power of adult men and women determines to a large extent which objectives and whose objectives will be actually realized. The latter is also a function of personal characteristics, access to resources, the availability of alternatives, prevailing cultural norms and emerging beliefs (Safilios-Rothschild, 1990). Since men still dominate public space, their conformity and involvement are critical in bringing about social change, also in the private context of the household (Narayan, 1999).

Just like in other societies, cultural norms determine the gender-based division of labour in the study sites. Almost all women mentioned the high workload as a burden. If their husbands are seen performing women's tasks, people would say that the man is 'under the *saya*'¹² or is a henpecked husband, which makes him vulnerable to ridicule. Pottier's (1999) analysis of marital relationships of Bwisha couples in Zaire and in Gola Forest Sierra Leone, are in consonance with the findings of the present study. He found that many young married men now experience how their economic weakness results in more economic independence of their wives, a situation those men find threatening. As a consequence, they try to hang on to the patriarchal values and forms of authority derived in part from their economic power in the past.

¹²*Saya* means a woman's skirt while 'under the *saya*' means a henpeck husband.

As the case studies show, downplaying the women's contribution to the household income is one strategy of maintaining dominance, which has also been reported by many other studies. Husbands usually do not acknowledge the importance of women's income because it would be an admission of the husband's failure as a provider, thereby undermining his dominance (Safilios-Rothschild, 1990). The three cases are also telling examples of the crucial role of women in achieving household food security. During times of economic hardship, it is usually the women who absorb shocks to protect the welfare of household members by expanding their already tightly stretched working day.

Finally, the observations and interviews also show that the reproductive rights of women are violated in the Philippines¹³. Because of the higher status of males, husbands prefer male children, while the Catholic Church is another obstacle to practicing family planning. According to Smith and Haddad (2000), the preference for male children in Asia continues to result in differences in the preferred number of children between the wife and the husband. Herrin (1999) claims that on average, each Filipino woman has at least one child more than she desires.

6.4 Conclusions

At the beginning of this chapter, we discussed the characteristics of food insecure households according to local perceptions. The different dimensions of household food security were also examined in the case studies. In doing so, we found out that in general, food insecure households are indeed poor, having few productive assets and amenities, with household members having irregular jobs. Such households survive because the productive members of the households accept different kind of jobs, by frequent borrowing, and support by their social network. These findings are consistent with the survey data.

Although men and women have different ideas of food security, their ideas are consistent with current 'etic' and definitions of household food security. It was also noted that particularly women's ideas of food security overlap with the 'etic' definition nutrition security. This is probably could be attributed to knowledge of some women on the nutritional needs of their family.

The case studies and FGDs show that the dominant household member, that is the husband and head of the household, in his decision-making and resource allocation is often not guided by the principle of meeting the basic needs of his household. These men are not the benevolent patriarchs, protecting the collective interest and welfare of the household that they are supposed to be. The economic model that posits total altruism within the household so that the welfare of each member is integrated into a unified welfare function is not borne out by these cases. In fact, the cases show welfare inequities. In this way food security is a product of socio-economic and cultural factors, including household inequities and patriarchy.

¹³The reproductive and sexual health and rights of women refer to the availability of reproductive health information, services and products, including contraceptives, to allow all couples and individuals to exercise their right to decide the number, spacing and timing of their children and to have the information and means to do so (UNFPA, 1999).

As Wolf (1990:60) puts forward,

[...] the household can neither decide nor think, since analytical constructs are not empowered. Rather certain people within the household make decisions. One or more persons with enough power to implement them make decisions and other less-empowered household members follow them.

The important issue of vulnerability raises the question of how households cope in times of food shortage. Due particularly to women's creativity and hard work, they bare the brunt and they and the family pay the price: neglected and malnourished children, poor health and nutritional status of themselves, mental stress and fatigue, instability in family relationships. The cases highlight how the poor distribution of resources and responsibilities between men and women make women vulnerable.

The culturally determined status of women and power relations within the household constrain women to exercise their rights to decide on the number, spacing and timing of their children. Because of the gender-based division of labor, men or husbands continue to ignore women's sexual and reproductive health and rights, and men's obligations in sharing household and child-rearing responsibilities.

Indirectly these findings also shed light on the apparently contradictory observation that in the Philippines the relatively high educational level of women, good education is not enough. Enhancing women's capacity for economic independence and challenging their situation of subordination are particularly needed. Thus, gender equity is part of the solution to food and nutrition insecurity.

CHAPTER 7

SEASONALITY AND RELATED COPING STRATEGIES

In Chapter 5, the relationship between food security and child malnutrition and other related factors was investigated. Findings show that food security and child malnutrition are quite common but there are differences according to ecological setting. However, it is not certain if households experience food insecurity throughout the year or periodically. This chapter examines the influence of seasonality in food security and composition of habitual diets as a proxy of nutrition security of households in the study areas, particularly the consequences of seasonal fluctuations for food supply and food sources, and quality of diets of households.

Seasonality may influence food security among subsistence farmers and fishermen's ability in a number of ways. In the study areas, despite having both a bimodal type of climatic conditions, which allows two annual harvests, heavy rains, typhoons and drought can minimize harvests. Fishing yields vary according to monsoons. Finally, off-farm employment may also fluctuate by calendar month. In periods when primary sources fail to provide the needed food, households deploy a range of remedial responses. Data on these responses and strategies will be presented in the form of case studies.

In this chapter, three aspects of seasonality are reviewed: (a) the prevalence of food insecurity, (b) the sources of food and (c) the quality of the diet. The methodology of data collection was described in Chapter 4. The survey data pertain to food in store, composition of diets, and the food procurement pattern of households. These were collected in periodic surveys of about 200 households (100 in each study area randomly taken from the universe described in Chapter 5). The qualitative data were gathered through a snowballing method, such as home visits, focus group discussions (FGDs), and case studies. Observations and free interviews focused on the various remedial responses (coping strategies) of households in periods of food shortage. To place the impact of the three aspects of seasonality in time, the rice production and fishing calendar in the dry and wet seasons were used as reference points.

7.1 Food insecurity

It was assumed that food insecurity fluctuates according to the temporal variations in rice production and fish catches, which are in turn determined by the prevailing climate. Based on seasonal rainfall distribution, four types of climate can be distinguished in the Philippines:

- Type I - Two pronounced seasons with maximum rain period from June to September and a dry season which lasts from three to six or seven months.
- Type II- No dry season with a very pronounced maximum rain period from December to February.
- Type III- No pronounced maximum rain period with a short dry season lasting only from one to three months.
- Type IV- Rainfall more or less evenly distributed throughout the year.

The tropical and maritime climate of the Philippines is marked by relatively high temperature, high humidity and abundant rainfall. Rainfall distribution varies from one region to another, depending upon the direction of moisture-bearing winds and the location of the mountain system. Despite these differences, the Philippine climate is generally divided into three seasons: rainy, which extends from June to November; dry cool, from December to February; and hot dry, which falls from March to May. The tropical typhoon season is from June to December, with the months of July to September having the most frequent occurrence of more than three cyclones each month (Department of Agriculture, 1999; FAO, 1995).

The two study sites are located in two climatic zones. The lowland areas in Luzon Island are characterized by a Type I climate, while coastal areas have a Type IV climatic condition. In both areas, rice production is irrigated, and for cropping cycle, only two seasons are considered - the dry and wet season. In each season, five important rice production activity periods can be distinguished: the planting, pre-harvest, harvest, post-harvest, land preparation period. During the wet season, heavy rains may flood the rice fields, diminishing or totally destroying the crop. Hence, in general, the dry season gives higher yield of paddy rice compared to the wet season.

In coastal communities, the fishing seasons, which coincide with the three climatic seasons of the year, are almost similar with other fishing areas. Peak months usually start from December to May. The best peak months occur in March to May. The lean months in fishing last from June until November¹. The majority of fishermen also identified August as the leanest months for fishing.

The climatic conditions during the study period were exceptionally bad due to the prolonged drought brought about by El Niño in 1997-98 resulting in a significant drop in rice² and fish yields in the study sites and, in the country in general. Climatic stress was exacerbated by the Asian financial crisis, which saw the peso depreciating against the dollar by 48 percent by the end of 1998 (NEDA, 1998). The damaging effects of the two crises did not spare the households in the study sites. The rise in inflation due to fluctuations in commercial economies significantly reduced the purchasing capacity of households. Such a situation had a devastating effect on the livelihoods of many households in the study sites, which depend on the agriculture and fishery sector.

Lowland area

Food insecurity is defined according to the perceived feeling of food shortage during the particular month of the year that resulted to buying of low quality rice or substitution of staple, changes in food preparation and reducing meals, among others. Table 7.1 shows the percentages of households who mentioned food shortages according to the perception of women in two study sites in 1999. Notably, household food insecurity is less prevalent in lowland areas. Of the 96 households interviewed, 51 percent claimed to have experienced food shortage. There is a distinct seasonality in food insecurity when dry and wet seasons

¹ Productivity in coastal fishing varies with season. In the peak season, aside from high volume, there are more kinds of fish such as, *hasa-hasa*, *lumahan*, *ginto-ginto*, *salmon*, *galunggong*, *tamarong*, *bisugo*, *tambakol*, *tamban*, *dilis*, etc. In the low season, there is a relatively small volume of fish catch, mostly *galunggong*, *tamarong*, *lumahan* and *hasa-hasa*.

² In 1998, the agriculture sector experienced 5.7 percent contraction in January to September, and 3.5 percent in October to December (Lara, 1999).

are compared. In the dry season, a small percentage of households is food insecure and there is little variation by rice production period (2 percent in the post-harvest period to 8 percent in the harvest and land preparation periods).

Table 7.1 Prevalence of food insecurity according to the perception of women by rice and fish production calendar in 1999 by ecological area of self-reported food insecure households*

Months of the year	Rice Production Calendar	Lowland (N=49) (51%)	Fish Production Calendar	Coastal (N=90) (88%)
	Dry Season		Dry Season	
January	Planting	2	Start of fish presence	8
February	Pre-harvest	3	Peak of catch	5
March to April	Harvest	4		3
May	Post-harvest	1		2
June	Land preparation	4		2
	Wet Season		Wet Season	
July	Planting	13	Less catch	14
August	Pre-harvest	32		22
Sept. to October	Harvest	10	Very low catch	24
November	Post-harvest	8		48
December	Land preparation	3	Start of fish presence	29

* The women who experienced food shortage were asked to identify which month(s) of the year food shortage was experienced. The frequency of households with food shortage on a particular period was tallied according to rice production calendar for the lowland area and fish production calendar for the coastal area.

In the wet season the prevalence of food insecurity rises till a peak in the pre-harvest period (65 percent), the month of heavy rains before harvest. The observation that 20 percent of households experience food shortage in the harvest period of the wet season indicates the low agricultural productivity in this period compared to that of the dry season. Heavy rains affect the rice harvest.

Coastal area

As mentioned earlier, rice-cropping season in coastal areas follows almost the same pattern as that in the lowland area. The time spent within which the first crops are harvested is the same for both areas. In the coastal area, 62 percent of households are in fishery and only about 15 percent are engaged in agriculture. This implies that seasonality in rice production is less important for the food security of coastal households.

As can be gleaned from Table 7.1, the food security situation is worse in the coastal areas compared to lowland areas. Almost 90 percent of coastal households experienced food shortage in 1999. Similar to the lowland villages food insecurity is almost restricted to the wet season, but it affects a much higher proportion of the households. Among these

households, 24 to 53 percent had food shortages for at least five months of the wet season. These households can be considered chronically food insecure. Food problems were worst in November, when catches are leanest. This much longer duration of food insecurity in coastal areas can be related to the fishing seasons.

Discussion

The finding that food insecurity is more prevalent in coastal areas than in lowland areas is consistent with the profile of coastal households examined earlier in Chapter 5. Food insecurity tends to be a common phenomenon in the wet season for both areas. However, in coastal areas, a longer period of food shortage was noted; with the onset in June lasting till November. This results in more chronically food insecure households in the coastal area compared to lowland villages.

The heavy reliance of fishermen on climatic conditions greatly affects their income-generating capacity. The pronounced peak season for fishing activities in the area lasts barely six months. This is further reduced because in any given month fishermen can effectively fish at most only for 20 days. Fishermen normally do not go fishing during lunar transformation or when there is a new a moon (Jimenez and Francisco, 1984).

In lowland areas, only two important periods of food shortage were observed, the planting and pre-harvest period, the peak being noted in the latter. The ability of lowland households to improve their situation in the short term can be attributed to better access to food and sources of income compared to coastal households. The traditional system of wages in-kind in the agricultural production could explain this. The old system of *hunusan*³ is still very much observed in rice production and forms an important source of staple food for most landless household. Households have immediate access to staple food during the harvest season that can be extended until the post-harvest period. The high demand for agricultural labor from harvest until land preparations as well as the restart of the informal economy such as paddy rice trading and food vending that take place directly in the farm is an important source of income for most poor lowland households. Those who have no immediate access to staple from wages in-kind can easily sell their labor and purchase staple. Consequently, there is also higher demand for other services e.g. rice drying and milling as well as personal services, such as manicuring and hairstyling that are generally provided by women. These circumstances make households less vulnerable to food insecurity in the dry season.

In Chapter 5 we saw that lowland households are better educated, have higher income and assets, and more access to paid employment and at the same time have lower dependency ratio (see Tables 5.2, 5.4 5.5, 5.7 and 5.10). These differences in human, financial and material resources from which households in coastal and lowland areas draw their food and livelihood also explain the variation in household food security in the dry and wet seasons. As mentioned earlier, both areas suffered from the consequences of the natural calamities

³ Refers to the weeding operations done by landless workers. Under this arrangement, whoever does the weeding on a certain plot is given exclusive right to harvest the same plot and receives a share from the harvest. The share is usually 1/6 if the crop is also threshed and cleaned by the harvester. If not, 1/7 sharing will be applied (Ledesma, 1982). Although Sandoval (1995) refers to the system as *hunusan* from the word *hunun* (share), the sharing arrangement is the same. In this thesis the term *hunusan* will be used.

that hit the country during the 1997-98. However, the data seem to indicate the more vulnerable situation of fishing communities compared to agriculture-based communities.

7.2 Food procurement pattern of staple food

This section examines the seasonality in the sources of the staple food rice of households in the study sites. Foods coming into the households from own production, purchases, as wages in-kind, borrowed or obtained on credit, gathered, bartered or given by neighbors were recorded on monthly basis from recalls. A look at the sources of staple food will provide some insights into the importance of the primary sector (agriculture and fishery) in attaining food security at the household level and household coping strategies in periods of scarcity.

Lowland area

The distribution of households by sources of staple food at different production periods in the dry and wet season is shown in Figure 7.1 to 7.6. In both seasons, only three percent of sample households produce their staple food (see also Appendix 7.1 & 7.2). Lowland households are almost totally dependent on market sources during planting and pre-harvest periods, with over 70 percent of staple coming from purchases (Figure 7.1). In comparing the planting and pre-harvest season to the following harvest and post-harvest periods, the lowland households are able to reduce market dependency. Wages in-kind (described in Chapter 6) is the second most important source of staple in lowland areas that complements the food purchases in those periods (Figure 7.3). By land preparation time, these same households were again purchasing their staple food.

When primary sources of rice staple (production and purchase) are insufficient to cover needs, borrowing/credit, gift-giving/receiving, gathering or asking foods from relatives and friends are resorted to by lowland households to abate food shortages (Figure 7.4 and 7.6). Borrowing becomes an important source of rice in the pre-harvest period in both seasons.

Coastal area

As in the lowland area, also in the coastal area own production is not an important source of supply of rice. Being predominantly a fishing community, more households (a little less than 80 percent) are dependent on the market for their staple. The peak of rice bought is in January and February in the dry season and in July to August in the wet season, while lower purchases are observed in the harvest dry season. Contrary to lowland areas, the fluctuations in rice purchases during harvest and post-harvest periods are mostly complemented by purchases of corn and not by wages in-kind (rice) and to some extent by bartered and purchased root crops. These other staples or means of procuring staple food illustrate some remedial actions or strategies the households resort to in times of food insecurity (Figure 7.3 and 7.6).

Likewise, coastal households resort to borrowing/credit, bartering and soliciting food assistance from relatives, neighbors and friends when they experience food shortage (Figure 7.4 to 7.6). Unlike in the lowland area, in the coastal area borrowing of staples to smooth food consumption prevails throughout the wet season. During this period, the income of households is marginal due to low productivity of coastal fishing. To meet consumption

needs, households resort to borrowing food and cash. Apart from these means of procuring food, the case studies in the following section will elucidate other household responses and coping strategies in the study sites.

Figure 7.1 Distribution of households who buy staple rice by rice production period during the dry and wet season in 1999 by ecological area

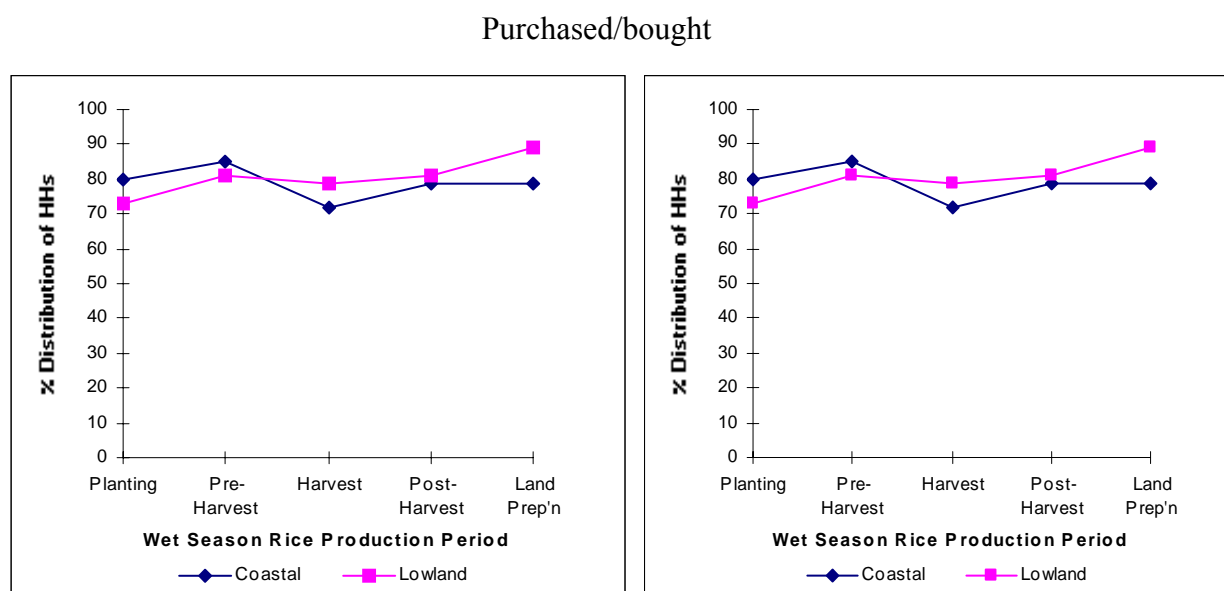


Figure 7.2 Distribution of households who produce own staple rice by rice production period during the dry and wet season in 1999 by ecological area

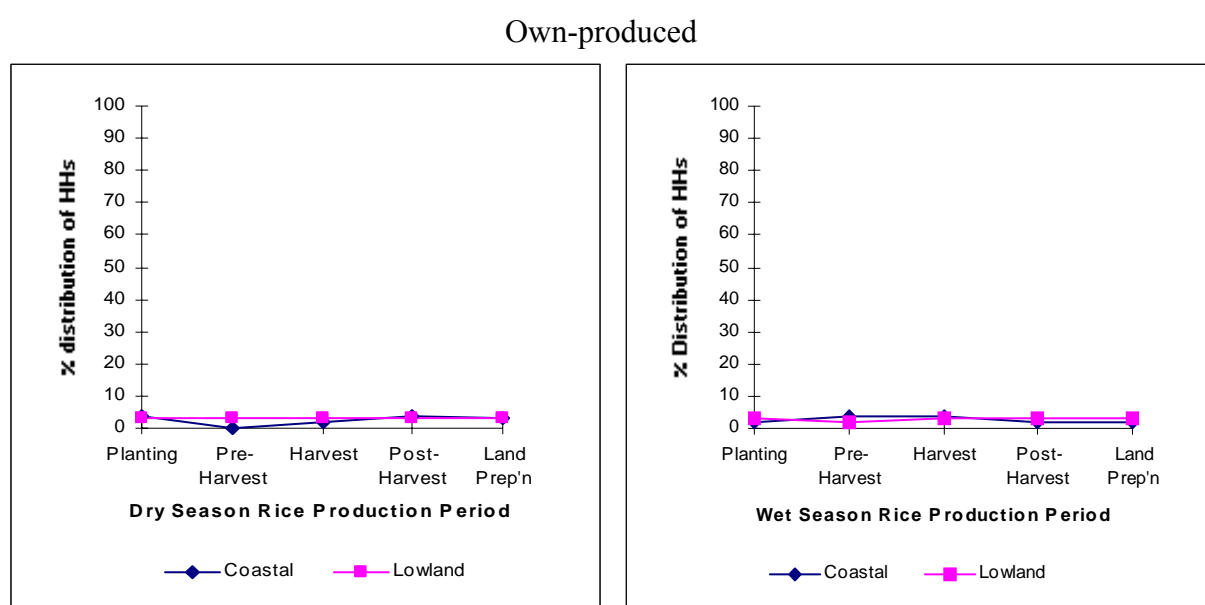


Figure 7.3 Distribution of households with payment in kind as source of staple food by rice production period during the dry and wet season in 1999 by ecological area

Payment in kind

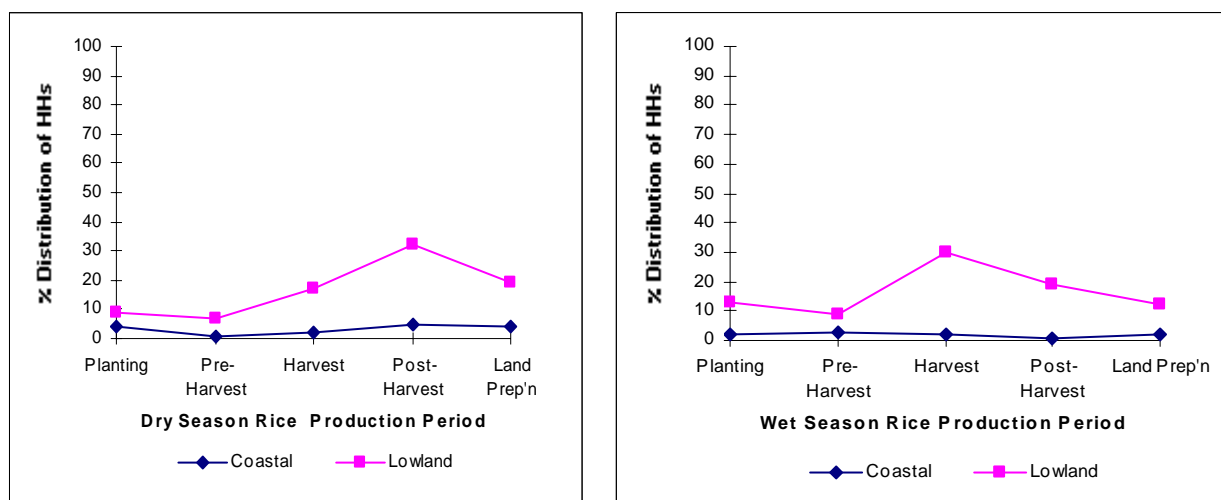


Figure 7.4 Distribution of households with credit as source of staple food by rice production period during the dry and wet season in 1999 by ecological area

Credit

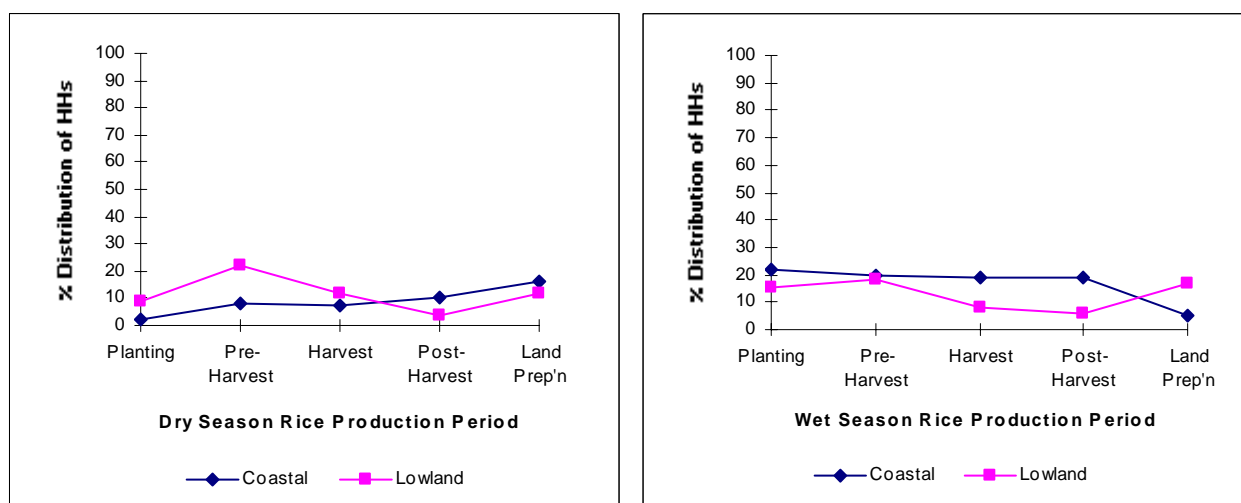


Figure 7.5 Distribution of households who receives free staple food by rice production period during the dry and wet season in 1999 by ecological area

Given

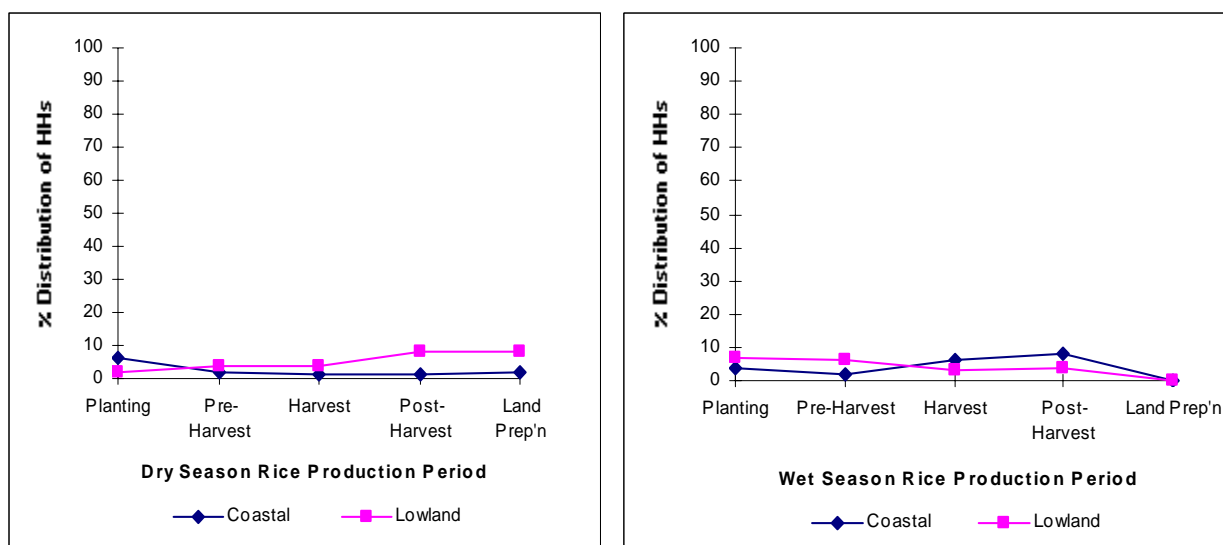
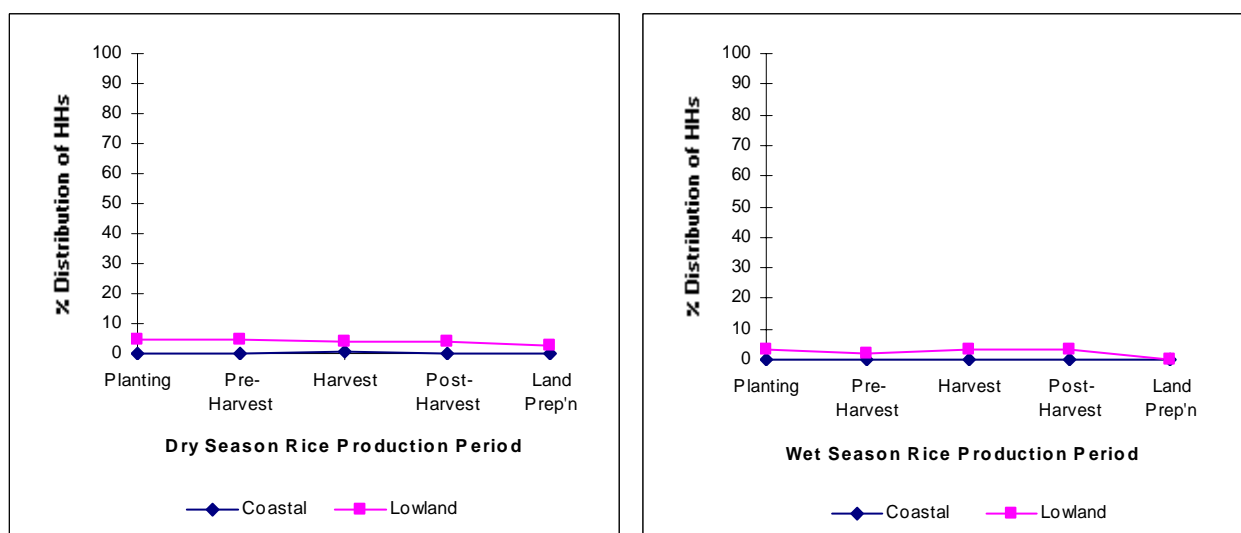


Figure 7.6 Distribution of households with gathered or bartered as source of staple food by rice production period during the dry and wet season in 1999 by ecological area

Gathered/bartered



Discussion

The most notable feature across villages in both ecological areas is the small percentage of staple calories that come from own-production. Market purchases are actually the largest source of the staple food consumed. The lowland households are able to reduce market dependency in the harvest and post-harvest periods. The system of *hunusan* provides landless agricultural households with a buffer against rice shortages until the post-harvest period.

The higher percentage of households in coastal villages buying rice is a reflection of the seasonality of fish production and income in the coastal area. Wage income from fishing and the possibility to convert the fish share into cash determine the ability of the households to purchase the staple food. However, fish catch varies highly, with no guarantee. Hence, fishermen do not get the best price for their catch because the price is always uncertain despite the fact that the supply is oftentimes insufficient to meet the demand. This is so because the fish dealers or wholesalers dictate the price. This implies that seasonal food insecurity is not directly due to failing food production but to seasonality in income generation that is indirectly linked to climate. The type and nature of livelihood activities of households determine access to food and other resources. The implication is that food security in these poor households cannot be achieved through agriculture production and fishery only. Other livelihood activities that will provide high productivity and income in the long-term are essential to reduce food insecurity. Chambers (1989) and Niehof and Price (2001) refer this to livelihood security.

7.3 Dietary patterns

In general, the Filipino households eat three meals a day that is breakfast, lunch and supper. Among the sample households in lowland and coastal areas, breakfast is a combination of rice, fish and coffee. For lunch and supper, the foods regularly eaten are rice, fish and vegetables. A proxy of the quality of habitual diet is the frequency of consumption of various types of foods to complement the staple food. Seasonality may influence the quality of habitual diet via food availability and the ability of households to procure the needed foods. A home diet is considered adequate if food sources of protein, vitamins and minerals are eaten at least 4 to 6 times per week. Hence, as a proxy of adequacy of diets, the percent of households having the food item daily and 4 to 6 times weekly were tabulated.

Except for rice (staple food), the food items were selected according to their nutritive value. The selected food items are those that are major sources of protein (fish and pork), vitamin A (green beans and green leafy vegetables) and vitamins or minerals (fruits)⁴.

⁴ Grouping of food items was done for the following: rice = commercial and NFA; corn = white and yellow corn grits; green beans; green leafy vegetables = all green leafy vegetables except onion and garlic because those are considered condiments; fruits = all fruits excluding banana; fish = fresh fish only; pork. Only daily and 4 to 6 times weekly frequencies are considered in the assessment of the dietary pattern of households.

Lowland area

The Figures 7.7 to 7.12 show the percentages of households who consumed the selected food items at least 4 times per week, by season and rice production periods (see also Appendix 7.7 and 7.8). In lowland areas, all households eat rice as a staple food throughout the year (the dip in the land preparation period is not significant) (Figure 7.7). On average fish was consumed according to the adequacy level by 30 percent of the households, with a peak in the harvest period of the wet season and a dip in the land preparation period in the same season (Figure 7.8). Pork was eaten by about 20 percent of the households. Apparently pork replaced fish in the wet season, land preparation period, which coincides with the Christmas season when meat consumption increases, even among the poor (pork is the cheapest type of meat). The rise in consumption of pork in the post harvest period that falls in the month May can be attributed to the celebration of the village fiesta (Figure 7.9). Green beans, which are more expensive compared to leafy vegetables, are not a common food item in either season (Figure 7.10). Green leafy vegetables are consumed more frequently in the dry season's pre-harvest and harvest periods because of cheaper price during these periods (Figure 7.11). In general, the percentages of households having an adequate intake were low, at most 40 percent. Adequacy in consumption of fruit was also low. The highest percentage of households with an adequate frequency of fruit consumption was recorded in the dry season, during harvest period. In this period, more households have income and thus have the capacity to buy fruits that are on-season (Figure 7.12). On-season fruits such as pineapples, mangoes, melons and watermelons are less expensive during summer. By post-harvest, food becomes scarce, the cash income diminishes and households again economize to prevent food insecurity.

Coastal area

Rice is the preferred staple in coastal areas, but corn and root crops complement it, particularly in times of scarcity. Indeed, in both seasons fluctuations in rice consumption are mirror images of corn. The relatively high proportion of households replacing rice with corn may be attributed to the combined effects of income collapse of households brought about by climatic disasters and the Asian financial crisis of the previous years. More coastal households became poorer due to low productivity in fishery and absence of other employment as well. The debts acquired in the previous years were big burden for most poor households.

About 80 percent of coastal households consumed fish at least four times per week, a much higher frequency than in the lowland villages (Figure 7.8). A similar difference between the two ecological areas was observed for the consumption of green leafy vegetables, e.g. approximately 60 percent of households having an adequate consumption versus about 20 percent in lowland villages (Figure 7.11). In the coastal area, pork and fruit consumption proved to be equally low. Pork is considered a luxury. Unlike in the lowland area, the non-consumption of pork even on special occasions like the Christmas season suggests the distressed situation of coastal households (Figure 7.9). Christmas is the most observed holiday of the Filipinos.

Figure 7.7 Rice and corn consumption pattern of households by rice production period during the dry and wet season in 1999 by ecological area

Rice and corn consumption

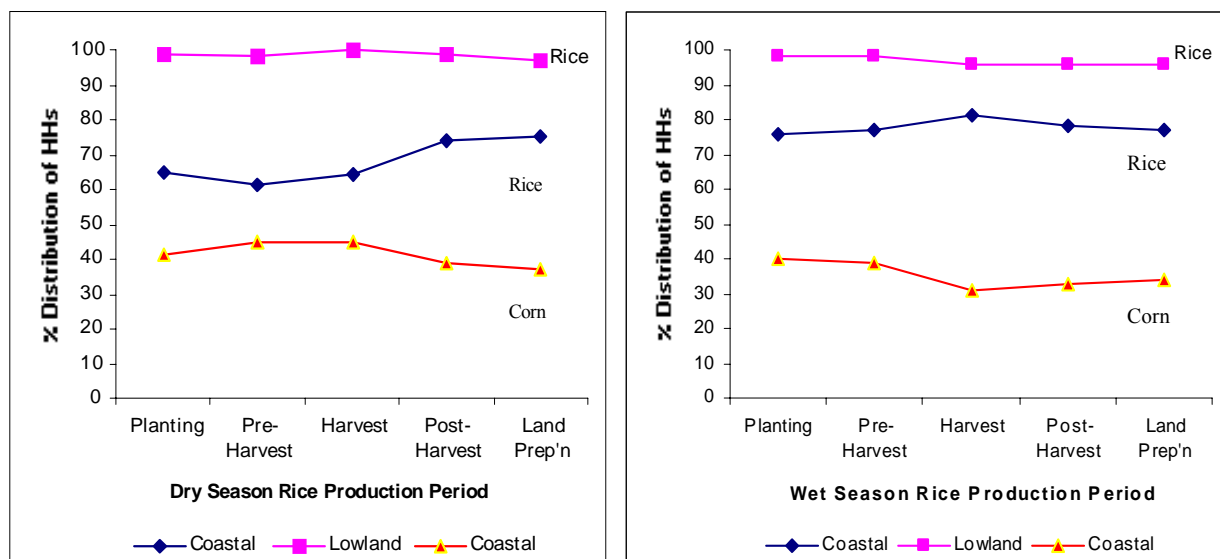


Figure 7.8 Fish consumption pattern of households by rice production period during the dry and wet season in 1999 by ecological area

Fish consumption

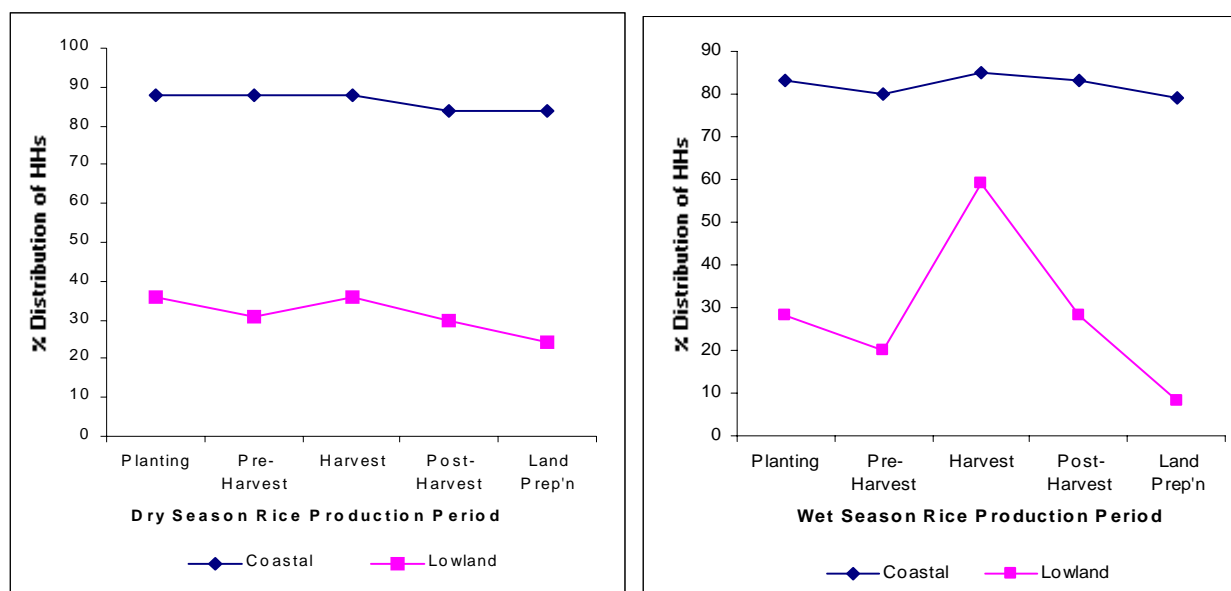


Figure 7.9 Pork consumption pattern of households by rice production period during dry and wet season in 1999 by ecological area

Pork consumption

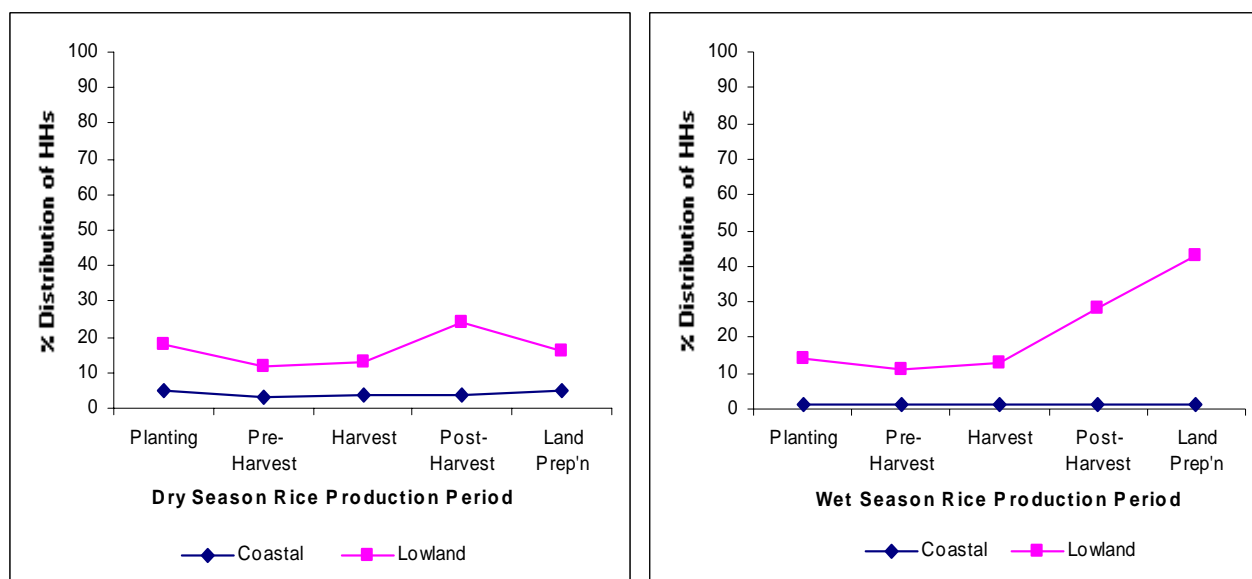


Figure 7.10 Green beans consumption pattern of households by rice production period during the dry and wet season in 1999 by ecological area

Green beans consumption

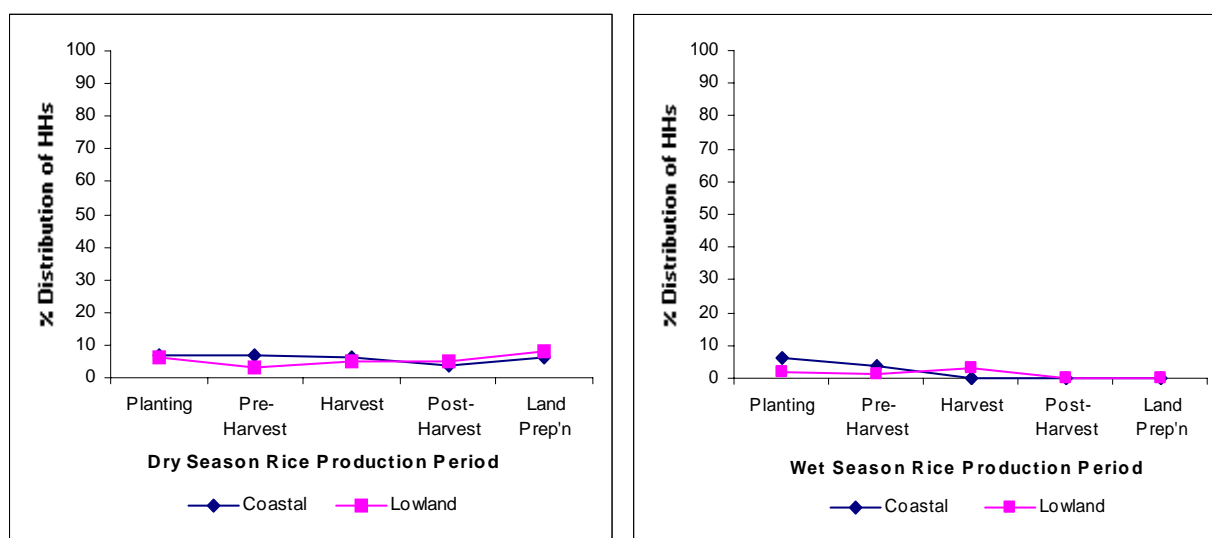


Figure 7.11 Green leafy vegetables consumption pattern of households by rice production period during the dry and wet season in 1999 by ecological area

Green leafy vegetables

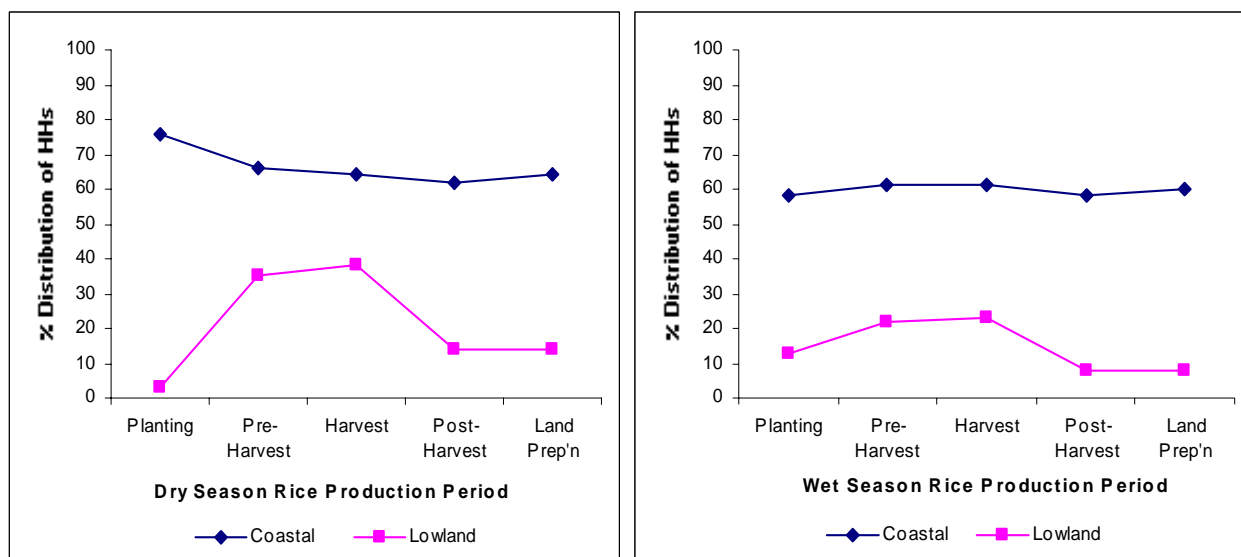
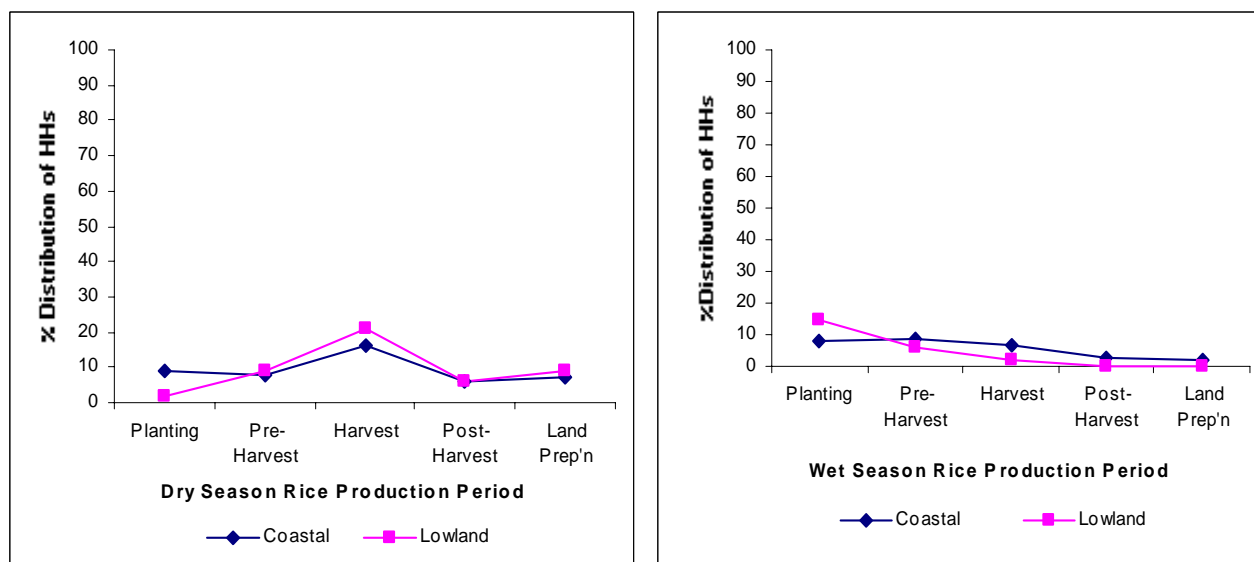


Figure 7.12 Fruits consumption pattern of households by rice production period during the dry and wet season in 1999 by ecological area

Fruits consumption



Discussion

Food security of lowland households did not lead to better quality of habitual diets (also observed in Chapter 5). While there is an agreement between food insecurity and inadequacy of habitual diets in the dry season (Table 7.1), better food security in the wet season, planting and pre-harvest periods was not accompanied by better food intake (quality of diet). This implies a marginal food security, either because production and income are not sufficient to provide better diets or because of ignorance, particularly with respect to sources of vitamins and minerals or food habits. It is also possible that lowland households continue to economize to prevent food shortage and to meet other needs such as housing and education of the children⁵. Another factor could be the power relations in the households that prevent women's access to resources to ensure adequate foods. This was observed in Chapter 6.

Households in coastal villages are almost homogeneously food insecure (Table 7.1). Yet, consistent with the findings in Chapter 5, they have qualitatively better diets than households in lowland villages that are less food insecure. This contradiction can be partly explained by the fact that frequencies of consumption do not take into account the amounts consumed. The findings may also indicate a change in the habitual diets of households in response to severe food insecurity, as was observed among case households. They economize by adding more vegetables and soup to the fish dishes.

7.4 Households responses to food insecurity

Households do not respond arbitrarily to fluctuations in food supply. Their responses or coping behavior include all efforts and livelihood activities of households aiming at improving the food security situation (Thomas and Leatherman, 1990; Van Liere, 1993). According to Webb et al. (1992), the pattern of household responses involves: risk minimization, risk absorption and risk-taking. Options for coping behavior depend on a set of entitlements, access to land, paid labor, financial and human capital. In the following paragraph, a distinction is made between coping strategies, as preventive risk minimization, and the response measures at moments of actual food shortage. Actions that prevent seasonal stress include diversification of income and employment, management of stocks, and actions based on the social network within the village: inter-household transfers of food and money, and borrowing. The information is derived from case studies.

Table 7.2 shows the mechanisms employed by case households in lowland and coastal areas to mitigate food shortages in the home. Women were interviewed on the various actions/activities they have done during period of food insecurity. Responses were validated by field observations and focus group discussions.

⁵ In September 1999, based on one week observation, coastal case households spent only about P450.20 on school expenses of children compared to P1,587.66 school expenses of lowland case households. Five of the 20 case households in the coastal area did not send their children to secondary school due to financial problems. Only children in the elementary grades are sent to school.

As can be gleaned from Table 7.2, regardless of ecological area, households pursue various mechanisms to minimize the risks to immediate and to long-term food insecurity. The case studies below of a household in the coastal and in the lowland area, who experienced food shortage in 1999, illustrate the various responses to declining food availability and strategies to cope with food insecurity. The discussion of selected coping mechanisms will follow.

Table 7.2 Food security mechanisms of case households in lowland and coastal areas in 1999

Food Security Mechanisms	Lowland (N=18)				Coastal (N=19)			
	Dry Season		Wet Season		Dry Season		Wet Season	
	Pr-H	LP	Pr-H	L-P	Pr-H	LP	Pr-H	LP
Income Diversification								
• Change of employment (men)	5	4	4	2	1	7	9	5
• Sale of animal	4	0	3	0	0	2	1	0
• Mortgage properties/appliances	0	0	4	0	0	1	2	1
• Sale of properties/appliances	1	1	3	2	1	0	2	0
• Women's employment	4	5	6	5	2	4	5	3
• Temporary migration	0	5	3	2	0	0	7	3
Management of Stocks								
• Sale of cereals	0	3	0	2	0	1	0	0
• Storage of cereals	4	8	4	6	4	5	4	0
Inter-household Transfers								
• Food sharing/gifts	7	6	5	6	7	8	7	5
• Borrowing food	8	4	12	8	16	13	12	9
• Borrowing money	5	2	7	6	4	5	9	7
Changes in Food Consumption Pattern								
• Substitution staple								
- high quality rice to low quality	5	4	6	4	0	0	0	0
- rice to corn	0	0	7	6	9	12	16	15
• Change in preparation	0	0	11	1	10	7	17	13
• Reduction in daily meals			1	1	2	2	3	4
Gathering/Bartering	5	3	4	5	5	3	9	7

Note: Pr-H = Pre-Harvest Period; LP = Land Preparation Period

Coping with risks and stress

In examining the dimensions of food security, the concept of livelihood security needs to be taken into account. Vulnerability is seen as the opposite of sustainability. Chambers (1989) describes the term vulnerability as any eventuality and stress experienced by households and their difficulty of coping with them. The vulnerability of the households to risks is affected by events beyond their immediate control. These include seasonality in food supply and incomes, loss of jobs, fluctuations in prices and natural calamities.

Households' access to assets, resources and opportunities are important to minimize the risks and stress. These resources can be physical, natural, social, financial and human capital (Carney et al., 1999). Households possess these in varying proportions, and will use them, invest in them or deplete them, depending on circumstances and outcomes. The profiles of two households provide a micro-picture of the pattern of household coping strategies and other remedial responses to achieve food security.

Case 7.1 The case of a farm caretaker

Lando grew up in farm family. At an early age, he was exposed to the life in the farm, being a constant companion of his father in their rice farm. He is married to Delia from a neighboring town, and they have five children, four boys and a girl. Both of them finished secondary school.

Five years ago, due to serious illness of his father, part of their rice farm was sold to pay for his father's hospitalization. His hopes to get a share from the farm became uncertain. So, when a relative, who became his godmother (*ninang* Maring)⁶ during his wedding offered him to tender her one-hectare farm, Lando and Delia did not hesitate to accept the offer.

As tendering arrangement, Lando receives 10 cavans⁷ of palay every production cycle. During the first two years, Lando's share of 20 cavans per year from cropping seasons had been enough for his family's consumption. The wages that he receives (P120-150 per day) from the landlord, whenever he works in the farm, e.g. weeding, seedbed preparation, land preparation, were also sufficient to cover their other basic needs. These jobs are not covered in the tendering arrangement. In addition, Lando has four plots of *hunusan* belonging from four tenants. The size of the plots range from 400 to 700 square meters. The amount of the harvester's share (in cavan) can be gauged by the yield per plot as shown in Table 7.3.

Table 7.3 Palay share of Matalom family under the *hunusan* system in the dry season in 1999

Tenant	Relationship with the tenant	Number of plots	Actual harvest's share (cavan)	Sharing arrangement
Delfin	<i>Compadre</i> ⁸	1	2	1/7
Ka Celso	Friend	1	1.5	1/7
Lola Saleng	Relative	3	4.5	1/6
Tio Paeng	Relative	2	4	1/7
Total		7	12	

The combined share from tendering and *hunusan* during the first two years has been more than adequate for Lando's family cereal consumption and other household expenses.

⁶ Relations that are formalized between kin and non-kin when one of the principal actors stands as sponsor during wedding ceremonies. A male sponsor is called *ninong*.

⁷ A unit of measurement of rice where one *cavan* has a capacity of 45 to 50 kilograms.

⁸ Relations that are formalized between kin and non-kin when one of the principal actors stands as sponsor for baptism and confirmation. A female sponsor is called *comadre*.

However, due to El Niño last 1997, half of the one-hectare farm was not planted for one production cycle. Although in 1998 the whole one-hectare rice field was planted, there was a very poor harvest in this year. The source of staple of the family became uncertain and in order to address the problem, Lando took on another job. He was hired as a helper in a veterinary shop in the neighboring town and was paid P130 per day. The couple has also two piglets on a share rearing system, which Delia got from her sister. The couple believes that they have to diversify their sources of income since rice yields are becoming unpredictable.

In January 1999, the couple had sold one piglet while the other was maintained to become a breeder for more piglets to raise. Lando continued his job in a feed shop while maintaining the farm he takes care. Being honest and hardworking. Lando's relationship with his employer who later on also became his *compadre* improved further. The relationship has turned into a friendship, allowing for extra favors, like credit for livestock feeds and vaccines without interest and at a longer period of time.

In March, Lando had a road accident and was hospitalized for a fractured bone in the left leg. He had to stay home for more than one month to recover. Delia borrowed P1,000 from her relatives for necessary medication. She had also taken a P1,500 loan with 5 percent interest from a neighbor. During harvest time in April, Lando was still not fit for work. As a result, he had to lend his *hununasan* to his brother to avoid for forfeiture. His brother gave him one sack of paddy rice in return for this favor. Delia had to oversee the farm while Lando was still recovering. She was already familiar with the activities in the farm because she used to help Lando with farm work. By the end of April, the couple had only 10 sacks of paddy rice from tendering, of which seven were sold to pay their debts. Due to a higher price of paddy rice (P340/cavan), they were able to pay back half of their loan, and the rest was spent on additional medicines for Lando. The other three cavans were reserved for consumption.

In May, Lando had resumed his job in the shop but did not collect his two-week wages to pay off his previous cash advances. Delia started to borrow rice because their cereal stock was finished. She also had to prepare cheaper vegetable dishes to economize. By the end of May, the couple had sold four out of nine piglets of the share-reared sow. Each piglet was sold at P1,000. Two piglets were given to the owner as share. From the P4,000 proceeds, P3,000 were used to pay back the loans from Lando's employer, while the remaining P1,000 was kept for the school opening for school costs of the children.

End of June, the couple had financial problems because their savings were spent on school uniforms as well as on livestock feeds for the three fast growing piglets. Lando and Delia had to sell two of the three remaining sacks of palay for the feeds. But those were still not enough. Also, in those times, Lando had no off-farm wages because he was overseeing the farm operations for the wet season. He again borrowed two sacks of livestock feeds from his employer.

Between July and August, Lando had already borrowed cash from his father and feeds from his employer. Delia also borrowed rice from relatives. She also got one half sack (about 25 kilos) of rice as a gift from Lando's parents. The couple had to postpone also the construction of another pigpen because of financial problems. The couple felt that they

would soon be in deep trouble if no extra income would be generated. Lando decided to apply as night guard (since he had worked as a security guard when he was still unmarried) in an on-going house construction of his employer, with a wage of P100 per night in addition to his daily new wage of P200.

By September, the couple's food and financial status had become more or less stable. They had a P3,200- net earnings from sales of three swine. Lando bought one sack of rice for P800-which lasted until harvest in October. At the beginning of October, Lando had already three sacks of harvester's share. By mid-November, the couple's had a total share of 22 cavans of palay from tendering and *hununan*. They sold seven sacks for the construction of an additional unit of pigpen for the fast growing ten piglets from the second furrowing. Due to the low price of palay - P250/cavan, the P1,750 proceeds from sales were still not enough to finish the project. The pigpen was completed using second-hand coconut lumber woods and galvanized iron sheets given by Lando's employer.

Lando evaluates his family's situation as follows:

My family is big, I have five children. There are many mouths to feed so our expenses are also big. Delia and I have to work hard and find ways to increase our income. My children are growing and eventually all of them will be in school. We have to be financially prepared for their education.

For Lando and Delia education for children is a major goal. Both believe that education is important for their children's future. They want their children to finish college education when they grow up.

Discussion

This case shows how a farm caretaker family copes with an impending food crisis and how a vulnerable household integrates activities and wage labor to generate livelihood and food security. To maintain income and food supply, households diversify their sources of income by combining farm and off-farm employment and livestock production. Access to a rice farm assures this household of a regular source of staple that is more than enough in good times. However, series of natural calamities and ensuing circumstances had jeopardized the livelihood and food security of the household.

As the household becomes vulnerable, the capacity to cope with shocks or stress becomes a function of the asset base of the household. In this case, human capital, financial and material resources are all significant for income generation. Health, education and labor are important aspects of human capital that this household possesses. The household was able to draw on their material possessions and social network to maintain their livelihood. The couple has limited human resource because the children are quite young. However, education, skills and health of couple are important assets that contribute to livelihood outcomes and cushion household food insecurity. The case household is endowed with a social network. The in-laws, sister, godmother and *compadre* are important persons in the social network. The social network of gift-giving and sharing, food and cash borrowing and reciprocating, has smoothed consumption of the household during the period of seasonal food and financial stress. The system of share-rearing was instrumental to sustain the household's financial and food needs.

The case also highlights the important role of women in the household economy, in decision-making processes, and in food security. Aside from the traditional roles, Delia makes an important contribution to the household economy. She was mostly in charge of the farm and livestock when Lando was recovering from accident. She also engaged in occasional food vending for additional income. The case shows the tenacity of women to shocks and their flexibility in times of food crisis. This household has been successful in diversifying or multiplying their sources of revenue, which prevented a downward movement in the cycle of poverty. Early recognition of an impending crisis is also an important factor that prevented serious food shortage this particular household.

Case 7.2 The case of a hired fisherman

Teban, a native of Leyte, is married to Linda, also from Leyte. They have six children between the ages of 1 and 13 years. Teban formerly rented a motorized fishing boat from his relative. Four years ago, he joined a big fishing boat in the adjacent village and he became a regular member of the fishing team as *mangangabay*⁹ or an ordinary helper. During the last two years (1997-98), due to declining fishery resources, Teban's income from fishing continued to dwindle, which negatively affected his household's food supply. To meet subsistence needs, when not off-fishing, Teban wherever possible engages in farming as a hired laborer for planting, weeding and harvesting services. Being hardworking and because of his experience in farming, Teban was able to obtain two parcels of rice farm through the *ambo*¹⁰ system when the landowner got seriously ill. Unlike Lando's case, Teban's share from *ambo* is not fixed, but dependent on the total harvest per cropping cycle. The harvested paddy rice has never been sufficient to last till the next season nor till the start of the rainy season. Teban usually gets about six cavans in the dry season and four cavans in the wet season, which is equivalent to 1/5 of the total harvest in each season. He explains that his household always experiences food and money shortages and is unable to pay for basic households goods and services such as health and education. Teban and Linda have several debts that they cannot repay.

Due to prolonged drought brought about by El Niño in 1997-98, rice production was at a low level. Teban had a total share of only five cavans from the dry and wet season. Despite harvest failure, Teban got another *ambo* from a friend. He believed that shares from *ambo* would prevent severe food shortage in his household. In-between the planting, weeding and harvesting periods, he continued to engage in fishing although he already found it too risky and no longer profitable, due to very little or sometimes no catches at all. He could not also join the fishing team regularly because he became sickly.

In May 1999, four months after giving birth to their sixth child, Linda resumed fish vending. She was forced to vend to earn money and to preserve the little rice stock they had. She also needed money to buy vegetables and condiments for their viands, as well as for the opening of classes in June. The couple decided not to send Dante, their eldest son, to secondary school due to financial problems. By the end of June, there was no rice staple and the family resorted to corn purchased from the money earned by Linda. Teban finally stopped fishing

⁹ A member of fishing team who cast down and pull out the net from the sea. For this service, a *mangangabay* receives cash payment between P70-100 and a non-cash payment of fish between half to one kilo depending on the volume of fish catch.

¹⁰ Is an arrangement similar to *hununan* (Sandoval 1995).

because the foreman of the fishing boat replaced him. In July, Dante also started fish vending to augment his mother's income and meet family food needs. His uncle had lent him P200 as a starting capital. In addition, he also gathers firewood in a nearby forest to sell in the village. He sells one bunch of firewood at P10. Dante gives almost all his earnings, about P50 to 70, to Linda. He only keeps about five to ten pesos for pocket money, but often he also spends his money on household expenses, such as kerosene or school allowance for his younger siblings. Occasionally Teban would borrow the motorized fishing boat from his cousin but often the catch was not even enough to pay for the gasoline. In August, Teban had no job. Fishing became dangerous because of bad weather condition brought about by monsoon. This situation was aggravated by the absence of farm jobs, since it was the period when the palay rice is standing and waiting to mature. Since August also coincides with the typhoon period, gathering of hunger foods edible seaweed, sea urchins, clams, and wild yam became difficult¹¹. The difficult situation of Teban's household is captured in his narration:

Earning a living has always been hard for my family. Whenever I can not go fishing, I get whatever job is available even an illegal job of being a combrador¹² or other menial jobs in order to have food for the day. Our poor purchasing capacity is further aggravated by higher prices of food commodities. Because of higher demand (since better income families shift to much cheaper food), prices of cheaper commodities increased thereby making it more difficult for my family to meet food requirements. Better-off families could easily dispose their assets in exchange for food. But in our case, our most precious asset is our body and if there is no job available, we become idle against our will.

By this time, Teban's household continues to buy corn at a much higher price in the village *sari-sari* store (the price per kilo of corn being 1 peso higher than in the town market). Sometimes, they buy rice, of which Linda makes porridge. She also accepted laundering, but only on Saturdays and Sundays when her eldest daughter is not in school and can look after the younger kids. In this period, they ate only rice porridge for breakfast, and corn for lunch, and dinner with some green vegetables, gathered or sometimes given by friends in the adjacent village. They also started to eat fish sauce to complement the rice porridge. During low tide, Dante would collect clams under the *nipa* palm trees in the swampy area at the back of their house. They had to thoroughly clean the clams to remove the mud and foul odor. Though it is a taboo to collect them in the swamp due to pollution of human and animal waste, in times of hardship, some families ignore this to stave off hunger. During low tide, aside from Dante, Linda also collected seaweeds, sea urchins and other edible organisms for their consumption. This activity that is usually done in the morning by women and children is also referred to as gleaning (Israel-Sobritchea, 1994)¹³. In fact, many families

¹¹ Except for wild yam, gathering of organisms that thrive in shallow water is also called gleaning (Israel-Sobritchea, 1994). It is usually done during low tide in the early morning or late afternoon. In the coastal area, many poor households depend on this food resource especially when fish production is low due to inclement weather.

¹² A person who collects the bets for lottery or *jueteng* and receives commissions out of the total money collections.

¹³ A production activity closely associated with women and children. It involves collection of edible seaweeds, mollusks, sea urchins, snails and other organisms that thrive in shallow water (Israel-Sobritchea, 1994). According to some households, in recent years, this activity becomes an indicator of food shortage in the household because people will not resort to it if they have much choice due to pollution of the shoreline

depend on this food resource especially when fish production is low due to inclement weather.

At several occasions, Linda and Teban visit their relatives in a neighboring village to ask for food, e.g. corn, banana, sweet potato or cassava, whatever available. Although they are ashamed, sometimes, the elder children are sent to Linda's sister on weekends to reduce the food consumption of family.

When their youngest son got ill, Linda did not vend for several days. Teban had to mortgage two sheets of newly acquired galvanized iron roof for one-month period for P250 to buy medicines and some cereals. Linda was already ashamed to borrow corn from the neighbors and from the *sari-sari* store in the village. She had not paid off earlier loans from storeowners nor returned the several kilos of corn to neighbors. Against the couple's will, but because they were in dire need of money, they allowed Dante to join a one-month fishing expedition and got an advance payment of P500 from the owner of the fishing vessel. Also, with the consent of the owner, the couple sold their two-months old fattening swine acquired through the system of share-rearing, for P2,300. Although, the proceeds should be divided equally, Teban decided to give the owner P1,500 (which was more than the agreed sharing of proceeds) in exchange for the favor and to maintain a good relationship with the owner. Linda had used the P800 to pay the P250 mortgage and interest for the two sheets of iron roof. She also bought rice for their own consumption and returned the corn and rice she borrowed from the neighbors. But she was able to payback their loan in only one *sari-sari* store. The disposal of the swine helped them financially in the short-term, especially when there was no income from fishing and vending. Yet, the possibility for profits in the long-term did not materialize.

By the end of September and beginning of October, the harvest season starts. Teban and Linda said that they have to work harder everyday for their children. According to the couple, if they only had other options, they would not allow Dante to join the fishing expedition because he is still young. They are also worried that it will be the beginning of independence for Dante and that the other young boys in the community who give only a small portion of their income wages to the parents will influence him. Most of these boys also lose interest in going to school.

Linda wishes to increase her capital in vending so that she can buy greater quantities of fish. She hopes that her loan application from BIDANI (without collateral) will soon be approved. She does not want a loan from the moneylender, due to the high interest rate. Even before their sixth child, Linda wanted to have a tubal ligation (sterilization) for two reasons. First, she does not like to have another child and, second, to have more time for fish vending. However, like many other men, Teban is strongly against it.

The couple understands that they cannot have a better job because of their low level of education. Like other parents in the village, they have a dream for their children to finish at least high school education, so that they can find a better job. Linda also hopes to repair their dilapidated house and buy a container for drinking water. But no matter how she and Teban try, their earnings are hand-to-mouth only. They cannot sustain the food and other needs of their children. The couple is still uncertain whether their dream for the children will come true.

Discussion

This case illustrates a vulnerable context within which a poor fishing household has to cope. It shows the limited opportunities and constraints household members face in periods of food shortage and economic stress. This household is characterized by a long-term trend of food and nutrition insecurity and it is highly susceptible to risks, shocks and stress. The household adopts a number of livelihood and coping strategies. The livelihood has been changing overtime, but compared to Case 7.1, the changes were not for the better because of its limited asset base.

Some characteristics of Teban's household can explain why his household is impoverished. These are: large household size (eight members); low educational attainment of the household head and other members and their poor state of health and nutrition; the almost total dependency of household on traditional fishing as prime source of daily maintenance; and their meager assets most of which are traditional fishing gear. Teban, can never hope to get a well-paying job, as he does not have the skills and knowledge required for an occupation with higher returns. This is also true for Linda. Nevertheless, Osmani (2000) asserts that in poor households, the role of women in ensuring survival and in carrying out fundamental productive activities and household decisions becomes increasingly important.

The household never had enough food for subsistence and cash to buy food and pay for other basic necessities and services such as health and education. The system of *ambo* provides only temporary relief. The inability of the household to send their eldest child to school is an illustration of their desperate situation. Likewise, the sales of share-rearing livestock at a loss and the gathering of hunger foods, also indicate that this household is in great distress.

Considering the impoverished situation of Teban's household, one may wonder how they are survived. A possible explanation is the presence of a support system. This household is able to claim support from the family network, e.g. the use of boat for free and sending children to a relative during weekend to reduce food consumption are important for the household's survival. According to Devereux (1993), the latter mechanism can minimize food purchasing needs, but –as could be observed by the researcher - it associated with a social cost: shame or disgrace. However, as Ardales and David (1986) noted, the above mechanisms and means, though imperfect and less dignifying to the poor, help them survive. Findings also show that whatever ways people would resort in order to survive these are conditioned by the vulnerability of the context in which the household operates. Lack of assets hinders the ability of Teban's household to choose and implement effective coping strategies. The cyclic periods of adversity increased the vulnerability of the household.

7.5 Strategies to cope with food insecurity

In this section, several coping strategies and mechanisms will be reviewed. For each of them the situation in the lowland area will be compared to that in the coastal area to examine the coping behavior of case households in the two study sites.

Income diversification and employment

As shown in Chapter 5, households in both areas are engaged in a multiplicity of income-earning activities to meet subsistence requirements. The wage employment of household members provides a substantial contribution to the total household income. Employment is intended to solve problems of food insecurity for the long-term. But since well-paying jobs are difficult to find, part-time employment is utilized to complement and supplement the social mechanisms to help cushion food shortages.

Lowland area

For income-generating activities in lowland areas, landless agricultural workers rely heavily on seasonal employment in agriculture. Wage income from the service sector is important especially in the pre-harvest period when there is little agricultural activity in the villages. Male family members who work out of the village on a daily, weekly or monthly basis make up the majority of off-farm wage labor. Although more women had off-farm activities than men especially in the wet season, their income was marginal. Lowland women were mostly engaged in wage labor as factory workers, cosmetologists, waitress, whereas coastal women work in stressful jobs like small trade and domestic services. The employed women claimed that the biggest proportion of their income was spent on foods and other basic household needs. The difference in proportion of women engaged in income-generating activities between the two communities illustrates the more varied opportunities in lowland areas, where 28 percent of women have off-farm income versus only 18 percent in coastal areas.

A small percentage of lowland household heads changed their employment during the observation period, the peak being in August. However, this is complemented by a relatively higher employment of women. Other possibilities for earning money in order to buy food depend on the sale of assets or livestock, mortgage properties or appliances and temporary migration in search of wage labor. Sales of livestock are more prevalent in the lowland area, especially in August when 17 percent of the lowland households sold swine compared to only 5 percent in the coastal areas. The same trend can be observed in the sales of appliances and temporary migration of men to the nearby city and provinces in search of jobs.

Coastal area

In coastal villages, households also pursue several activities to generate income in order to survive. Changes in employment of men, and women employment are the two most popular diversification strategies of households during the observation periods. This is followed by temporary migration of men. These activities are more prevalent in the month of August, and the differences can be seen between the lowland and coastal households. As a consequence of a much longer period of low productivity in fishing during the rainy season, more men have changed their employment and have searched for wage labor in other places than men from lowland households. Some households sold their few assets in order to buy food. This action is related to the general observation that coastal households have limited assets.

Despite the common perception that they are full-time “housewives” and, therefore, economically unproductive, women in the coastal area also played an active role in income diversification in order to maintain the food supplies. Several wives of case households were engaged in a variety of jobs, e.g. food vending and laundering. Others are employed as collector of *hai-alai*, *masiao* and *hueteng*. Despite low proceeds and the risks involved in these illegal activities, women believe that their engagement in these activities is better than

stealing or being prostitutes. Nevertheless, just like in lowland areas, the meager income of women is mostly spent on food for consumption and other basic needs of the household.

Temporary male migration was found more in the coastal than in the lowland communities, especially in August (36 percent versus 27 percent). However, the extent to which migration is a solution depends on timing and amount of remittances. Women are who are left behind are solely responsible for looking after the welfare of the members of the household. Often, remittances are received late, and the households resort to a combination of cash borrowing and obtaining food on credit to be repaid when the money arrives. In some instances, remittances are not sent because men have used it for other purposes

Management of stocks

One of the most important mechanisms for smoothing consumption from one season to the next is the accumulation of household food stocks. The adequacy of the stocks depends on the initial levels of food stocks right after harvest (for lowland areas) or after the period of abundant supply of fish catches (for coastal areas). For lowland landless households, stocks include the wages received in the form of a share of harvest (as in the case of Lando and Teban) plus purchased food items, which are added to household food supplies.

Lowland area

Storage of rice was almost two times higher in lowland case households than in coastal case households during land preparation in the dry and wet season. Likewise, sale of stocked paddy rice is done when households are in dire need of cash e.g. for hospitalization, payment of school fees, etc. About 60 percent of case lowland households are landless agricultural laborers and almost all of them are involved in the system of *hunusan*. Particularly in the dry season, higher yields also mean higher harvest shares for agricultural laborers.

Coastal area

As expected, sales of processed fish were observed only for coastal households. It is a common practice for fishing families to process fish by drying and fermentation during the time of abundant supply, for consumption during the lean months. However, when the supply of rice is already insufficient, these food stocks are either sold to buy or corn or bartered for rootcrops.

Regardless of the type of households, storage or sales of food stocks for hungry period would depend on the capability of households to accumulate adequate food stocks, particularly during periods of abundant catch and sufficient income. However, the marginal income from fishing does not allow the coastal households to stock food for a longer period.

Inter-household transfers

The presence of socio-cultural mechanisms could explain how household in coastal survived despite growing poverty. Inter-household transfers are another important way to smooth consumption from one season to another. Payment in-kind, gift-giving, food sharing and loans are important sources of unearned income. Data on food procurement practices of households show that wages in-kind is an important source of staple for many households in lowland areas. In both areas, households resort to borrowing, obtaining food on credit from sari-sari stores, receiving gifts when the main source of staple collapsed.

Lowland area

Inter-household transfers of food and money have long been an important mechanism in minimizing risks associated with food shortages. In rice farming communities, it is a common practice for landless households to render weeding services when rice plots are ready for weeding. As mentioned earlier, the palay share from *hunusan* becomes an important buffer for many landless agricultural workers during the lean period. Those who have weeded more plots will have more shares and consequently more sacks of paddy rice during harvest time. This practice could be best understood by the experience of Lita from Laguna:

We are very poor, we do not have land to till. My husband and I grew up on the farm so we only know farm work. Since farm jobs are seasonal, during the peak season, my husband and I extend working hours to do weeding in several paddy rice plots. Fast work enables us to move to another plot. Sometimes, I would ask my children to forego school in order to finish weeding commitments. Our eldest, a 11-year old boy joins us in weeding while our 10-year old daughter looks after the younger siblings. Although, our work is not remunerated immediately, it assures us of more stable income and sufficient staple at harvest time. Last dry season, my family collected a total of 15 cavans of paddy rice as wages in-kind; five sacks were sold while two sacks were used to pay back our loans. From the proceeds, aside from groceries, I also bought two galvanized iron sheets to replace our old leaking roof. We kept the eight sacks for our own consumption. As long as my husband and I do not fall ill and there are no natural calamities, my family will not go hungry because our share from the harvest will be more than enough for us.

Borrowing food and money is another common mechanism used to smooth consumption from one period to the next. Households, facing depleted food stocks during pre-harvest season, borrow (food items and cash) to meet consumption. They usually borrow staple from landlords and repay debts by family labor or rice stocks after harvest. In the following season, these households find themselves borrowing again. This is the scenario during good harvests. In bad years, such a strategy can cause seasonally food insecure households to become chronically food insecure. Informal credit arrangements have a strong influence on the cost of borrowing for many households. Credit is paid cash and with interest charges, whereas borrowed food items are paid back in-kind. In borrowing, more interpersonal relationships are involved. Food items on credit are usually obtained from the *sari-sari* store or from rice dealers, while borrowing is between relatives, neighbors and friends. More households borrowed food and money in the wet season. This illustrates the poor food security situation of households during this period.

Food sharing and receiving also constitute an important safety net for poorer households in times of scarcity. This system cultivates and converts social resources into a system of mutual assurance that should households find themselves in similar situation, friend, relatives and neighbors will be willing to reciprocate. In the lowland area, few households are able to share food in the wet season.

Coastal area

In fishing communities, the system of wages in-kind was not only observed in rice production but in fish production as well. However, because fish is not a staple, the system of wages in-kind in the fishery sector is less effective in minimizing the risks associated with food shortages. Wages in kind in fishing must be immediately converted to cash to purchase the staple. The higher the position, the bigger amount of fish is received by the worker. An ordinary worker receives P70 plus one half to one kilo of fresh fish, depending on the volume of the catch. The sea diver, a much higher position, normally receives P250-300 plus one to two kilos of fresh fish. When the catch is little, workers are only paid in cash.

In coastal areas, almost the same number of case households as in lowland areas receives gifts of rice and share cooked foods. This testifies to the fact that the old-age Filipino tradition of sharing with others is still very much alive in both areas. However, some households claim that in times of hardship people tend to be less generous, especially when they cannot expect something in return. The low proportion of households who received foods during the wet season in both areas supports this. As in the lowland area, most food sharing and gift-giving takes place between relatives and close friends or neighbors.

Coastal households tend to borrow food rather than cash. The peak of cash borrowing is in the wet season, coinciding with the time when fishermen are offshore and food stocks are almost depleted. Cash loans obtained from employer, merchants or *sari-sari* store owners are with interests whereas loans from relatives are not. These loans are not exclusively spent on food. In both areas, borrowing of food is usually done by mothers. Persons approached in order of preference are immediate relatives, neighbors and friends, in-laws, and *sari-sari* stores. Borrowing, as opposed to credit, has a moral value because it operates on trusts and a long-established relationship between the provider and the borrower.

Changes in food consumption patterns

Households tend to change eating patterns and food preparation as a reaction to dearth in food supplies. These changes usually involve the kind, amount and preparation of food consumed. When the situation deteriorates, reduction of meals is also resorted to.

Lowland area

In terms of consumption strategy, in general, changes in the food consumption pattern are less in lowland villages, particularly skipping meals in response to food shortage, but a shift could be noted in consumption of high quality rice to low quality rice. Some lowland case households likewise resort to consumption of rice gruel. None of the lowland case households resort to corn as staple, even during food scarcity. During scarcity, for protein sources, the lowland households shift from pork to fresh fish and, subsequently, to dried and salted fish. With regard to the consumption of vegetables, it was observed that during scarcity households tend to eat more of fruit vegetables like green papaya, *langka* (jackfruit) and squash, less green beans and green leafy vegetables (which are more expensive), while potato tops and *malunggay* (horse radish) were regular items in the diets regardless of season or month. In lowland villages, the changes in the dietary pattern were observed mostly in the wet season; the most common of which is a change in food preparation.

Coastal area

As seen earlier, consumption of corn was observed only in coastal villages. Corn as secondary staple plays an important role during the rainy season in buffering lower levels of consumption of rice. Surprisingly, even in the dry season when income peaks are expected, still a big proportion of coastal case households consumes corn. The shift was gradual, first to a mixture of rice and corn and then to pure corn grits. For protein sources, coastal households shift from cheaper fish (*galunggong*, *tamban*, *alumahan*, *bisugo* and the like) to dried fish, *dilis* (anchovies) and then to *ginamos* (processed anchovies). Expensive fishes, e.g. yellow fin, *tanigi* and *talakitok* are sold and not consumed, even when there is abundant supply, because they command a high price.

For vegetables, the changes in consumption are similar to those in the lowland area. It was also observed that consumption of fruit vegetables (usually cooked in coconut milk or sauteed) is resorted to because they can be gathered or are given by neighbors or friends. Because these vegetables are bulky, they can more or less compensate the lesser quantity of cereals in the diet. In a deteriorating situation, women skip meals and sometimes just drink hot water to fill their stomach, so that the children can share the limited food. This was not observed in the lowland area. The latter mechanism is detrimental to the food and nutrition security of women.

Gathering and bartering

Lowland area

In this category, hunting or fishing and gleaning are the most common activities done in lowland areas. Hunting and fishing are commonly done by men, gleaning by women and children. These activities are generally observed in the dry season when the good weather allows women and men to go to the field (in the case of gleaning) and small rivers for fishing. Gleaning is usually done after the harvesters deserted the rice fields by using a metal stick in order to remove the remaining grains from the threshed rice stalks. Whatever the gleaner collects is not shared with the owner. Women who engage in this activity are not only able to improve their rice stock but also improve their income and capacity to payback their loans. Lita shared her experience on gleaning:

Because harvest time in our barangay coincided with the school vacation, my son and I were able to glean some rice fields after harvest. From the three rice fields, we were able to get three sacks of paddy rice by gleaning. We sold two sacks for P270 per sack. One was kept to increase our reserve stocks. I spent the money to purchase school supplies and on some new clothes for the children. I also gave my son some money for new rubber slippers. Sometimes, my husband would go fishing, but because of too much water pollution, he could only bring home two to three pieces of small hito or tilapia, and some kuhol (edible black snails), which were not even enough for one meal. Last harvest season, because of severe financial problems, he also hunted paddy rice rats for our viand.

Procurement of rice through barter is not a common practice in the lowland area (Figure 7.10). In fact, bartering is done the opposite way; during abundant supply, rice is exchanged for non-food items.

Coastal area

Unlike in the lowland areas, exchanging food items through barter can be observed in fishing villages, not only during food scarcity but also during normal conditions. For fishing households, fish is normally bartered for rice, banana or root crops such as sweet potato, *gabi* or yam while the-rice producing households bartered rice for fish when income is insufficient to buy viands. An indication that the household is really in distress is when corn is bought instead of rice or rice is exchanged for corn, or dried fish for banana and root crops. Rice is more expensive compared to corn, so households get more corn when they exchange rice.

More coastal households are involved in gathering wild foods. Women and elder children mostly do this activity. Although wild foods such as yam, banana blossoms, wild papaya, jackfruit, seaweed, clams, snails and other organisms can hardly be found in the wet season, it appeared that the percentage of households gathering wild foods was twice as high in the dry season compared to the wet season, which again illustrates the poor food security situation in the coastal area.

Households in both areas find it difficult to find ways of feeding their families, especially during seasonal periods of stress. They tend to use a number of different coping strategies and mechanisms ranging from diversification of employment to liquidation of assets, and inter-household transfers such borrowing food and food sharing. Due to differences in the environment and the context within which the households operate and the lesser availability of and access to resources and to other employment, households in the coastal area tend to resort more to social mechanisms throughout the year. The diverse and interlocking nature of responses to food deficit, as demonstrated by the behaviour of the two case households, was also observed for other cases in the study sites. Table 7.4 summarizes the outcomes of strategies and responses to food shortage.

Table 7.4 Outcomes of strategies and responses to food shortage

Event	Behavioral category	Strategy	Specific response or action	Outcomes (+ or)
Low food supply	Protect consumption	Income generation (employment)	*change of employment (men) *additional employment (men and women) *women employment *migration	(+) improve income and capacity to purchase food and other basic needs (-) poor childcare (-) potential breakdown of family relations
		Income generation (non-employment)	*mortgage assets *sale assets (animals and other properties) *sell of processed foods *borrow cash	(+) improve income and food supply temporarily (-) depletion of asset base (-) reduce food stock (-) need more cash in the future to pay debts (-) insolvency or collapse
		Food generation (inter-household transfers)	*borrow food *asking and sharing *gifts *gathering	(+) temporary relief of food shortage (-) dependency (-) social stigma (-) moral obligation to reciprocate (<i>utang na loob</i>) (-) destruction of natural resources
	Modify Consumption	Reduce consumption	*smaller portions *reduce meals per day	(-) low energy intake (-) food insecurity or hunger (-) nutrition insecurity (-) illness
		Diversify consumption (change diet)	*less preferred varieties or types of food *less nutritious diet *wild foods *bulky foods	(-) low food intake (-) food insecurity or hunger (-) nutrition insecurity (-) social stigma
		Reduce number of consumers	*children sent to relatives	(+) more food to be shared by members of households (-) moral obligation to reciprocate (-) social stigma

7.6 Summary

This chapter addresses the influence of seasonality in food security and diets of households. Three aspects of seasonality are reviewed: (a) the prevalence of food insecurity; (b) the sources of food and (c) the quality of diet. For these indicators, both similarities and variations could be observed in the study sites.

Food shortage tends to be a common phenomenon during wet season in both areas. In the coastal area, a relatively long period of food shortage was noted, which resulted in more chronically food insecure households compared to the lowland area. Both areas suffered from the consequences of natural calamities and financial crisis that hit the country in the previous years. But none of the sample households are chronically food insecure. The data seem to indicate the more vulnerable situation of fishing communities compared to agriculture-based communities. The differences in resources (physical, human, financial and materials assets) from which households in the coastal and lowland area draw their food and livelihood explain the variation in household food security in the dry and wet season (see Chapter 5).

Among lowland households, there is an agreement between food insecurity and poor diet in the dry season, but better food security in the wet season, planting and pre-harvest period is not accompanied by a better quality of diet. This implies a marginal food security, with production and income being not sufficient for a better diet or because of other competing needs of households and/or ignorance. Case households in the lowland area seem to invest in needs such as housing and in children's education for better income benefits in the future.

Market purchases are the largest source of staple calories in both areas. This implies that household food insecurity is not due to seasonality in food production. Access to food is directly linked to employment and income generation activities of households. Hence, employment is intended to solve the problems of food security. However, there is also seasonal factor involved in employment and income generating opportunities.

In order to better understand the link between household food and nutrition security, several household strategies were examined. Households resort to a number of mechanisms to meet food consumption needs throughout the year. Due to growing instability in fishing as well as uncertainty in fishing operations, many fishermen in the coastal area engage in farm and off-farm jobs and migrate to other areas in search for work during the wet season. They are also widely engaged in borrowing of food and food sharing, both in the dry and wet season. In the lowland area, more women take up employment in the service sector to complement the wages of men. This is related to more varied employment opportunities in lowland areas compared to coastal areas.

As a consequence of a longer period of food shortage and inability to recuperate during periods of high productivity in fishing, actions that defy existing norms for survival such as substitution of staple, change in diet preparation and skipping meals, gathering of hunger foods and sending children to relatives are pursued by coastal households in both seasons. As mentioned earlier, these mechanisms and means, though imperfect and less dignifying to the poor, help them survive.

In conclusion, the usual of pattern of seasonality is that towards the end of dry season, food becomes scarce, less varied and more expensive. The general scenario in the lowland landless households is that a shorter period of adversity allows recuperation. The relatively better endowments of lowland households prevent them from plunging into a downward spiral movement of poverty. The subsistence fishermen face greater food shortage than lowland farmers, due to marked seasonal fluctuations in income and food supplies. The longer period of adversity in fish production does not allow poor households to recover. As

a consequence, they become poorer and perennially or increasingly indebted households. This implies that not all household coping strategies and mechanisms for smoothing consumption contribute to long-term household food security. As shown in the cases, some strategies may ameliorate seasonal household food insecurity without affecting long-run household welfare; some may relieve seasonal food shortages to a certain extent; some may temporarily ease food shortages but increase household poverty. In the latter situation, poverty becomes a downward spiral, with women assuming an increasingly heavy workload and greater responsibility for household food security.

Households' access to food depends on whether they have enough income to purchase food at prevailing prices or have access to land and other resources to grow their own food in a sustainable manner. Sen's (1989) concept of entitlement illustrates why coastal households are food insecure. They are food insecure because they lack or have no access to assets that can be transformed into resources and investments necessary for minimizing risks and resisting shocks. They have few productive assets, limited skills, low education, which they can build up or draw on in pursuit of sustainable livelihood. Oshaug et al. (1994) assert that any form of food procurement is only viable when the available resources are sufficient to cover other basic human needs, aside from food. Households, who use more than their resources to pursue short-term gains in food security, do so at the expense of other basic needs such as health, education and housing, foregoing other opportunities with long-term benefits.

Finally, the range of responses and coping strategies of households in times seasonal stress overlap with the characteristics of food insecure households according to the local perceptions that are reported in Chapter 6. The findings in this chapter confirm that food insecure households are indeed poor, have few productive assets and resources, with households members having irregular jobs. They survive through frequent and many loans and accepting different kinds of jobs, and drawing on their social network for support.

CHAPTER 8

GENDER ROLES AND INTRA-HOUSEHOLD FOOD DISTRIBUTION

As seen in Chapter 7, households in both study sites experience occasional food insecurity due to seasonality in food supply and incomes, loss of jobs, fluctuations in prices and natural calamities. During periods of food scarcity, the women are the most involved in finding ways to deal with food shortages. They absorb shocks to household welfare by expanding their already tightly stretched working day, often to the detriment of their own health and nutrition.

To get an impression of the role of gender, an in-dept study of 40 case households divided equally over two study sites was carried out. Qualitative and quantitative data on gender time allocation and decision-making were gathered. Quantitative data on dietary intake were also collected from 20 case households, 10 of which with working mothers. The details of the methodology of data collection and analyses are discussed in detail in Chapter 4.

8.1 Gender roles

The three pillars of food and nutrition security are sustainable production of food, economic access to food, equal distribution of food among household members and childcare. In these activities and processes, men and women play different roles, which are highly influenced by socio-economic status of their households, the cultural environment, ethnicity, religion, women's age, and the type of productive activity that prevails in their respective localities. According to FAO (1999a), gender-specific roles and responsibilities are often conditioned by household structures, access to resources, and ecological conditions.

The concept of gender serves to distinguish socially defined roles and responsibilities of men and women under a given set of circumstances (Carney, 1992; Niehof, 1999a). Moser (1993) has identified three sets of roles that women perform in a given society (see also Chapter 3). The first is the reproductive role. This role includes responsibilities such as child bearing and nurturing, and caring of all household members. The second is the productive role, in which women may work as agricultural workers, farmers, or maybe self-employed, to supplement the household income. They are involved in economic activities such as petty trading, food and fish vending, or may work as a domestic helper. Although, especially in low-income countries, women usually play a significant economic role, this is not often acknowledged (Narayan, 2000). Their third role is community management. The activities undertaken by women at the community level are considered an extension of their reproductive role. The participation of women in such activities ensures the provision and maintenance of social services such as access to water, health care and education. The community-managing roles include voluntary services to various socio-civic organizations or committees.

In the Philippines, rural women are involved in the productive, reproductive and community activities mentioned above, which are competitive for time. However, as elsewhere, their

significant contribution to food production and household food security tends to be invisible (NSCB, 1995; Pottier, 1999; Price, 1999). Until recently their contribution was often neglected and considered marginal. In the Filipino society, the man is considered the breadwinner in the family, although the contribution made by women and other family members can be quite significant. The woman is generally considered as household head only after the demise of her spouse.

Women and men's economic activities

The allocation of roles and responsibilities between husbands and wives in the lowland and coastal case households are quantified in terms of hours spent in various activities, taking into account the work status of the wives. In 26 out of 40 case households, the number of working and non-working mothers differed in the two observation periods because two women in the lowland area had a job in period 1 but not in period 2. In both study sites, the observation was conducted in the same year (1999); period 1 in the dry season and period 2 in the wet season. The observation day started at 6:00 am until 8:00 pm (total of 14 hours). Due to minimal variability in time allocation on various activities of men and women between the periods, the average time allocation for the two periods was used.

Lowland area

The sexual division of labor in the study sites varies between agro-ecological locations (Table 8.1). In the irrigated rice farming system in the lowland, women and men play distinct roles. Men are usually responsible for land preparation, fertilizer application and chemical spraying, and mechanized threshing. Women are involved in planting, weeding, harvesting and post-harvest tasks. Since the three working women from the case households involved in agriculture are landless laborers, these tasks are reported as wage work. Other women are engaged in petty trading while only one is engaged in service work

When interviewed, the three women agricultural laborers complained that they not only receive lower wages than men¹, but that they sometimes have to compete with the young men who also join the labor force for agricultural activities that are generally women's domain, when farm jobs for men become scarce. They also revealed that some households of which the husbands are engaged in service work, also have some rice plots under the *hunusan* system (see Chapter 7). During the weeding and harvesting period, depending on the availability of funds, they either use hired labor or make themselves or their wives (for weeding) available. In weeding, women use their bare hands and small tool to remove the weeds between the rice plants. The women claimed that their families do not have to buy rice after the harvest period thanks to the palay share from the harvest.

Livestock raising tends to be a joint activity of women and men (Table 8.1). About eight women in all households dedicate some time to tending livestock. Working women dedicate an average of 26 minutes daily, while non-working women tend to spend a much longer period in this activity for more than half an hour daily (41 minutes). According to the wives, tendering of animals provides them with some ownership and control over these assets because they can decide when to sell the animals and they have control over the proceeds.

¹ The prevailing minimum wage for planting/transplanting and weeding is between P140 to P150. For land preparation, fertilizer application, chemical spraying, mechanized threshing, the minimum daily wage is between P160 to P175. In Leyte, the minimum daily wage for the two categories of agricultural operations is much lower, between P110 to P120 and P130 to P140, respectively.

Their husbands usually get only a portion of the profit, if any. Aside from animal husbandry, some productive time of women is spent on cultivating the backyard garden, which provides vegetables, tubers and seasonal dietary supplements. Unlike animal husbandry, this activity appears to be a purely women's domain.

Table 8.1 Average time allocation in hours (6 a.m. to 8 p.m.) by gender and work status of women in the lowland and coastal area

Particular	Lowland		Coastal	
	Men (N=7)	Women (N=6)	Men (N=6)	Women (N=6)
HHs with working women				
<i>Market production (own account)</i>				
Backyard gardens		0.12		0.00
Livestock/poultry raising	0.39	0.26	0.21	0.21
Food/fish processing			0.09	0.18
<i>Wage work</i>	6.11	4.03	6.53	5.02
Household chores	0.47	2.58	1.16	3.18
Child care	0.35	1.52	0.53	2.44
Rest, recreation, personal	5.20	4.29	4.28	2.17
<i>Total market work</i>	6.50	4.41	7.23	5.41
Total domestic work	1.22	4.50	2.09	6.02
Total working time	7.72	9.31	9.32	11.43
HHs with non-working women	(N=6)	(N=6)	(N=6)	(N=6)
<i>Market production (own account)</i>				
Backyard gardens		0.24		0.19
Livestock/poultry raising	0.28	0.41	0.30	0.26
Food/fish processing			0.11	0.15
<i>Wage work</i>	6.28	0.00	5.51	0.00
Household chores	0.40	3.23	0.51	3.18
Child care	0.22	2.21	1.03	2.55
Rest, recreation, personal	6.02	6.41	6.04	6.47
<i>Total market work</i>	6.56	1.05	6.02	1.00
Total domestic work	1.02	5.44	1.54	6.13
Total working time	7.58	6.49	7.56	7.13

In the lowland area, the husbands who are engaged in agriculture spent their productive time on harvesting the rice plots under the *hunusan* system (as wages in kind) and in other people's fields as paid wage work. Only two wives engaged in retail store-keeping and ambulatory peddling of fish, fruits, and vegetables. Information from the interviews revealed that food vending is a profitable type of activity. However, doing this may involve some trade-offs, because apart from taking away the woman from home almost half an hour daily, going around the village and carrying the goods for sale can be very stressful.

Three working wives were engaged in manicuring and pedicuring and hairdressing. These women claimed that during harvest period, some of their customers who have rice surplus pay them in kind (such as kilos of rice). They also claimed that their income and resources are pooled with that of the husband, but more often they immediately used it to buy

additional food, such as vegetables and fruits and other groceries needed by their household. As reported in Chapter 7, the quality of diet of households improves in the harvest period.

Table 8.2 Main employment of husbands and wives with working and non-working mothers by ecological area

Occupation	With working women		With non-working women	
	Men	Women	Men	Women
Lowland area	(N=10)	(N=10)	(N=10)	(N=10)
Service worker	5	5	6	
Petty trade	1	2	2	
Agricultural worker	4	3	2	
Coastal area	(N=10)	(N=10)	(N=10)	(N=10)
Service worker	2	3	1	
Petty trade	0	7		
Fisherman	2		1	
Fisherman laborer	5		5	
Factory worker			1	
Agricultural worker			1	
Unemployed	1		1	

Coastal area

In the fishing communities, the wives productive activities revolve around fish processing and marketing, livestock raising, petty trading and rendering services (Table 8.2). Fishery is a predominantly male activity. Repair of nets and boats is also a male task. Hauling is mainly done by men, sometimes by hired male labor. A common sight along the seashore is a group of women along with a few men salting and drying fish as well as removing entrails and fermenting fish in large containers. The entrails are not thrown away but become ingredients in a delicacy (fish paste).

Table 8.3 Average contribution by husbands and wives to the household income and mean monthly income by area of case households

Item	Lowland			Coastal		
	N (HH)	Husband	Wife	N (HH)	Husband	Wife
Contribution by husband and wife in percentages	9	77	23	10	87	13
Mean monthly income		P 4,907.30	P 1,256.44		P 4,478.75	P 1,106.89
Range		P 2,490 – P 8,415	P 445 - P 2,000		P 2,300 - P 7,450	P 400 - P1,840

Note: In the coastal area one husband is unemployed due to illness.

Service work in the coastal area consists of manicuring and pedicuring, and laundering. Just like in the lowland area, it appears that working wives from the case households in the coastal area tend to receive lower wages than their male counterparts, despite the little difference in working-time (Tables 8.1 and 8.3). In the lowland and coastal area, working wives seem to be underpaid compared to their husbands. In addition, incomes from vending are usually marginal because of the limited capital, which restrains women's access to fish on a wholesale basis. It is even worse when the fish for sale is obtained on credit, because then

the price of fish is much higher. The researcher also noticed that men seldom acknowledge the women's contribution to the household income. In Ethiopia, Negash (2001) observed that when the men were asked who does the planting, they responded by saying that it is only the men who plough the land and the women are only consumers of the food.

Working mothers claimed that they remain in their poorly paid jobs or activities because they need to earn cash income to supplement the income of their husbands. They also claimed that the largest proportion of their income is spent on food, health, and household necessities. One of the women said it as follows: "Our income maybe smaller compared to that of our husbands but it comes in more frequently and we can readily use it to purchase food. We can not be choosy in our job, because our education is low and our skills are limited. If we have enough money, we will raise more livestock to augment our income. We have submitted a loan application to BIDANI, but we do not know if it will be approved. Being working mothers is not easy because we combine wage work and domestic work."

Discussion

The above paragraph described the production roles of men and women in the household economy in general, and food security in particular. As seen in Chapter 7, apart from the regular annual seasonality of food supply, life in both areas worsened due to inclement weather conditions that affected the livelihood of the case households. Faced with economic and natural disasters, the women and men were pushed to work longer to earn cash income. Although many women's activities are not directly connected with fish or rice production, for that matter, they are nevertheless integral to the generation of household income. The women's sideline occupations, generally small-scale and low-valued, such as trading or home-based manufacturing and service work, become the household's life line (see also Chapters 6 and 7).

The data reveal that the men tend to do more household chores when the women work in off-farm or non-farm activities. While female and male roles are largely substitutable in these activities, men continue to contribute more time to wage work. According to Piwoz and Viteri (1985), the internal division of labor and economic responsibilities are defined by age and gender. Women appeared to play an essential role in the food provisioning, but ensuring good nutrition should be a joint responsibility of all family members, including the men. Women's engagement in economic activities in both areas involves trade-offs, of which the ultimate effects on household nutrition security will depend on the specific setting.

Women and men's domestic activities

The situation of women in the study areas does not differ much from that of their counterpart in other areas. Aside from their involvement in market production, women in both study sites invest a lot of time in domestic activities.

Lowland area

As mentioned earlier and as can be seen in Table 8.1, employed women spend more total productive time than men. Although the amount of time spent in paid activities for working wives is less than that of their husbands, they dedicate a large amount of time to domestic production.

Most domestic chores, such as house cleaning and maintenance, food preparation and childcare, fall on the shoulders of wives. To a significant degree, older children usually assist their mothers in these tasks. Men spent only some minutes per day on household chores as well as childcare. Working mothers had to decrease their time spent on household chores and childcare to accommodate for the time required for out-door economic activities. Among non-working mothers about the same proportion of time was spent on household chores, childcare, recreation and personal activities, irrespective of the agriculture cycle.

Regardless of the type of households, case men and women in the lowland area tend to spend less time on domestic activities than men and women in the coastal area (Table 8.1). This may be partly explained by the fact that lowland households have a lower dependency ratio and better amenities make some domestic activities much efficient (Tables 8.4 and 8.5). Most mothers are able to perform childcare and cooking simultaneously, which is easier with fewer children. Breastfeeding and weaning food preparation are two important childcare activities mothers do aside from other domestic work. They serve and feed the young child. Almost all women do not prepare special weaning food for the young children. In general, the child's food is taken from the family meal, but it is made more palatable and digestible, such as by mashing the rice with vegetables and a little fish, or by diluting the rice with soup from vegetables or fish. Moreover, most of the lowland case households have gas stoves, so that the women do not have to spend time on gathering firewood. Another task performed by almost all women, two to three times a week, is that of washing clothes. This takes about one to two hours per day or about six to seven hours per week, depending on household size and distance to water sources. Observation showed that all case mothers in the lowland area do not have to walk a long distance to collect water for home consumption. Washing of clothes is done at the water sources that are adjacent to their houses.

Noticeably, husbands tend to do more households chores and childcare when their wives are engaged in on-farm or off-farm work. Apart from this, house cleaning and maintenance chores are shared between wives and their older children. Despite this, compared to their spouses, working wives devote less time to rest, recreation and personal care. Obviously, non-working wives have more time for these activities.

Coastal area

Compared to men, wives in the coastal area devote a considerable amount of time to domestic activities. It is interesting to note that apart from the sizeable amount of time devoted to wage work, working wives in the fishing communities dedicate more time to household chores and childcare compared to working women in the lowland area. Although older children take on some of the domestic tasks of their mothers, the general poverty condition may partly explain the relatively heavy domestic workload of both working wives and non-working wives.

Table 8.4 Household characteristics by area

Particulars		Lowland		Coastal	
		N	Percent	N	Percent
Household size	3-4	2	10.0	0	0
	5-6	11	55.0	8	45.0
	7-15	7	35.0	11	55.0
Total		20	100.0	20	100.0
Range		4 – 8		5 – 11	
Mean		6.4		7.4	
Number of under-fives	1 only	12	60.0	7	35.0
	2 or more	8	40.0	13	65.0
Total		20	100.0	16	100.0
Number of dependents ²	1 only	0	0.0	0	0.0
	2-3	9	45.0	2	10.0
	4 or more	11	55.0	18	90.0
Total		20	100.0	20	100.0
Dependency ratio ³		170		185	

Table 8.5 Households assets and amenities

Particulars	Lowland (N=20)	Coastal (N=20)
Electricity	20	8
Productive assets		
• Welding machine	2	-
• Carabao	1	-
• Motorcycle with side car	1	-
• Fishing gears		6
Liquid assets		
• Radio cassette	12	6
• Electric fan	13	2
• Television	13	2
• LPG stove	14	2
• VHS/Beta	2	2
• Refrigerator	2	0
• Bicycle	3	1
Water facility		
• Water pipe		7
• Artesian well/jetmatic	18	8

*Percentage is calculated over total sample

² Are household's members belonging to age group < 15 years and ≥ 65 years old

³ Dependency ratio = [(n < 15 + n ≥ 65)/ n 15-64 age group] x 100

Demographic, socio-economic and housing data from the Tables 8.4, 8.5 and 8.6 indicate the poor condition of case households in the coastal area. They have low incomes, more under-five children, fewer assets and poor amenities. Only half of the 20 case households have electricity, important for easing domestic tasks like ironing clothes and food preparation in the evening and early morning. Since most men go to sea, it is usually the women who collect the water for home consumption. Apart from the distance, the poor quality of water from the community piped water source is problematic. Households tend to buy drinking water or travel some distance for safe drinking water. For washing clothes, the river is the women's meeting place. Women have to walk some distance to reach the river.

Almost all case households cook their food using firewood. Just like in the lowland area, food preparation is a woman's task. Most cooking takes place on an open fire on the floor. In general, women and older children gather firewood. Some households collect firewood not only for home consumption but also for cash income. I observed three households with working wives who bought their firewood for one-day consumption only when older children are not able to dry the available firewood. Such a situation has a negative effect not only on the workload of women, but on the household budget as well. Moreover, when dry firewood was not available, old rubber slippers are used to start the fire, which is an unhealthy practice, particularly for children in poorly ventilated houses. About 85 percent of the case households have poor housing conditions and lack proper ventilation (Table 8.6).

Table 8.6 Type of housing of case households by ecological area

Type of housing	Lowland		Coastal	
	N	%	N	%
Concrete & iron roofing	4	20.0	2	10.0
Semi-concrete & iron roofing	4	20.0	1	5.0
Semi-conc. & nipa thatched	4	20.0	0	0.0
Wood and iron	1	5.0	5	25.0
Wood thatched	5	25.0	0	0.0
Bamboo thatched	2	10.0	7	35.0
Shanty	0	0.0	1	5.0
Total	20	100.0	20	100.0

In the coastal area, men with working and non-working wives tend to spend more time on domestic activities. Men with working wives have to take on some of the food preparation and childcare activities while their wives are away. Because of the nighttime nature of work in the fishing community, fishermen are often at home during the day and can thus help on domestic activities. However, there were also some men who spent their time on drinking and gambling with other fishermen. Working wives tend to have longer working hours than their husbands because they have more young children, need to collect water and fire wood while they have no appliances to reduce household chores. As a consequence, they have less time for resting, recreation, social interaction and personal care.

The social interaction activities include asking for food, favors (e.g. baby sitting), and credit from neighbors. There is no direct exchange but reciprocity is maintained by the implicit assurance that the same kind of help will be readily extended when the benefactor becomes the needy. In the coastal area, it could be observed that women are bound by ties of camaraderie, as evidenced by the amount of time spent in chatting, playing bingo and cards,

while their husbands are out fishing or in the house catching up on their sleep. Compared to the lowland wives, women in the fishing households seem to do more networking, possibly as a way of supporting each other while their husbands are away. The system may also have developed to provide for widows and orphans, considering the precarious nature of fishing in the open sea. The social interaction activities of the case husbands were mostly geared towards borrowing and lending fishing implements and other tools, as well as exchanging help in pushing boats and carrying baskets of fish.

It could be observed that the non-working wives in the coastal area spend a lot of time preening and socializing. This is also reflected in the amount of time spent on personal care, leisure or recreation and social activities. It is for this group that the appropriation of leisure and recreational time is slightly tilted in favor of women.

Discussion

This section described the production and domestic roles of men and women and underscored the latter's significant contribution to the maintenance of household food security. In order to interpret the results concerning women's time allocation and to determine the potential repercussions for food security beyond income alone, it is important to note the time allocation and the division of labor between men and women. Findings reveal that the situation of the women in the study areas does not differ much from that of their counterparts in other areas. They are strongly tied to their traditional roles as mother, wife and housekeeper, even if many take on non-traditional positions in economic production (Israel-Sobritchea, 1994). The traditional pattern of gender role allocation prevails in the both study areas. Women do the bulk of household chores and assume primarily task of childcare with assistance of older children. Although men, take some domestic activities when wives are engaged in economic activities, the men spend most of their time on productive activities.

The diversity of activities and tasks of men and women in the study sites reveals some aspects of the household's internal differentiation and stratification of gender roles. It also indicates the existence of 'gendered' and 'non-gendered' roles (Israel-Sobritchea, 1994). While some tasks can be performed by both sexes, others are exclusively and primarily for one or the other (Niehof and Price, 2001; Kabeer, 1991). For example, in lowland areas, planting, weeding, harvesting and post-harvest activities, e.g. drying are among the roles that both sexes can perform in agricultural production. In the coastal areas, the roles both sexes perform include fish processing and marketing. Livestock raising is jointly performed by both sexes in both study sites.

That some gendered roles are complementary is also apparent in both study areas. In contrast to the findings of Van Liere (1993) of the activity patterns of men and women in Northern Benin, there is evidence in this study that men take over some domestic tasks of women when women have to combine economic and domestic activities. In time of food crises, the complementary of roles and economic activities of men and women is crucial for the family's survival. The women's economic contribution is decisive especially when men's income from main occupation is hardly sufficient to meet the family food needs. However, the extreme demand placed on women's time may also lead to a life of drudgery. According to Israel-Sobritchea (1994), the traditional notion of complementary male and female roles is a façade that hides the imbalance nature of traditional sexual division of labor. Indeed, the data suggest the unequal allocation of roles and unequal recognition or

valuation of such roles. Women tend to suffer more than men from a multiple or double burden; their work is not valued as much as that performed by men.

8.2 Gender and decision-making

Food security and nutrition security are outcomes of complex and interacting processes of how resources are allocated within the households. Men along with women are actors in intra-household resource allocation and decision-making. Through this, the power relations between the two to a large extent determine the household's livelihood strategy. In the rice farming community of Bohol, in the Philippines, all decisions regarding crop production, seed management and family matters are shared equally between husband and wife (Bertuso, 1999). This section examines the decision-making of the men and women in the case households in the study sites.

Lowland area

There are gender-specific decisions (Table 8.7). Women decide how children will be raised and treated when they are sick, how earnings will be allocated, how much of the crop harvest will be sold, and what to feed their families. In contrast, men have a greater say in matters like investments, loans, savings, acquisition of livestock, as well as the choice of contraceptive method and number of children. Decision-making is shared between husband and wife regarding the education of the children and determining who should work or not. Men's dominance in matters about family planning and the number of children reveals the influence of patriarchy and the strong influence of the Catholic Church on men's views on family planning (see also Chapter 6). The data indicate that men have more decision-making power and control over the greater portion of the household income. However, in some **Christian** families in the lowland area, women claim that they and their spouses decide on investments and loans jointly.

Coastal area

In the coastal area, a similar situation is observed regarding gender-specific decisions within the home. Women also make decisions on how children will be raised and treated when they are sick and on obtaining food on credit. However, unlike the women in the lowland area, they also decide on how much to sell from the fish catches. The involvement of women in decision-making in the sale of fish catch might be related to the traditional division of labor in the fishing communities. In fishing, men are responsible for off-shore fishing activities, while women are responsible for on-shore tasks such as fish processing and marketing. Moreover, being in charge of food preparation, women can easily determine how much of the catch can be sold and kept for their consumption. Similar patterns could be observed in a fishing village in Madura, Indonesia (Niehof, 1985).

Just like in the lowland area, men's decisions prevail on matters such as investments, loans and savings and even on the choice of contraceptive method and number of children. In addition, they decide on how children will be educated and who among the members of the household can work or not.

Table 8.7 Decision-making at the household level by ecological area

Selected decision-making area	Lowland (N=20)			Coastal (N=20)		
	Male	Female	Shared	Male	Female	Shared
Allocating family expenditures	5	12	3	6	10	4
How much to save	12	5	3	9	7	4
Seeking loans	10	3	7	17	1	2
Seeking food credit	4	12	4	8	11	1
Acquisition and raising livestock	11	6	3	16	2	2
Income from sale of livestock	6	5	9	5	11	4
Determine who should work or not	7	2	11	15	1	4
How much to sell (products)	9	6	5	8	12	0
Disciplining children	5	12	3	7	11	2
Education of children	7	3	10	7	9	4
Child's medical treatment	14	3	3	9	8	3
Choice of family planning	14	3	3	18	2	0
Number of children	11	2	7	16	2	2

When some couples were asked about their ideas on education, the women share with the men the belief in the benefits of education. A gender bias in educating children has been noted to work either way. Some couples prefer keeping daughters in school because they are more diligent and more interested in studying. Others parents, however, prefer to educate their sons because the former are expected to provide for their families, in the future. Three mothers mentioned that their choice on who should continue schooling is determined by economic necessity: “After elementary, our boys did not go to school anymore due to our financial problems. They joined their father in fishing.”

Discussion

In both areas, as in most places Philippines, the man is considered the head of the household and therefore the power and authority tend to rest on him (Illo, 1997). The data reveal that men have greater say in matters related to investment, loans and choice of contraceptive methods. Women have their own areas of authority, such as childbearing and household budgeting that are strongly tied-up with their traditional roles as mother, wife and housekeeper (Israel-Sobritchea, 1994). However, information from focus group discussions revealed that in poor families, the women's area of authority is very limited due to lack of options; there is little income to be budgeted. Results also suggest that a major problem is women's ignorance about their legal rights, and their pre-occupation with the day-to-day anxieties of basic survival. Illo (1997) noted that among some ethnic groups in the Philippines, such as in Maguindanao, not even children or the household budget are a woman's domain.

In reality, the household can neither decide nor think, but rather certain people within the household make decisions on matters affecting the welfare of household (Wolf, 1990). Data suggest that because of the traditional division of roles between men and women, there are gender-specific decisions within the household. That there are joint activities and decision-making, but that - at the same time - , individual members have their own activities and

make their own decisions either for their own benefit or for the household is also observed in other households (Niehof and Price, 2001; Kabeer, 1991).

8.3 Women and intra-household food distribution

In general, the intra-household food distribution is highly influenced by social and cultural factors and by the economic status of the household. Food allocation within the household is conditioned by the nature of the distribution system, variation and patterns of distribution, and role and function of the person responsible for distribution (Katona-Apte, 1983). Women as budget managers and food purchasers, play a key role in the intra-household food distribution.

Lowland area

In general, the members of the household eat together, except in the morning when working mothers and schoolchildren eat ahead of others because they have to leave early. Non-working wives usually eat last because they take care of and feed the young children. In the case households, except for young children, members of the household help themselves to whatever is laid on the table (if they own one). Staple foods when sufficiently available are taken according to appetite, while nutrient rich foods or the viands are dispensed with greater care. In large households, cereals and viands are served in several serving platters and bowls. As mentioned earlier, the mothers serve and feed the young children. Nearly all case parents (both in the lowland and coastal area) interviewed claimed that they were not favoring any member of the family. Moreover, children were encouraged to eat on time because 'it is important for their health'. It is commonly believed that irregular meal schedules can cause illness. When other members of the household are not present during mealtime, portions of the foods are immediately reserved by the mother according to how she perceives each member's needs, which may or may not be sufficient to actual needs. When one mother was asked why such portions were kept for the husband, her answer was that "it is the usual amount of food my husband eats".

Spouses interviewed did not think that working members of the family are necessarily entitled to extra food. This is viewed as being unfair to other members because "everyone is doing his/her own share in the household", as it was phrased. However, almost all mothers claimed that when there is enough money, the food preferences of the father and the children are usually taken into account. When the available food is not sufficient, the mother tends to distribute the food equally among other members of the household except for the father, who is given a larger portion of viands. This was also observed during the food weighing sessions.

Coastal area

The food distribution pattern in the coastal area is almost similar to that of the lowland area. All members of the household eat together, but the work schedule may cause some household members to have to eat at different times. Fishermen usually come home between 9 to 10 in the morning. They sail again between 4 to 5 in the afternoon. In this case, only the school children and young children eat breakfast together. The wives usually drink only coffee and take their late breakfast with their husbands if there is still food available. Otherwise, it becomes an early lunch because the women have to prepare the meal first. In this situation, the food available for each member is not the same. For some case households

where usually breakfast is prepared, those members who eat early may have an advantage over those who eat later. However, in the poor case households this does not apply because the foods served during breakfast are more often than not leftovers from the previous evening. When the food is not enough, sometimes boiled banana, sweet potato or some pieces of bread complement it. When meat is available, the mother usually serves the food individually and the couple will share what is left.

The mothers usually serve the food on the floor or on the table (if they own one). Just like in the lowland area, members of households help themselves. Staple foods (rice or corn) when sufficient are also served in plentiful in plastic serving platters, while viands (usually fish) are served with greater care. However, when fish catch is plenty, dispensing of fish becomes unrestricted, particularly for the adult household members. The belief that too much fish for young children can cause intestinal worms is still observed by some women in the case households. In these households, fish dishes are always served with greater care to children.

Mothers in the coastal area serve and feed the young children mashed rice and fish usually from their own plate, which is not the case in the lowland area. In some cases, an older female household member feeds the young children. Mothers, being in charge of food preparation, can have a strong influence not only on the food distribution pattern in the household but also on the children's idea of having enough food. During the food weighing, some children indicated to have a 'full belly' after the meal, suggesting that mothers have passed on to their children the common notion of 'having enough food' when your belly is full.

While both spouses interviewed claimed that they are not favoring any member of the household, this is not the case in practice. Men take packed meals when they go fishing. It was observed that most wives pack a relatively large portion of rice and viands for the men. Informal discussions revealed that this pattern of dispensing food is borne out of necessity and tradition. Apart from the harsh conditions at sea where men have to expend more energy, it is a common practice to share foods among other fishermen in big fishing vessels. In this case, fishermen who have no food do not go hungry.

Women in the coastal area share with women in the lowland area the belief that irregular meal schedules can cause illness. However, this idea is being ignored during periods of scarcity (low fish production), due to income and food problems. In most poor fishing households eating schedules became irregular during the lean period.

Discussion

In both study sites eating times are determined by work schedules and school attendance. Although households claim that none of the household members are favored, the food available for members who eat an early breakfast may not be the same as that of those who eat later. Those who leave early or get home late may get less or not any of the food that was prepared while they are away. The situation during breakfast may be disadvantageous for the children and other members of the household who have to rely on leftover foods from the previous evening. The situation of the mothers in the fishing community may be badly affected when their meal depends on the leftovers of the breakfast meal.

In the case households in both areas, when sufficient staple foods were available, each member had his/her share according to perceived need. In general, viands are served with greater care. Since it is not a common practice that mothers serve the food individually, it is

very possible that the older members of the households dominate the weaker members like the children or that the most aggressive child may dominate the young child. Young children should be served separately and prioritized when nutritious foods are available. This is not always done. If the food of the child is taken from the mother's plate while she is eating (which is often the case in the coastal area), it will be difficult to determine whether the child gets enough food.

In the coastal area, some food beliefs still exist that may have negative consequences, such as the belief that fish can cause intestinal worms in young children, while in coastal areas fish is the cheapest source of protein. The notion of 'full belly' being associated with having eaten enough food is an indication of the mothers' ignorance about proper nutrition.

The food preferences of the person responsible for distribution may influence the type of food eaten by the household as well. As one may expect, the case studies show that food preferences are only honored when they are affordable. According to FAO (2001), adjustments in food preferences are generated by social and economic changes that take place throughout community, the society and the household. At the household level, the issue is often not what foods are eaten but rather how much of each food is eaten and how consumption is distributed within the household. Especially when food or certain nutrients are available in marginal amounts, proper distribution within the household is crucial to satisfy the special needs of the vulnerable groups such as the preschoolers, pregnant and lactating mothers, and the elderly. Apart from the role of women in food preparation and intra-household food distribution, the contribution of women to household income is critical to achieve food and nutrition security.

8.4 Intra-household food distribution of selected household members

Seasonal fluctuations in food availability and income and household responses to seasonal food shortages can influence the intra-household food distribution. However, seasonal reductions in food availability may not affect all members of the households equally. As was discussed in Chapter 3, studies reveal that some members of the households are vulnerable to food shortages while others are protected, and that an advantageous food allocation for male adults or boys over females can be observed (Gopaldas et al., 1983; Hassan and Ahmad, 1984; Kardjati, 1985; Kigutha, 1994; Ategbo, 1993; Ferro-Luzzi, 1990; Kigutha, 1994; Van Steenberg et al., 1984; Kaiser and Dewey, 1991; Leonard, 1991). Other studies show that this is not necessarily the case (Abdullah and Wheeler, 1985).

In this study, the intra-household food distribution refers to the allocation of food and drinks among the household's members consumed within and outside the households (Van Esterik, 1985). To get an impression of the intra-household food distribution and adequacy of diet in the study sites, a one-day dietary survey for selected household members, namely father, mother, school child and pre-school child, was conducted. The methodology was described in Chapter 4. Although this section does not focus on seasonality, the data were collected twice, once in each period to assess the effects of seasonality on food security.

Period 1 was the wet season during September-November 1998 in both areas, while period 2 was March-April 1999 in the coastal area and May 1999 in the lowland area. In the lowland area, period 1 coincided with the rice harvest. In irrigated rice farming, harvest time is generally considered a period of abundance, but due to the bad weather conditions yields

were low this particular wet season. In the coastal area, the harvest month in the wet season coincided with the lean period in fish production, while the abundant period falls in the summer months.

Nutrient intakes

The degree of adequacy of dietary intake, taking into account the requirements for age, sex and activity of individual household members, is one measure of household food and nutrition security. To assess adequacy, the FAO/WHO recommendations were used (FAO/WHO/UNU, 1985). The individual dietary intake is considered adequate if $\geq 80\%$ of the recommended dietary allowance (RDA) is satisfied, and it is inadequate if it is less than $< 80\%$.

Lowland area

The mean per capita energy and nutrient intakes of selected members of the case households in both sites and for both periods can be seen in Figures 8.1 and 8.2, as well as Appendix 8.1.

The data reveal some seasonal variation in the dietary intakes of selected household members. However, irrespective of the period, adult members of the households tend to meet their calorie and protein RDA. Except for protein intakes, on average, the nutrient intakes of the pre-school children were below RDA. In the Philippines, the Gomez classification is used to define degrees of child malnutrition (underweight) by weight-for-age. In lowland case households 4 out of 20 pre-school children were underweight (Figure 8.3).

Coastal area

Seasonal variation in dietary intakes of selected household members was also observed in the coastal area. In contrast to lowland area, in both measurement periods the nutrient intakes of selected household members were dramatically poor. Except for protein, none of the selected household members meet their RDA for calories, iron and vitamin A (Figure 8.1 to 8.2). The dietary insufficiency was borne out by the higher prevalence of underweight among preschoolers, e.g. 7 out of 16 pre-school children (Figure 8.3).

Discussion

Both study sites suffered from the consequences of natural calamities and the financial crisis during the previous years, but the findings indicate the more vulnerable situation of fishing communities compared to agriculture-based ones. In the coastal area, the perennially fragile economic conditions, worsened by the effects of the El Niño and La Niña phenomena and the 1997-98 financial crises, had put more pressure on the food supply of the households.

Figure 8.1 Mean one-day per capita adequacy for calorie, protein and iron consumption of selected household members during the wet and dry season by ecological area

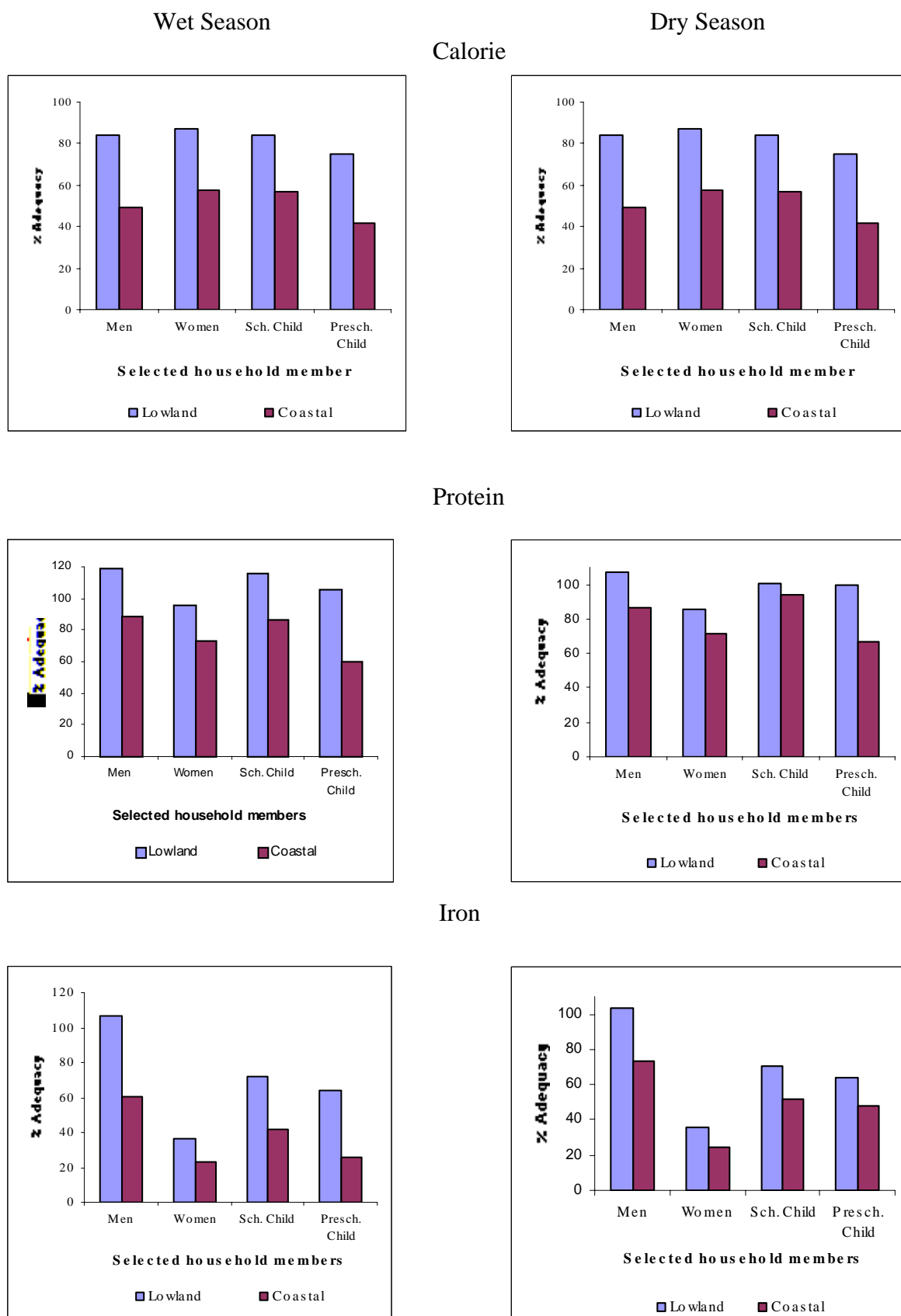


Figure 8.2 Mean one-day per capita adequacy for vitamin A consumption of selected household members during the wet and dry season by ecological area

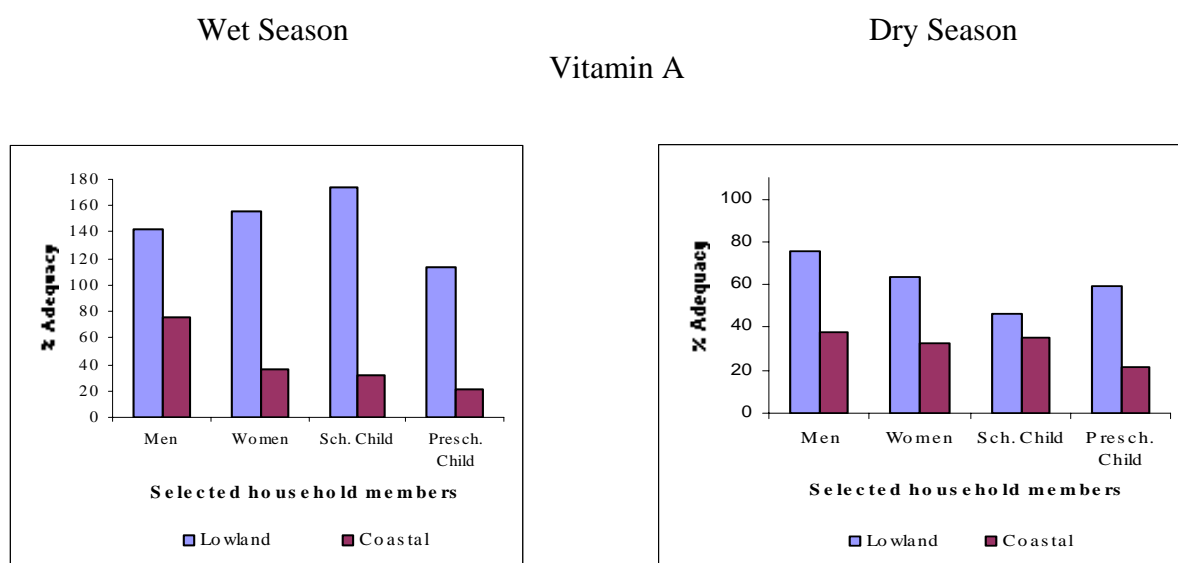


Figure 8.3 Weight-for-age (WAZ) of preschool children of case households by age expressed in Z scores of NCHS by age group during the wet season in 1998 and dry season in 1999 by ecological area



In the lowland area, the trend seems to be that the pre-school children and the women are most vulnerable to food shortages, while the men and school children seem to be adequately fed. The finding that some households' members are more vulnerable to food shortages than others, is supported by the literature (Gopaldas et al., 1983; Hassan and Ahmad, 1984; Kardjati, 1985; Kigutha, 1994; Ategbo, 1993; Ferro-Luzzi, 1990; Van Steenberg et al., 1984; Kaiser and Dewey, 1991; and Leonard, 1991). However, this pattern was not observed in the coastal area, where all selected members of the households tend to be less adequately fed and equally share the risks of food shortages.

8.5 Women's employment and nutrient intake

Women in the study sites find ways to deal with food shortages. Among others, they engage in farming, petty trading, shop-keeping and laundering, manicuring and pedicuring in order to earn cash and contribute to the household income. During food crises, women's employment, especially for low-income households, may be good not only for women's own welfare, but also for other household members (Haddad, 1992). The following paragraph examines the impact of women's employment on the intra-household food distribution.

Lowland area

The Figures 8.4 to 8.7 and Appendices 8.2 and 8.3 summarize the adequacy in comparison with recommended dietary allowances (RDA) of the intakes of selected nutrients by men, women, and pre-school children from the two types of households in the study sites in the two periods. Calorie intake of the men, women and school children from both types of households was adequate both during harvest and post-harvest period according to the cut-off point of 80 percent adequacy. In case households with full time housewives all men, 4 out of 5 women and almost all school children had calorie intakes \geq 80 percent of the RDA in both periods. A slightly lower proportion of men, women and school children from households with working wives met the adequacy cut off. In both types of households, the calorie and protein intake of the pre-school children was the lowest compared to other members of the household. Iron intake was adequate for the men in both periods and in both types of households. As far as the other household members are concerned, regardless of type of household, the iron intake of the women was the most inadequate in both periods. School children and preschoolers tend to have a better iron intake in the lowland area, and when mothers had an income of their own.

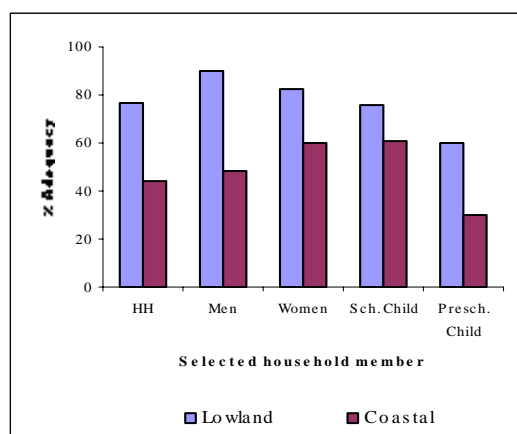
Vitamin A intake of all members of the households was insufficient during the harvest and post-harvest period. However, more men, women, school children and preschool children from households with working wives met the RDA in vitamin A, and the vitamin A intake of all members was consistently higher than among the members of households with unemployed women.

Due to absence of weighing scales for adults, the mid-upper-arm circumference was used as indicator of the nutritional status of the women in the case households. Both working and full-time time mothers in the lowland area had a measurement within the normal range (Table 8.8), suggesting that women were not energy deficient.

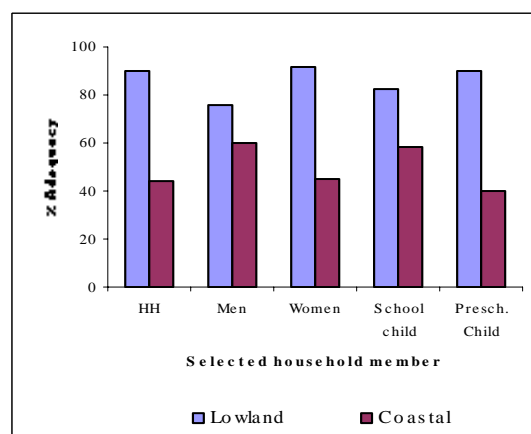
Figure 8.4 Mean one-day per capita adequacy for calories of selected household members by type of households and ecological area during the wet and dry season

Wet Season

HHs with unemployed women



HHs with employed women



Dry Season

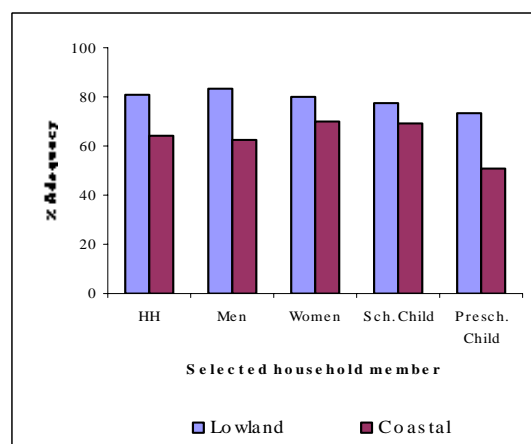
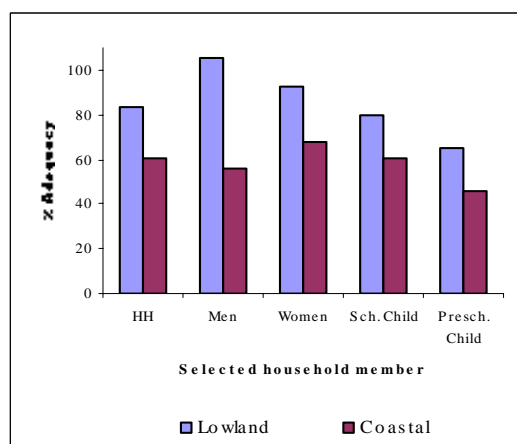
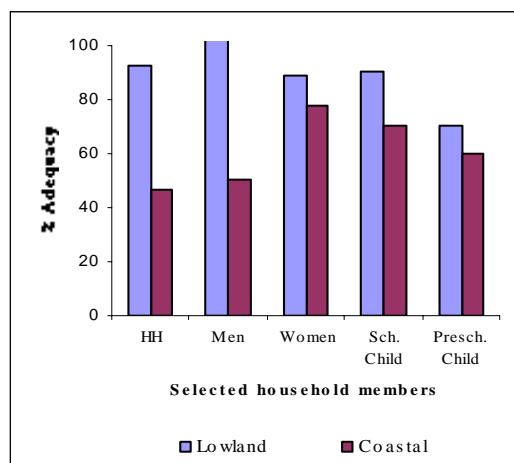


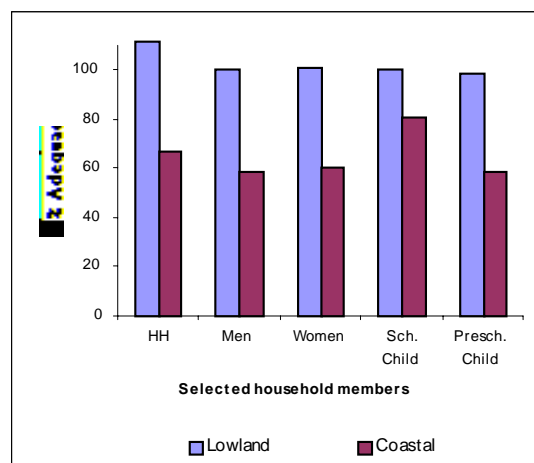
Figure 8.5 Mean one-day per capita adequacy for protein of selected household members by type of households and ecological area during the wet and dry season

Wet Season

HHs with unemployed women



HHs with employed women



Dry Season

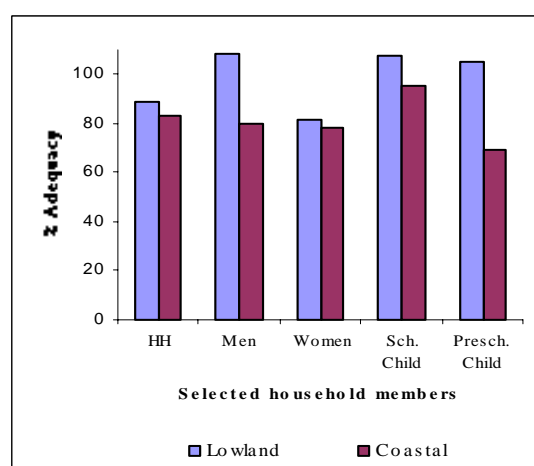
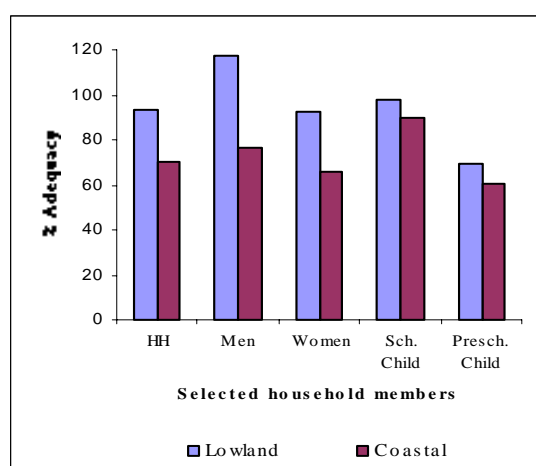
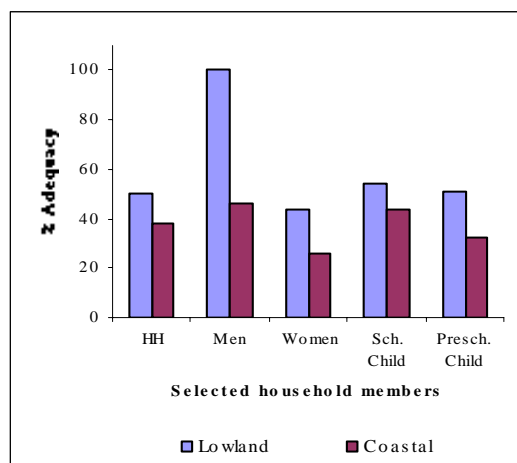


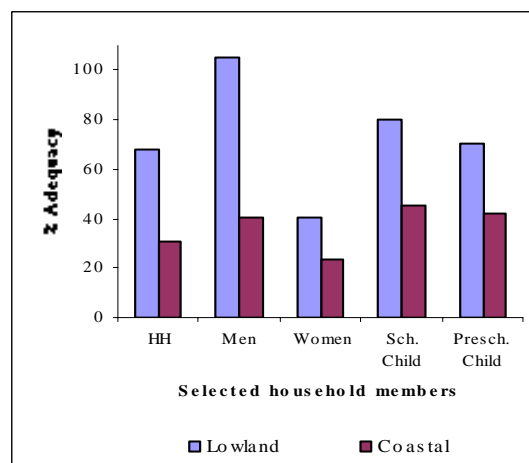
Figure 8.6 Mean one-day per capita adequacy for iron of selected household members by type of households and ecological area during the wet and dry season

Wet Season

HHs with unemployed women



HHs with employed women



Dry Season

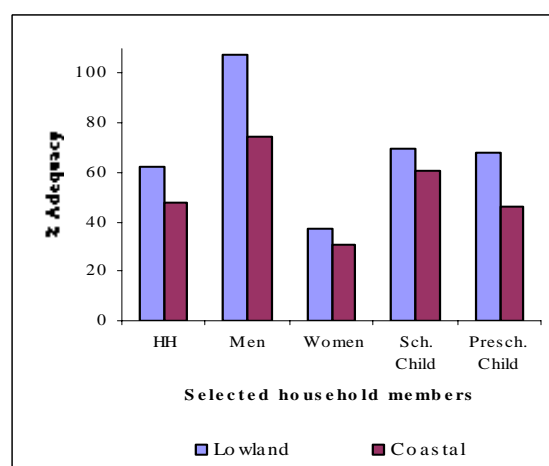
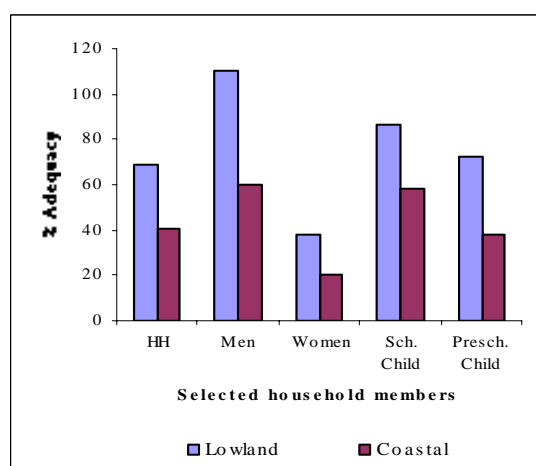
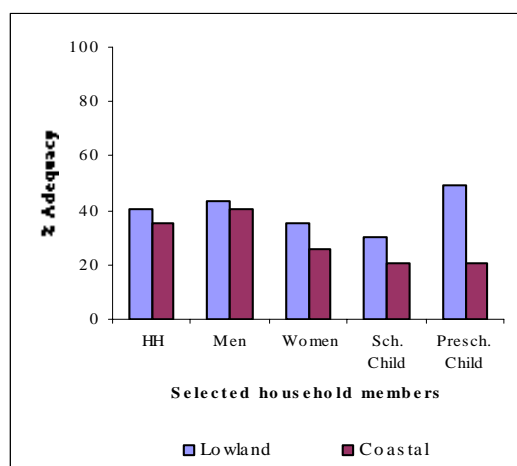


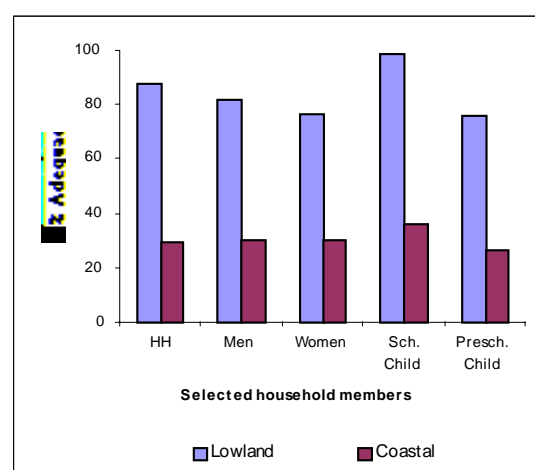
Figure 8.7 Mean one-day per capita adequacy for vitamin A of selected household members by type of households and ecological area during the wet and dry season

Wet Season

HHs with unemployed women



HHs with employed women



Dry Season

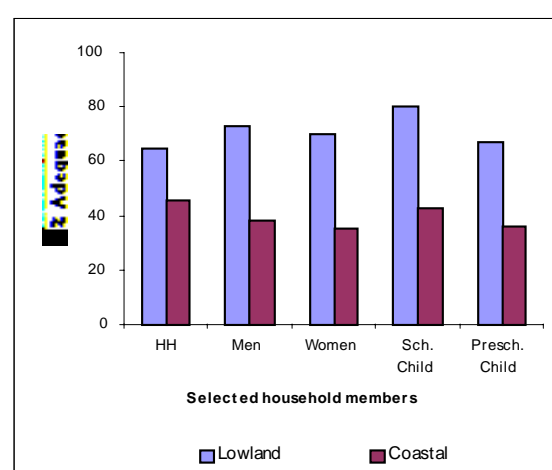
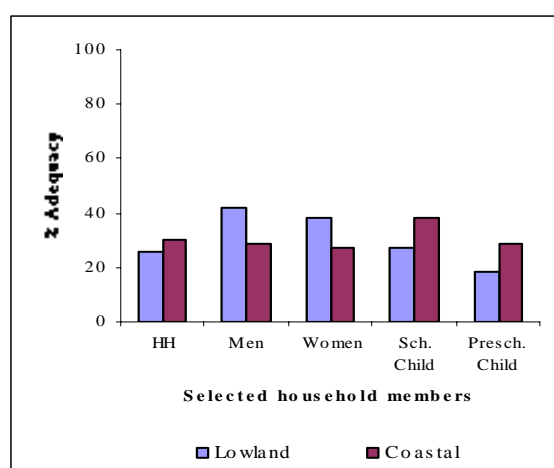


Table 8.8 Nutritional status of women using the mid-upper-arm circumference covering two periods (P1 and P2) by type of ecological area

Nutritional Status	Ecological area							
	Lowland				Coastal			
	HHs with unemployed women		HHs with employed women		HHs with unemployed women		HHs with employed women	
	P1	P2	P1	P2	P1	P2	P1	P2
Normal	5	5	5	5	5	5	2	2
Underweight	-	-	-	-	-	-	3	2

Coastal area

In the coastal area, the energy and nutrient intakes were inadequate for all selected household members except the school children (Figures 8.4-8.7 and Appendices 8.2 and 8.3). Intakes were slightly better in the wet than in the dry season, except for iron and vitamin A. The influence of mothers' employment status was variable and not consistent. Preschool children tend to have lower intakes in energy and protein but not in iron and vitamin A.

Discussion

In both areas the case studies did not reveal a positive effect of women's income (or employment) on household food and nutrition security. Women in the lowland area work to diversify the household's sources of income and to prevent food shortage. Thus, the women's participation in economic activities becomes a livelihood strategy to improve not only the food security but also to meet other basic needs.

Women's employment as a part of a strategy for livelihood security was most apparent in the poorer coastal villages. Women act as 'shock absorbers' at the expense of their own nutritional status, either through increased energy expenditure and/or by reducing their own food consumption to give preference to other members of the household. As nutritional status has a significant effect on the outputs of physical labor, the economic cost of nutritional deficiencies among women is may be considerable (Tinker and Green, 1994). Hence, they are caught in a vicious circle: increased work burden but lower returns.

Considering the intra-household food distribution in the two types of households, the case study couples in both study sites claim that they do not favor any member of the household. In the lowland a trend exists (probably spurious as numbers are small) that the calorie, protein and iron intake of the men exceed that of the other household members, particularly in the households with full-time housewives. It is possible that - unconsciously - the mother gives preferential treatment to the father if he is the sole breadwinner. In the coastal area, hardly any difference in nutritional adequacy can be observed between household members during the lean and abundant period. The situation was critical in both periods. These results are consistent with earlier findings in Chapter 5 and 7 that coastal households have poorer food and nutrition security despite more variety of foods in the diet compared to lowland households.

On average, 17 and nine school children from the lowland and coastal area, respectively, met their calorie and protein requirements as compared to none of the pre-school children.

This is because by school age, children may well compete with other members of the households for food. Personal observation in the coastal area revealed that some school-age boys already participate in economic activities, which may entitle them to more food.

The main conclusions of the observations on intra-family distribution of foods are that no cultural biases favoring particular household members exist but that, nevertheless, preschool children had the most inadequate intakes of macro- and micronutrients. The latter corroborates the results of the PPEC survey (Chapter 5). It was argued there that mothers may know *what* young children need but not *how much*. The implication is that food and nutrition security in this age group can only be achieved by improving nutrition knowledge, attitude and practices of mothers as well as the general care system for children.

The findings of Garcia (1990) in his study in the three provinces in Philippines that the wage rate of the wife has a significant positive impact on the calorie allocation of both herself and her children and negative effect on the husband's allocation, are not supported by this study. The data from the coastal area reveal possible negative effects of women's employment on the food and nutrition security of herself and her young children. None of the working women and her young children met their entire nutrient requirement during the lean period. During the abundant period, while the food supply situation improves, still very few women (2 out of 5) and young children (1 out of 5) proved not to meet their nutrient requirements. In these households, the women seem to assume the burden of adjustment. Moreover, due to inability of young children to compete with older members of the family for food, their dietary intake remains poor. Hence, they become vulnerable to food and nutrition insecurity. Four pre-school children from households with employed women have poor nutritional status (Table 8.9).

Table 8.9 Nutritional status (weight-for-age) of pre-school children by type of households and ecological area covering two periods

Nutritional status	Lowland				Coastal			
	With unemployed women		With employed women		With unemployed women		With employed women	
	P1	P2	P1	P2	P1	P2	P1	P2
Overweight								
Normal	5	4	4	4	3	1	1	2
1 st degree		1	1	1	2	2	2	1
2 nd degree						2	2	2

The studies by Vega and Fisher (1983) and McGuire and Popkin (1990) also did not find a positive relationship between women's income and household food and nutrition security. In poverty-stricken households, the income contribution of working wives did not lead to significant improvements in the household food and nutrition security in general, and that of the women and young children in particular. Presumably, in poor households the situation is already so critical that the women's contribution to the household income is too little to make much of a difference. In such a situation, women's working is not a livelihood strategy but amounts to mere coping for survival. Although the numbers are too small to permit any generalization, our results seem to point to a negative relationship between women's employment and food consumption and nutritional status of herself and her children.

CHAPTER 9

OVERVIEW, DISCUSSION AND RECOMMENDATIONS

The previous chapters examined the factors related to child malnutrition using the UNICEF model as conceptual framework and the linkage between food and nutrition security based on an adapted IFAD model as guidelines. In this study, child malnutrition was placed in the context of the food security situation and livelihood performance of households with pre-school children. Villages in a lowland and a coastal area were selected as the location of the study to assess potential differences in child malnutrition and food security strategies of households primarily engaged in agriculture or fishery.

This chapter presents an overview of the issues implied by the objectives of the research. The objectives addressed in this overview were presented in Chapter 1 (Section 1.3). They can be summarized as follows:

1. To describe the factors influencing food and nutrition security at the household and individual level and establish the magnitude of food and nutrition insecurity.
2. To describe the people's perceptions of and attitudes towards household food security and how these affect their behavior and actions.
3. To assess the effects of seasonality.
4. To identify and examine the impacts of different coping mechanisms employed to increase access to food.
5. To determine the role of gender in food and nutrition security.

The following sections contain an overview of the main findings in the form of a discussion of clusters of issues. This discussion is based on the detailed data presented in the Chapters 5, 6, 7, and 8. Where relevant, the specific reference will be given. At the end of this chapter we will come back to the subject of program interventions and policy measures in the form of recommendations that may be formulated. The sixth research objective is about the role of the BIDANI program. It will be addressed at the end of the chapter, when discussing recommendations.

9.1 Magnitude, evolution and risk factors of child malnutrition

In general the growth patterns of the children in the research area seemed to be consistent with those reported for developing countries. In the lowland and coastal areas, the growth curves in weight and length are comparable to the international (NCHS) reference standard till age 3-5 months. These findings indicate that birth weight and lactation are not compromised by under-nutrition among mothers (not measured). From 6 months of age, there is a distinct and progressive growth faltering till 18-20 months for weight and till 12-14 months in length.

However, there appeared to be a clear difference in the evolution and type of malnutrition between the areas. In the lowland villages, the prevalence of stunting increases gradually with age to over 40% at 30-36 months, while wasting is only a problem at 12-17 months (12%). Thus, children in lowland areas adjust to the hostile environment by becoming short but with adequate weight-for-height.

In the coastal areas, stunting is particularly prevalent after the age of 18 months. In contrast to lowland villages, wasting is also prominent at this age period, ranging from 12-18%. Thus, in the coastal households the evolution of malnutrition shows a breakdown of biological adjustments in growth. To put it briefly, pre-school children are not only stunted but also wasted.

At the level of the individual child (in contrast to household level), malnutrition may be attributable to inappropriate breast-feeding, inadequate complementary food or the family diet (from which the toddler's food is derived), morbidity and care. It is unlikely that the duration of breast-feeding is a major cause of malnutrition in the study populations. More than 70% of the mothers still breast-fed in the second half of infancy and over 40% continued to do so in the second year (Chapter 5). The observation that such prolonged breastfeeding is a risk factor for being underweight and stunted in lowland villages, and being wasted in coastal villages, was unexpected. Apparently, mothers perceive that breast-fed children need less complementary food. As far as complementary foods are concerned, children are prioritized when "luxury" foods such as eggs, fish and fruits are available in the family diet. The above observations imply that breastfeeding promotion and nutrition education with regards to complementary foods have failed to convey the message of total dietary needs of children. The case studies in Chapter 8 give further evidence of the lack of knowledge about food requirements of young children. There were no differences in quantity of foods consumed as percent of recommended dietary allowances (RDA) by the father, mother and school-age child. However, the pre-school child consumes less than the other household members in terms of percentage of RDA.

No information was collected on morbidity. Living conditions (housing, water and sanitation) of households (see Chapter 5) were used as proxy indicators for risk of illness. The fact that households in the lowland area have much better type of housing, water supply and toilet facilities as compared to those in the coastal area seems to suggest that morbidity is an important cause of wasting in the latter.

Childcare was assessed as part of a time allocation study (Chapter 8). Mothers spent almost 2 to 3 hours in childcare and about 5 hours for social activities other than household or productive activities. If she works outdoors, the father spends more time with the child. It is difficult to make a judgment on the quality and adequacy of childcare, but some form of nutrition or health education that requires mothers' time can obviously be accommodated.

In the lowland villages, the pattern of wasting and stunting and the evolution of malnutrition across age groups indicate that direct determinants of child malnutrition are more important than household food security (Figure 3.3). The high prevalence of wasting in the coastal villages points to a more prominent role of food insecurity as an intermediate determinant of child malnutrition. These assumptions are supported by the multiple regression analysis of determinants of child malnutrition (Table 5.19). Furthermore, for stunting, household size and number of underfives emerged as major underlying causes of malnutrition in both areas. These factors will have a direct effect on women's time, through which women's health and their capacity for care labor and potential market activities are affected.

9.2 Food security and nutrition security across seasons

9.2.1 Characteristics of households reporting food shortages

In the year preceding this study, the community-based survey (PPEC survey) identified food shortages in households with children, 0-36 months of age, e.g. 49% in lowland villages and 54% in coastal villages (Table 5.14). In the lowland area, households without food shortages are characterized by better education of mothers, having more assets, and fathers being self-employed. In addition to these determinants, in the coastal area, predominant dependency on fishing is a determinant of food shortage (Table 5.16a and 16b). It is quite likely that in the coastal area the low level of education of household members and the limited opportunity for paid labor are the major constraints of food security. Households are just too poor to procure food. Thus, in both areas opportunities for income diversification sources throughout the year and possession of assets rather than ecological characteristics, and being a farmer or fisherman, determine the risk of food insecurity.

This study compared objective (i.e household income levels) and the subjective (i.e perception of food shortage) measures of food insecurity. Among those households reporting food shortages, the majority had an income below the poverty level (Table 5.15). However, in the income category of 100-149% poverty threshold, 47% of households in lowland villages and 41% of households in the coastal villages reported to be food insecure. But even at income level above 150%, 39% in lowland areas and 18% in coastal villages reported food insecurity. These findings imply that increasing income alone does not always guarantee adequate food on the table. It also indicates that income is a poor indicator of food security.

Table 9.1 summarizes the relation between livelihood security (LS) and food security (FS). The first condition illustrates the positive association (+ LS and + FS) between income (livelihood security) and food security. This means that livelihood security takes precedence over food security. The second condition (+ LS and – FS) suggests that while food security cannot be disassociated from livelihood security, the mere presence of the latter does not always lead to better diets of households. Income is not necessarily used for adequate food. These two conditions are observed among households with secure livelihood both in the lowland and coastal area. Among 81 and 108 households from lowland and coastal areas whose income falls above the poverty threshold, only 59% and 61% respectively, experienced food security. A situation may exist where livelihood is sufficient for food, but the misallocation of resources to non-essential expenditures jeopardizes food security. This relationship also illustrates the competing demands and priorities of households, because even among livelihood secure households in lowland and coastal areas 30% and 40% respectively, were food insecure.

For a household, there are competing demands and needs for expenditures, of which food is one. In the lowland area, being able to afford expenditures for transportation, clothing, education (school fees), housing, treatment of illness, etc. are important elements in livelihood security. These are either means to earn a living, to invest in the future, or maintain good health. As the case study in Chapter 6 shows, vices and gambling are additional drains on resources of households.

Table 9.1 also illustrates that food security may also exist despite the absence of livelihood security. Among 99 and 114 households with income below the poverty threshold in the

lowland and coastal area, 44% and 41%, respectively, experienced food security. Social capital plays an important role in explaining this. Claims on family, relatives and local networks for labor and other resources provide tangible and intangible stores of value, because of the access to assistance they represent, as shown in cases 7.1 and 7.2. Households with high social capital have a better chance of absorbing shocks and contingencies. However, there is also evidence that poor households have less access to inter-household support networks (cf. Sauerborn et al., 1996). Such households are poor, not only in terms of material assets but also in terms of social assets.

Table 9.1 Outcomes and consequences of livelihood security

Lowland		Coastal	
Livelihood security	Food Security	Livelihood security	Food Security
+ (81)	+ (44/81)	+ (108)	+ (75/108)
+ (81)	- (36/81)	+ (108)	- (33/111)
- (99)	+ (44/99)	- (114)	+(47/114)
- (99)	- (55/99)	- (114)	- (67/114)

*Figures in parenthesis represent the number of households per category.

9.2.2 Seasonality, food availability and dietary patterns

In irrigated rice farming areas (lowland areas), harvest time is generally considered a period of abundance (dry season). This does not necessarily imply that all households produce enough rice for their own needs. It is a good season primarily because of the availability of agriculture-related or off-farm employment in that period. In the coastal area, the period of relative food security coincides with high season in sea fishing (February to June).

To assess seasonality in food security, 96 households with children 0-36 months in the lowland area and 103 of such households in the coastal area were interviewed during the one-year study period (Table 4.3). In both areas, food shortages were reported during the wet season, but the period of shortage reportedly lasts three months in the lowland area and five months in the coastal area (Table 7.1).

The question arises about the extent to which seasonality affects the adequacy of habitual diets in the study area. Rice is the only the staple food throughout the year in the lowland villages, while rice and corn - in different proportions by season - are eaten in the coastal area. The only indication of relative abundance is a higher frequency of pork consumption in the lowland area and fish consumption in the coastal area. The overall quality of the habitual diet in both areas is still poor throughout the year (low consumption of foods of animal sources, beans, green leafy vegetables and fruits), particularly in the coastal area (Figures 7.7 to 7.12). This implies that even in households that did not report food shortages, nutrition security was not achieved.

All households in the lowland area appeared to be marginally poor, while in the coastal area the majority is extremely poor. In both areas, livelihood security may provide for food security but not necessarily nutrition security (Table 9.1). The role of nutrition knowledge in the prevention of micro-nutrient deficiency will only be limited if households have no access to micro-nutrient rich foods. Intra-family distribution of food cannot be held accountable for the poor quality of diets of pre-school children. As shown in Figures 8.1-8.2, all household

members do not meet the recommended daily allowances in nutrients. The differences in relative deficiencies (as percent of recommended daily allowance) between household members can primarily be attributed to differences in daily nutritional requirements according to age and physiological needs.

9.3 People's perception of food security and their coping strategies

Although men and women have different ideas about food security, their perceptions encapsulate core concepts of food security. These include availability and security. In both areas, men's perceptions about food security revolve around having a permanent source of income and other resources (assets) to acquire either money or food. This can be explained by the fact that in general, men are still (considered to be) the primary breadwinners in the household.

Food security for women in both areas relates to food supply or having adequate stocks of rice in store at all times. However, they mentioned that the ability to manage meager resources is as important as the amount of income per se. In the Philippines, it is indeed the women who are in charge of household budget. However, some women have broader perspective of food security that goes beyond food availability. To them the food must also be adequate and nutritious. This is important, particularly from a nutrition point of view. The importance of nutrient adequacy in the ideas of some women illustrates the overlap between food and nutrition security. This observation is consistent with some of the literature.

Misconceptions about food and nutrition still prevail in the coastal area. The idea that having a "full belly" is the same as being well nourished, could still be observed (see Chapter 8). While this idea may not be a constraint to household food security, it may lead to lack of attention to the quality of the diet, thus influencing the nutritional status of individual household members.

Given these ideas of men and women about food security, the question then is what do they do in times of food shortages? Households resort to a number of mechanisms to meet food consumption needs. While coping strategies and mechanisms appear to vary in terms of timing and sequence, certain common patterns can be observed. The first strategy to prevent an impending food crisis appears to be income diversification and mobilization of assets. At some stage in the process, households begin to sell off their assets, starting with consumer goods but inevitably productive assets as well. According to Webb et al. (1992), the first response to a crisis is to preserve assets, the second stage is disposal or depletion of assets, while the final stage involves actions that go against prevailing social norms. This is shown in the case studies in Chapter 7. Lando's household succeeded in diversifying income and reducing vulnerability by combining farm and off-farm employment as well as livestock production. In the coastal area, due to poverty, Teban's household did not succeed in diversifying or multiplying its sources of income, due to lack of material resources and poor human capital. While diversification provides something of a safety net, this household became caught in a downward spiral of insufficient generation of income and getting more indebted in each crisis. These findings suggest that diversifying economic activities and/or seeking new ways of livelihood generation have potential only when skills as well as jobs and other resources are available and accessible to the households.

Aside from preventive strategies of income diversification and stocks management, adaptive strategies as a form of coping (Davies, 1993) were also observed in this study. The following coping mechanisms observed were: mortgaging, inter-household transfers, barter, altering food preparation, cutting down on the number of meals, gathering wild foods, and - to some extent - postponing expenditures on health. Households in the coastal area tend to engage more in borrowing food and cash, and food sharing throughout the year because other options, like selling and mortgaging assets, were not feasible due to lack of assets. In extreme destitution, households tend to ignore prevailing norms and food taboos in order to survive. The case household in Chapter 7 pursued gathering of wild foods and sending children to relatives in order to minimize food purchases. However, these mechanisms and means, though less dignifying, help the poor survive. This variation in type, timing and sequence of actions and strategies can be explained by the conditions and the degree of vulnerability that characterize households in lowland and coastal areas at the start of the food crisis.

The social network was also noted as an important means of dealing with food crises. In both areas, borrowing money and asking food or money from relatives, neighbors or friends show the importance of social capital for distressed households. While manipulations of social relations can be a significant form of coping, a note of caution should be added. A non-reciprocal use of social relations creates dependency and a relationship of patronage between giver and receiver.

Between men and women, the latter are highly visible in activities to meet actual food needs. The differences in coping strategies used between men and women can be attributed to their culturally determined roles in the household. In this study, activities that are secondary to livelihood generation and food production are delegated to women (Chapter 6, 7 and 8). These include food processing and preparation, distribution and utilization. According to Niehof (2003), because of women's reproductive responsibilities and tasks in the food system that ensue from these, women evaluate resources and assets as well as options to achieve food security differently from men. The fact that in both areas home gardens are popular among women (see case studies in Chapter 8) provides an example.

9.4 Power relations, decision-making and gender roles

In the study areas, power relations and gender divisions of labor were observed in the home. There are power relations in decision-making, in resource allocation and in the productive and reproductive activities of men and women. In general, men make more decisions than women. In both areas, men decide on matters related to investments and livelihood security. The culturally determined role of men as head of the household can explain this. In the Philippines, indeed, men are the head of household, even when they are no longer the major breadwinner.

Men also tend to decide on the number of children and they are often adverse to the use of modern contraception, or even natural family planning methods. Several studies have shown that Filipino men often dictate what their wives can or cannot do with their bodies (Sison, 2003). The case study in Chapter 7 shows that Patricia could not exercise her right over reproduction.

In both study sites, generally women decide on matters related to care and management and allocation of resources related to food procurement, preparation and distribution, and consumption. This is part of their reproductive role. Husbands do take over some domestic tasks when women are engaged in economic activities. The complementary of roles and activities of men and women during food crises is crucial for the family's survival. The case studies reveal that when men's income from the main occupation is hardly sufficient to the family food needs, the women's economic contribution is decisive. However, the case studies also show that economic and social constraints impede women in getting access to enough resources to fulfill their reproductive responsibilities. The culturally determined status of women and power relations within the household prevents women from exercising control over income and other family resources. These findings suggest that empowerment of women presumably not only implies good education but also enhancing their capacity for economic independence to gain greater control over decision-making. The comparative study carried out in two villages in Madura, Indonesia by Niehof (1985) showed that in the village where women had greater economic autonomy they also had greater social autonomy, including control over reproduction.

9.5 Recommendations

9.5.1 General recommendations

Based on the outcomes of this study, the following recommendations can be formulated for program interventions and policy measures.

1. Considering the finding of this study that children in coastal areas are more at-risk to malnutrition, development planners, government officials and community development workers alike should redirect development efforts towards these areas. Priority in terms of programs and projects should be given to coastal families. This holds especially for programs and projects that aim at increasing income and food production, and for training and intensive health and nutrition campaigns to improve knowledge on health and nutrition of less educated mothers.
2. Dietary guidance of mothers should put emphasis on breastfeeding in combination with giving complementary food, adequate in quantity and quality, to children after the age 6 months of full breastfeeding. The individualized approach of identifying the causes of malnutrition in each child for the intervention focus has shown to be effective in the Participatory Domiciliary Nutrition Rehabilitation (PDNR) component of the BIDANI program (see Section 2.8).
3. Prevention of wasting, particularly in the coastal area, requires interventions that allow households to acquire the needed food for adequate nutrition, especially during the wet season.
4. Other indicators of food and nutrition security should complement location-specific poverty thresholds, as the poverty threshold does not sufficiently capture the real situation with regard to food and nutrition security. Identification of people's coping strategies or responses is an important dimension in the understanding and assessment of food insecurity. This study did not examine other factors influencing nutrition security. Since

food and nutrition security is often manifested by the degree of nutritional well being of children in the home, it is therefore recommended that in future studies, maternal childcare and health status in relation to weight fluctuations, will receive more attention.

5. Given the limited possibility to produce enough food to cover the dietary needs of households, policy and program emphasis should be on the creation of wage-earning non-farm employment. The success of promoting income-generating activities to ensure household food security and poverty reduction is conditional on the fact that the targeted groups maintain control over a fair share of the resources generated. This applies to both household and intra-household levels. At the household level, evidence suggests that fishermen as well as fish retailers in the coastal area may not receive their rightful share of profits because of their disproportionate relationship with the owners of big fishing boats.
6. Targeted micro-nutrient supplementation is necessary until food-based long-term interventions (horticulture, food fortification, and genetic improvement of crops) are realized, and adequate purchasing power of households to meet their daily requirements, has been achieved. Interventions aiming at reducing food insecurity should be location-specific.
7. The study confirmed that the smaller the household size, the greater the chance to be food and nutrition secure. It was found that the number of underfives within a household affected the pre-schooler's nutritional status. It is clear that fertility decline will have a direct positive effect on the welfare of the poor, particularly of women, apart from the indirect effect via economic security. A strong family planning program, including both traditional or "natural" and modern or "artificial" methods of contraception, should be promoted. According to Herrin and Pernia (2003), an effective population program should be directed at: 1) reducing unwanted pregnancies, 2) enhancing the preference for small family size through an incentive structure that raises the investment per child and lowers the demand for children, and 3) reducing population momentum through promotion of later age at marriage, later child bearing, and birth spacing. For women, access to affordable and good contraceptive means and services is part of their reproductive rights. Considering that the target group is almost the same, in order to make the program effective and efficient, family planning programs should be integrated with health and nutrition programs for mothers. In addition, to increase the effectiveness of the family planning program, involvement of fathers should be encouraged.
8. It has been pinpointed in this study that most households experience food shortages during the part of the year that coincides with the wet months. Programs and projects of the government aimed at absorbing excess labor should be properly planned and must take seasonal and environmental aspects into account to be more effective. Local government and other development institutions must endeavor to conceive and implement labor-intensive projects and other income-generating activities considering constraints, including environmental ones of which the effects vary per season.
9. Improvement in the primary sector offers opportunity for sustained improvement in food security and, consequently, could contribute to the nutritional status of the rural poor. However, prevention of food insecurity also requires interventions that will improve men's access to permanent jobs as well as allow women greater access to the household's resources. It is important that skills development program be intensified as a matter of

policy to provide both men and women with the necessary expertise in pursuit of different lines of work. Moreover, reducing cost of production through application of new technologies and practices as well as increasing farm-gate price of agricultural and fishery products to increase primary income could decrease vulnerability to food insecurity of agriculture- and fishery-based households.

10. Credit assistance for livelihood, which aims at providing households, particularly women, access to credit to enable them to cope with acute food shortages and to address the problem in the long-term, should be promoted. However, given women's reproductive responsibilities and the still prevailing tradition that puts women in charge of the household, such projects should prioritize economic activities for women that allow for a synergy with their reproductive tasks. Activities falling into this category are: handicraft manufacturing, running of sari-sari stores and food vending businesses, developing home gardens, and raising of small animals.

A number of recommendations were formulated for cost effective action in terms of direct food and nutrition interventions and indirect support actions to achieve household food and nutrition security. Increased investments and political support for implementation of food and nutrition interventions and support programs, operations research, a cadre of trained manpower, among others, are some critical inputs to the effective delivery of nutrition food production programs.

In the Philippines, at the village level, the implementing structure to spearhead policies and programs directed towards achieving food and nutrition security is in place. What is needed however is a catalyst to enhance the capability and capacity of the different stakeholders to attain the goal of improving food security and the nutritional status of the people.

9.5.2 The role of BIDANI in improving household food and nutrition security

In this section we will address the sixth research objective (see Chapter 1), that of the role of BIDANI in improving household food and nutrition security. BIDANI conceptually and operationally approaches malnutrition through a development strategy. What does BIDANI specifically attempt to do in terms of livelihood, food and nutrition security? Broadly, BIDANI as a program supports the implementation of the Philippine Plan of action for Nutrition (PPAN) and the Local Government Code. It helps the national government in promoting good governance in a decentralized government. BIDANI does not give material inputs but develops the capacities of people to understand and use skills in resource generation and management. The “bottom-up” approach of BIDANI is directed at the local nutrition program as part of a comprehensive development plan (BIDP), which simultaneously addresses the root causes of malnutrition. BIDANI has enhanced the understanding and appreciation of the nature, causes and magnitude of malnutrition as well as the need for care and attention for social development of the child, by the local government units, their functionaries, the NGOs as well as the community, and target malnourished families and individuals. BIDANI, as partner of local government units, should continue to empower villagers and municipalities in planning, implementing and evaluating food security projects for nutrition improvement. This approach will enable the barangay people to identify and implement programs and projects that would solve the people's identified needs or problems that directly or indirectly influence food and nutrition security.

In BIDANI, local leaders and community constituents are involved in gathering and updating basic data and information (BMIS) about the situation of their village, e.g. demographic structure, health and nutrition, livelihood and employment, food production and availability, potential resources in their community. These are important tools for assessing problems and needs, and for advocacy and social mobilization for action.

BIDANI recognizes the importance of education and training and intensive health and nutrition campaigns to improve health and nutrition knowledge and practices of the less-educated mothers. The PDNR approach of BIDANI encourages participation of the family and community, and participation of women and men in nutrition-oriented development activities to prevent child malnutrition. Information, education and communication support activities of BIDANI should be promoted to ensure that nutrition is always at the center of food security and poverty alleviation thrusts of the government both at the national and local levels.

BIDANI's food security for nutrition improvement (FSNI) provides activities to increase local production and processing of complementary food, vegetables, fruits and small animals. Under the micro-credit component of BIDANI, the poor women are given the opportunity to engage in livelihood projects through funding assistance, skills enhancement training and linkages. The women's income-earning activities promoted by BIDANI micro-credit can serve as useful vehicles for the diversification of the livelihood structure of the households, which can have a favorable effect on a household's coping ability. However, the micro-credit component should take women's reproductive responsibilities into account (see above), so that the income-earning activities do not have a negative impact on women's health and childcare.

Theoretically, improved household food security should result in improved nutrition security, provided the family is exposed to nutrition education and information including food and nutrient requirements of household members, proper food preparation and intra-familial food distribution. However, without health interventions, including family planning and immunization services, and without addressing environmental concerns such as safe water supply and sanitary facilities, nutrition security does not automatically ensure improved nutritional status and well being of the child and household.

Where stunting and wasting are prevalent, BIDANI promotes direct nutrition interventions such as feeding projects, which are organized by village leaders. Interventions not only include nutrition education, family and community care, but also linking the nutritionally at-risk families with opportunities for employment, livelihood and income, home food production, skills training, and development of entrepreneurship with micro-credit.

Development of leaders through training, and community organizing and advocacy for participation in various development activities concerning livelihood, education, food, health and nutrition, are in the mainstream of BIDANI. In a decentralized government, local communities have autonomy and are mandated to generate own funds and allocate for their own needs, as decided by the people and their leaders together. This should strengthen social safety nets.

It can be concluded that, in the areas where BIDANI is operational, the comprehensive and localized approach of BIDANI provides an important potential for enhancing local livelihood, food and nutrition security. However, this study also shows that the linkages between these

three types of security cannot be taken for granted, that the one does not automatically lead to the other. Furthermore, there are structural factors underlying the lack of livelihood security, as is apparent from the differences between the situation in the lowland area and the coastal area, which for BIDANI are difficult to address. Finally, it is important for BIDANI to relate its activities more systematically to issues of income and employment, family size and women's reproductive rights and health.

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GLOSSARY

<i>Amihan</i>	northwest monsoon
<i>Barangay</i>	smallest political unit
<i>Cavan</i>	a unit of measurement of rice where one cavan has a capacity of 45-50 kilograms
<i>Combrador</i>	a person who collects the bets for lottery or <i>jueteng</i> and receives commissions out of the total collections
<i>Compadre</i>	relations that are formalized between kin and non-kin when one of the principal actors stands as sponsor for baptism, confirmation and wedding ceremonies. A female sponsor is called <i>comadre</i>
<i>Habagat</i>	southwest monsoon
<i>Hunusan</i>	refers to the weeding operations done by landless workers. Under this arrangement, whoever does the weeding on a certain plot is given exclusive right to harvest the same plot and receives a share from the harvest
<i>Jueteng</i>	a kind of lottery game where a person bets on two numbers between 1 and 37. The bet can range from P1-200. The winning pot ranges from P350 to P40,000 depending on the number of people who bet on the winning combination. <i>Jueteng</i> is derived from the word <i>hue teng</i> ; <i>hue</i> for flowers and <i>eng</i> or to bet. <i>Jueteng</i> or forms of the game have been around since the Spanish era
<i>Ginamos</i>	a fish paste made from small salted fish
<i>Kaingeneros</i>	are slash-and-burn farmers who are engaged in upland farming in areas where they temporarily settle until the land they cultivate is no longer productive due to soil erosion and water leaching
<i>Mangangabay</i>	a member of fishing team who cast down and pull out the net from the sea.
<i>Nagbara</i>	the period when fishing operations is temporarily suspended for the annual necessary repair and maintenance of fishing boats and nets
<i>Ninang</i>	relations that are formalized between kin and non-kin when one of the principal actors stands as sponsor for wedding ceremonies. A female sponsor is called <i>ninong</i>
<i>Sari-sari store</i>	a small variety shop that sells food and non-food commodities, which are commonly needed by the villagers
<i>Saya</i>	a woman's skirt
<i>'Under the saya'</i>	a henpeck husband
<i>Sensuro</i>	big fishing boat
<i>Tuba</i>	a local liquor made from coconut sap
<i>Utang na loob</i>	or sense of indebtedness; a very strong Filipino values whereby one is expected to bestow the same or at least equal support to a benefactor
<i>Ultimo</i>	a member of fishing team whose main responsibility is to collect the fish from the fishing net

ACRONYMS

ACEF	Agricultural Competitiveness Enhancement Fund
ADB	Asian Development Bank
AFMA	Agriculture and Fisheries Modernization Act of 1997
BIDANI	Barangay Integrated Development Approach for Nutrition Improvement of the Rural Poor
BIDA	Barangay Integrated Development Approach
BIDP	Barangay Integrated Development Plan
BMIS	Barangay Management Information System
BNS-DW	Barangay Nutrition Scholar-Development Worker
BRC	Basic Reform Commitment
CED	Chronic Energy Deficiency
CNP-DOH	Comprehensive Nutrition Program of the Department of Health
DECS	Department of Education, Culture and Sports
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
FAO	Food and Agriculture Organization
FCT	Food Composition Table
FGD	Focus Group Discussion
FIES	Family Income and Expenditure Survey
FNRI	Food and Nutrition Research Institute
FSNI	Food Security for Nutrition Improvement
FS	Food Security
GDP	Gross Domestic Product
GNP	Gross National Product
HAZ	Height-for-Age Z-score
ICN	International Conference of Nutrition
IDA	Iron Deficiency Anemia
IDD	Iodine Deficiency Disorder
IEC	Information, Education and Communication
IFAD	International Food and Agriculture Development
IFPRI	International Food Policy and Research Institution
IRA	Internal Revenue Allotment
KAP	Knowledge, Attitude and Practice
LGU	Local Government Unit
LS	Livelihood Security
MBN	Minimum Basic Needs
MTP-FNP	Medium-Term Philippine Food and Nutrition Plan
MUAC	Mid-Upper Arm Circumference
NAPC	National Anti-Poverty Commission
NCHS	National Center for Health Statistics
NCR	National Capital Region
NDCC	National Disaster Coordinating Council
NEDA	National Economic Development Authority
NGO	Non-government Organization
NHF	Neys-van Hoogstraten Foundation
NNC	National Nutrition Council
NPA	New People's Army

NSCB	National Statistics Coordinating Board
NSO	National Statistics Office
OCWs	Overseas Contract Workers
PDI	Philippine Daily Inquirer
PDNR	Participative Domiciliary Nutrition Rehabilitation
PEM	Protein-Energy Malnutrition
PFNP	Philippine Food and Nutrition Plan
PO	People-based Organizations
PPAN	Philippine Plan of Action for Nutrition
PPEC	Pre-and-Post Evaluation by Cohort
PPP	Purchasing Power Parity
RDA	Recommended Dietary Allowance
TFR	Total Fertility Rate
SEAPAT	Southeast Asia and Pacific Multidisciplinary
SEAP-DSWD	Self-help Assistance Program of the Department of Social Welfare and Development
SEC	Security and Exchange Commission
SRA	Social Reform Agenda
SUCs	State University and Colleges
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UPLB	University of the Philippines at Los Baños
VAD	Vitamin A Deficiency
WAZ	Weight-for-Age Z-score
WCED	World Commission on Environment and Development
WHO	World Health Organization
WSC	World Summit for Children

SUMMARY

The Philippines is endowed with many natural resources but it is also confronted with a climate that annually poses threats to livelihood, food and nutrition security of its populace. High incidence of poverty and a great variation in agro-ecological setting influence food production as well as economic conditions continue to affect the country's food and nutrition security. The seasonal pattern of rainfall causes fluctuations in aspects of life, such as seasonal labor needs in agriculture and fishery, fluctuations in food security and variations in nutritional status. The present study was carried out in two different ecological settings: a lowland area in Central Luzon and a coastal area on the island of Leyte (Visayas).

This study was aimed at examining the factors influencing food and nutrition security at the household and individual level and establish the magnitude of food and nutrition insecurity. In this study, child malnutrition was placed in the context of the food security situation and livelihood performance of households with pre-school children. While putting the child malnutrition issues in the wider context of food and livelihood security, a number of research questions were raised and answered in the different chapters.

The first research question dealt with the factors influencing household food security and child malnutrition. Food insecurity and child malnutrition are quite common in both areas but the relationship between the two differs according to ecological setting, which in turn is differentiated by sources of income, living conditions, ownership of assets, and habitual diet. This study reveals that in wage-earning households in the lowland area, child malnutrition is less related to income and food availability than among households in the coastal area, where food and nutrition security more or less coincide. Above the food security threshold, care and morbidity are the limiting factors to nutrition security of households. This implies that while livelihood security is a pre-condition to food security, the presence of both does not always lead to better quality diets of children. Livelihood security may coincide with food security but the two do not automatically result in nutrition security in the population studied. The absence of an association of food security indicators with malnutrition suggests that different processes operate for food security and nutrition security. The relation between income and food security is context- and location-specific, with livelihood strategies as intervening variables.

In this study, there appeared to be a clear difference in the evolution and type of malnutrition between the lowland and coastal area. Biological adjustments in the growth of children were noted. In the lowland area, children are short but have adequate weight-for-height, while in the coastal areas, aside from being stunted, preschool children are also wasted. These findings suggest that in the lowland area, the direct determinants of child malnutrition, which include breastfeeding, complementary food, morbidity and care, are more important than household food security. In the coastal area, high prevalence of wasting points to more prominence of food insecurity as an important determinant of child malnutrition.

The second research question focused on people's ideas about food security. There are gender differences in men and women's ideas of food security. Because of their traditional role as breadwinner, men view food security in terms of stable income (livelihood) and food supply. They consider food security as being part and parcel of livelihood security. Women have broader perspective of food security. Traditionally, women are the homemakers. Their ideas

of food security hinge on food sufficiency through proper management of the household's scarce resources.

The third research question dealt with the qualitative changes in dietary pattern and sources of food as indicators of seasonal changes in household food security. Rice is the only staple food throughout the year in the lowland villages, while – in different proportions by season – rice and corn are eaten in the coastal area. The period of relative abundance in the lowland area as well as in the coastal area falls in the dry season. This is reflected in the lowest prevalence of food shortage in both areas during this period. However, coastal villages experience a longer period of scarcity (five months) than lowland villages (three months). While only fifty percent of households reported periodical food shortages, in general, the habitual diets were of poor quality, irrespective of the season.

Research question four focused on the coping behavior of households in the two study areas. In both areas, households use a number of strategies and coping mechanisms to prevent seasonal food stress and meet actual food needs. Actions intended to solve the problem of food security in the long-term include income diversification and mobilization of assets to prevent an impending food crisis. However, my study revealed that diversifying economic activities and/or seeking new ways of livelihood generation have potential only when skills as well as jobs and other resources are available and accessible to the households.

Aside from preventive strategies, several adaptive or coping mechanisms were observed. These include: mortgaging, inter-household transfers, barter, altering food preparation, cutting down on the number of meals, gathering wild foods, and - to some extent - postponing expenditures on health. Apparently, there are differences in coping strategies used by men and women, which can be attributed to their culturally determined different roles in the household. Women are highly visible in activities to meet actual food needs, while men generally dominate in income diversification and resource mobilization activities. The research shows that in both areas type, timing and sequence of actions and strategies of men and women vary according to the conditions and the degree of vulnerability that characterize the household at the start of the food crisis.

Research question five dealt with gender issues. Power relations in decision-making on resource allocation and in productive and reproductive activities of men and women were examined. In both areas, men make more decisions than women. Men, being the head of the household, decide on matters related to investments and livelihood. As part of their reproductive role, women decide on matters concerning care and management and allocation of resources related to food procurement, preparation, distribution, and consumption. The study notes that in times of economic hardship and food crisis, women carry out specific coping activities. However, there appears to be a shift in the division of tasks between men and women, when the workload is high and women have to combine reproductive activities and working for the market. Then, men sometimes take over part of the reproductive workload of their wife. Nevertheless, findings suggest that indeed there are unequal distribution of roles and unequal division of labor between the male and female.

The sixth research question focused on the role of the BIDANI program in improving livelihood, food and nutrition security. BIDANI is the acronym of Barangay Integrated Development Approach for Nutrition Improvement. It is a nation-wide extension program working through a network of state universities and colleges. As a program and a strategy BIDANI can serve as a catalyst to enhance the capability and capacity of the different

stakeholders to address food problems. The comprehensive and “bottom-up” approach of BIDANI is important for enhancing local livelihood, food and nutrition security. This study shows, however, that the linkages between the three types of security cannot be taken for granted; that the one does not automatically lead to the other.

BIDANI can contribute to decreasing malnutrition prevalence in real life situations. Its various intervention and development projects, including micro-credit, can produce synergistic impacts that improve nutrition. The women’s income-generation activities can serve as useful vehicle for the diversification of the livelihood portfolio of the target households, which can have favorable effects on the coping ability of household. However, there are structural factors underlying the lack of livelihood security, as is apparent from the differences between the situation in the lowland and coastal villages, that for BIDANI are difficult to address. Looking at alternatives, integrated development based on the primary sector (agriculture and fishery) must be complemented by employment opportunities in other sectors to reduce poverty. Off-farm employment and the generation of jobs are a challenge for local governments and BIDANI. Being a dynamic program, BIDANI can adjust its focus to incorporate more systematically issues concerning employment and income, family size, and women’s reproductive rights and health.

SAMENVATTING

De Filippijnen beschikken over veel natuurlijke hulpbronnen maar worden ook geteisterd door klimatologische omstandigheden die bedreigend kunnen zijn voor de bestaanszekerheid en voedselzekerheid van de bevolking. Armoede en een grote variatie aan agro-ecologische systemen beïnvloeden de voedselproductie, terwijl macro-economische factoren van voortdurende invloed zijn op de voedselzekerheid van het land en de voedingsstatus van de bevolking. De afwisseling van regentijd en droge tijd veroorzaakt fluctuaties in allerlei aspecten van het dagelijks leven, zoals werkgelegenheid in de landbouw en visserij, toegang tot voldoende voedsel en het dagelijks menu. Het onderzoek waar dit proefschrift over gaat, werd uitgevoerd in twee verschillende ecologische gebieden: een laagland gebied in Centraal Luzon en een kustgebied op het eiland Leyte (Visayas).

Het onderzoek was gericht op het bepalen van de factoren die voedsel- en voedingszekerheid van huishoudens en individuen beïnvloeden en op het bepalen van de omvang van voedselonzekerheid en inadequate voeding. In het onderzoek werd ondervoeding van kinderen geplatst in het kader van de voedselzekerheid, bestaanszekerheid en middelen van bestaan van huishoudens met jonge kinderen.

De eerste onderzoeksvraag betrof de factoren die van invloed zijn op voedsel- en voedingszekerheid van huishoudens en individuen en de omvang van het gebrek aan voedselzekerheid en adequate voeding. Beide komen veelvuldig voor in de onderzoeksgebieden. De relatie tussen voedselzekerheid en inadequate voeding verschilt echter per gebied, omdat deze beïnvloed wordt door bronnen van inkomsten, levensomstandigheden, bezit, en gebruikelijke samenstelling van het dagelijks menu. Uit de studie blijkt dat in de huishoudens in het laagland (Centraal Luzon) slechte voeding van kinderen minder is gerelateerd aan inkomen en beschikbaarheid van voedsel dan in de huishoudens in het kustgebied (Leyte), waar voedsel- en voedingszekerheid vrijwel samenvallen. Boven een bepaalde drempel van voedselzekerheid zijn het vooral zorg en morbiditeit die een goede voedingsstatus bepalen. Dit betekent dat terwijl het goed kunnen voorzien in het levensonderhoud een voorwaarde is voor voedselzekerheid, de aanwezigheid van beide nog geen adequate voeding van kinderen impliceert. Bestaans- en voedselzekerheid garanderen niet automatisch een adequaat dagelijks menu, hetgeen suggereert dat de processen die leiden tot voedselzekerheid enerzijds en adequate voeding anderzijds niet dezelfde zijn. Daarbij is de relatie tussen huishoudinkomen en voedselzekerheid contextgebonden en spelen de strategieën die huishoudens hanteren om in hun levensonderhoud te voorzien een belangrijk interveniërende rol.

Uit het onderzoek bleek een duidelijk verschil in de ontwikkeling en het type van voedingsstatus van kinderen tussen de laaglandhuishoudens en die in het kustgebied. In het laagland gebied zijn kinderen kort voor hun leeftijd maar hebben een voldoende gewicht in relatie tot hun lengte, terwijl in het kustgebied de jonge kinderen niet alleen te kort zijn maar ook een te laag lichaamsgewicht hebben. Deze bevindingen wijzen er op dat in het laagland de direct bepalende factoren, zoals borstvoeding, bijvoeding en zorg, belangrijker zijn dan de mate van voedselzekerheid van het huishouden. In het kustgebied wijst het voorkomen van ondergewicht bij jonge kinderen op een min of meer chronisch gebrek aan voedselzekerheid.

De tweede onderzoeksvraag betrof de eigen opvattingen van mensen over voedselzekerheid. Hier zijn duidelijk *gender* verschillen. Vanwege hun traditionele rol als broodwinner zien mannen voedselzekerheid vooral in termen van een stabiel inkomen en voldoende

voedselvoorraad. De ideeën van vrouwen over voedselzekerheid spitsen zich toe op een goed beheer van de schaarse huishoudelijke middelen.

De derde onderzoeksvraag betrof de seizoensmatige patronen in voedselzekerheid en dieet. Rijst is gedurende het hele jaar het hoofdvoedsel in het laagland, terwijl in het kustgebied ook maïs, of een combinatie van rijst en maïs, wordt gegeten. De periode van relatieve overvloed is voor beide gebieden de droge tijd. In deze periode komt voedselschaarste het minst voor. De periode waarin men voedselschaarste ervaart duurt langer in het kustgebied (vijf maanden) dan in het laagland (drie maanden). In de totale steekproef bleek vijftig procent van de huishoudens periodiek gebrek aan voedsel te hebben. Over de hele linie is er echter sprake van een dieet van lage kwaliteit, ongeacht het seizoen.

De vierde onderzoeksvraag richtte zich op hoe de huishoudens met deze problemen omgaan. In beide gebieden passen huishoudens een aantal strategieën toe om gebrek aan voedsel het hoofd te bieden. Voor de langere termijn probeert men dat door de verscheidenheid van bronnen van inkomen te vergroten. Deze studie wijst echter uit dat het zoeken naar nieuwe bronnen van inkomen alleen soelaas biedt als de huishoudens voldoende toegang hebben tot de arbeidsmarkt en over de nodige vaardigheden beschikken.

Als het gaat om de korte termijn blijkt dat huishoudens op verschillende manieren proberen een voedselcrisis te bezweren; door ruilen of andere transacties met andere huishoudens, verpanden en verkopen van bezittingen, andere wijze van voedselbereiding, terugbrengen van het aantal maaltijden, verzamelen van voedselgewassen in het wild, en – tot op zekere hoogte – uitstellen van uitgaven voor medische kosten. In de oplossingen die men zoekt valt een duidelijk verschil tussen mannen en vrouwen waar te nemen. Vrouwen zijn duidelijk degenen die – onder de gegeven omstandigheden – zo goed mogelijk proberen te voldoen aan de directe voedselbehoeften van hun gezin, terwijl mannen zich meer bezighouden met het zoeken naar extra inkomen of het aanboren van nieuwe hulpbronnen. In beide gebieden verschillen de strategieën en activiteiten die mannen en vrouwen ontplooiën al naar gelang de mate kwetsbaarheid van huishoudens bij het begin van de voedselcrisis.

De vijfde onderzoeksvraag richtte zich meer specifiek op de verschillende rollen en posities van mannen en vrouwen (*gender*). Machtsrelaties in besluitvorming over aanwending van middelen in het huishouden en in de verschillende activiteiten van mannen en vrouwen werden bestudeerd. Zowel in economisch productieve als in zorgende en reproductieve activiteiten nemen mannen meer beslissingen dan vrouwen. Mannen worden gezien als hoofd van het huishouden en besluiten over de economie en de financiën van het huishouden. Vrouwen besluiten over zaken zoals zorg, voedselaankopen en verdeling van het voedsel in het gezin. In tijden van voedselcrisis ontplooiën vrouwen allerlei activiteiten om aan genoeg voedsel voor hun gezin te komen. Als vrouwen gedwongen zijn om door betaald werk bij te dragen aan het te lage huishoudinkomen en daarmee een dubbele werklast hebben, gebeurt het wel dat mannen zorgende taken van hun vrouw overnemen.

De zesde onderzoeksvraag betrof de rol van het BIDANI programma in het verbeteren van de bestaans- en voedselzekerheid van de bevolking. BIDANI staat voor *Barangay Integrated Development Approach for Nutrition Improvement*. Het is een nationaal programma dat wordt uitgevoerd via een netwerk van plaatselijke universiteiten en hogescholen. BIDANI moet een katalysator zijn om het lokale bestuur en de lokale bevolking actief aan de verbetering van hun eigen situatie te laten werken. De benadering van het BIDANI programma is integraal en *bottum-up*. Deze studie is van belang voor BIDANI omdat eruit blijkt dat bestaanszekerheid

niet automatisch leidt tot voedselzekerheid, en voedselzekerheid niet automatisch tot goede voeding.

BIDANI kan in de praktijk iets doen aan het voorkomen van ondervoeding en slechte voeding. De verschillende interventies van BIDANI, zoals bijvoorbeeld voorlichting en krediet programma's, kunnen een synergie bewerkstelligen tussen de verschillende factoren die van invloed zijn op de voedingsstatus van de bevolking. Het scheppen van werkgelegenheid voor vrouwen kan zorgen voor de zo noodzakelijke verhoging van het huishoudinkomen. Aan de structurele factoren die ten grondslag liggen aan de kwetsbare economische positie van veel huishoudens, zoals blijkt uit de verschillen tussen de huishoudens in het laagland en die in het kustgebied, kan BIDANI niet zo veel doen. In het kader van plattelandsontwikkeling is het echter in het algemeen van belang om alternatieve werkgelegenheid te scheppen naast die in de primaire sector (landbouw en visserij). Hier ligt een uitdaging voor zowel BIDANI als de overheid. BIDANI, als een dynamisch programma, zou meer systematisch belangrijke kwesties zoals werkgelegenheid, huishoudinkomen, gezinsplanning, alsmede de reproductieve rechten en gezondheid van vrouwen in beleid en activiteiten moeten betrekken.

APPENDICES

Reference Tables for Chapter 4

Appendix HFC Table 4.1 During Preparation/Cooking

[illegible]

AP = As purchased

EP = Edible portion

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LEGEND: **B** = beginning **E** = ending **TI** = total intake **P** = plate waste

B = beginning

E = ending

TI = total intake

P = plate waste

Reference Tables for Chapter 5

Appendix Table 5.1 Current education status of population by age (in years) and ecological area

Age			Ecological Area				Total	
			Lowland		Coastal			
			N	%	N	%	N	%
5 to < 6	Education	Pre school	8	25	6	11	14	17
		Elementary on-going			1	2	1	1
		Never been to school	24	75	46	87	70	82
	Total		32	100	53	100	85	100
6 to 12	Education	Pre school	9	6	3	7	12	4
		Elementary on-going	119	79	150	79	269	79
		Elementary drop out	2	1	5	3	7	2
		High school on-going			1	.5	1	.3
		Never been to school	21	14	31	16	52	15
	Total		151	100	190	100	341	100
12 to < 16		Elementary on-going	21	14	31	16	53	39
		Elementary drop-out	3	6	19	23	22	16
		Elementary graduate	2	4	6	7	8	6
		High school on-going	25	47	23	28	48	36
		High school drop-out	2	4	1	1	3	2
		Never been to school			1	1	1	1
	Total		53	100	82	100	135	100
16 to < 20	Education	Elementary drop-out	3	5	22	36	25	20
		Elementary graduate	12	18	9	15	21	17
		High school on-going	9	14	6	10	15	12
		High school drop-out	14	21	11	18	25	20
		High school graduate	20	30	7	12	27	21
		College on-going	5	8	3	5	8	6
		College drop-out	1	2	1	2	2	2
		College graduate	1	2			1	1
	No information	1	2	2	3	3	2	
Total		66	100	61	100	127	100	
20 to < 25	Education	Elementary drop-out	9	10	37	41	46	25
		Elementary graduate	21	22	12	13	33	18
		High school drop-out	15	16	17	19	32	17
		High school graduate	37	39	17	19	54	29
		Vocational/Special course drop-out	1	1			1	1
		Vocational/Special course graduate	5	5	1	1	6	3
		College on-going	1	1	1	1	8	4
		College drop-out	4	4	4	4	8	4
		College graduate	2	2	1	1	3	2
		Graduate school			1	1	1	1
		Total		95	100	91	100	186	100

Percentages are rounded off to the nearest tenth

Appendix Table 5.2 Current education of population by gender and ecological area

Age	Education	Lowland				Coastal			
		Male		Female		Male		Female	
		N	%	N	%	N	%	N	%
5 to < 6	Pre school	4	24	4	27	2	7	4	15
	Elementary on-going	0	0	0	0	1	4	0	0
	Never been to school	13	77	11	73	24	89	22	85
	Total	17	100	15	100	27	100	26	100
6 to <12	Pre school	6	8	3	4	1	1	2	2
	Elementary on-going	63	80	56	78	64	76	86	81
	Elementary drop-out	0	0	2	3	2	2	3	3
	High school on-going	0	0	0	0	1	1	0	0
	Never been to school	10	13	11	15	16	19	15	14
	Total	79	100	72	100	84	100	106	100
12 to < 16	Elementary on-going	9	45	12	36	20	46	12	32
	Elementary drop-out	0	0	3	9	15	34	4	11
	Elementary graduate	1	5	1	3	0	0	6	16
	High school on-going	9	45	16	49	18	18	15	40
	High school drop-out	1	5	1	3	1	2	0	0
	Never been to school	0	0	0	0	0	0	1	3
	Total	20	100	33	100	44	100	38	100
16 to <20	Elementary drop-out	0	0	3	8	16	52	6	20
	Elementary graduate	7	25	5	13	6	19	3	10
	High school on-going	4	14	5	13	1	3	5	17
	High school drop-out	7	25	7	18	3	10	8	27
	High school graduate	5	18	15	40	1	3	6	20
	College on-going	2	7	3	8	1	3	2	7
	College drop-out	1	4	0	0	1	3	0	0
	College graduate	1	4	0	0	0	0	0	0
	No information	1	4	0	0	2	6	0	0
	Total	28	100	38	100	31	100	30	100
20 to <25	Elementary drop-out	5	12	4	8	17	50	20	35
	Elementary graduate	9	21	12	23	5	15	7	12
	High school drop-out	5	12	10	19	5	15	12	21
	High school graduate	16	37	21	40	5	15	12	21
	Vocational/Special course drop-out	1	2	0	0	0	0	1	2
	Vocational/Special course graduate	4	9	1	2	0	0	1	2
	College on-going	1	2	0	0	0	0	1	2
	College drop-out	1	2	3	6	1	3	0	0
	College graduate	1	2	1	2	1	3	0	0
	Graduate school	0	0	0	0	0	0	1	2
	Total	43	100	52	100	34	100	57	100

Percentages are rounded off to the nearest tenth

Appendix Table 5.3 Food consumption pattern (1x daily to 2-3 daily and 4-6x per week) of households by ecological area

Type of Food	Frequency of consumption															
	1x daily to 2-3x daily				4-6x /week				1-3x/week				Seldom/Never			
	Low		Coast		Low		Coast		Low		Coast		Low		Coast	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Dried beans	0	0	10	4.6	2	1.1	55	25.1	103	57.2	102	46.6	75	41.7	49	22.4
Fresh beans	1	0.6	23	10.5	14	7.8	63	28.8	127	70.6	86	39.3	38	21.1	43	19.6
Leafy vogs.	4	2.2	94	42.9	30	16.7	58	26.5	136	75.6	14	6.4	10	5.6	12	0.3
Other vogs.	2	1.1	32	14.6	25	13.9	62	28.3	147	81.7	88	40.2	6	3.3	28	12.8
Banana & fruits	29	16.1	53	24.2	41	22.8	68	31.0	104	57.8	73	33.3	6	3.3	17	9.4
Beef	0	0	0	0	1	0.6	1	0.4	44	24.4	63	28.8	99	55.0	127	58.0
Pork	3	1.7	0	0	13	7.2	0	0	138	76.7	97	44.3	26	14.4	119	54.3
Poultry	4	2.2	2	0.9	9	5.0	0	0	132	73.3	88	40.2	35	19.4	118	53.9
Fresh fish	46	2.6	65	29.7	52	28.9	70	32.0	61	33.9	5	2.3	3	1.7	0	0
Dried fish	16	8.9	49	22.4	21	11.7	55	25.1	92	51.1	80	36.5	32	17.8	7	3.2
Eggs	40	22.2	22	10.0	31	17.2	66	30.1	97	53.9	87	39.7	12	6.7	41	18.7
Bread	136	75.6	27	12.3	14	7.8	53	24.2	28	15.6	32	14.6	2	1.1	8	3.7
Snacks	60	33.3	77	35.2	78	43.3	64	29.2	31	17.2	37	16.9	11	6.1	12	5.5

Appendix Table 5.4 Type of foods consumed of index children by age group and ecological area

Type of Food	Lowland								Coastal							
	0-5 m		6-11 m		12-23 m		24-36 m		0-5 m		6-11 m		12-23 m		24-36 m	
	N=39	%	N=32	%	N=71	%	N=38	%	N=54	%	N=55	%	N=67	%	N=43	%
Rice	8	20.5	32	100	71	100	38	100	4	7.4	46	83.6	59	88.1	38	88.4
Dried beans	1	2.6	15	46.9	62	87.3	34	89.5	2	3.7	15	27.3	49	73.1	38	88.4
Fresh beans	0	-	7	21.9	59	83.1	34	89.5	2	3.7	13	23.6	45	67.2	38	88.4
Leafy vegetables	1	2.6	9	28.1	61	85.9	32	84.2	2	3.7	17	30.9	48	71.6	38	88.4
Other vegetables	2	5.1	20	62.5	66	93.0	34	89.5	2	3.7	28	50.9	55	82.1	37	86.0
Banana and other fruits	6	15.4	25	78.1	71	100	38	100	2	3.7	30	54.5	55	82.1	35	81.4
Beef	0	-	2	6.2	27	38.0	24	63.2	1	1.9	8	14.5	34	50.7	25	58.1
Pork	0	-	3	9.4	53	74.6	34	89.5	1	1.9	11	20.0	42	62.7	32	74.4
Poultry	0	-	4	12.5	54	76.1	34	89.5	1	1.9	12	21.8	36	53.7	27	62.8
Fresh fish	1	2.6	13	40.6	66	93.0	35	92.1	1	1.9	28	50.9	56	83.6	38	88.4
Dried fish	0	-	2	6.2	37	52.1	29	76.3	1	1.9	11	20.0	45	67.2	32	74.4
Eggs	3	7.7	20	62.5	65	91.5	37	97.4	1	1.9	33	60.0	57	85.1	37	86.0
Bread	2	5.1	23	71.9	67	94.4	37	97.4	2	3.7	29	52.7	57	85.1	36	83.7
Snacks	0	-	3	9.4	58	81.7	36	94.7	1	1.9	27	49.1	58	86.6	39	90.7

Appendix Table 5.5 Weight of index children by age group and ecological area

Age (in months)	Lowland		Coastal	
	Mean	SD	Mean	SD
0-2	4.5	1.2	4.6	0.9
3-5	6.6	0.8	6.1	0.8
6-8	7.4	1.0	7.2	1.0
9-11	8.0	0.6	7.8	1.0
12-14	9.0	0.8	7.9	1.0
15-17	9.1	1.0	9.2	1.1
18-20	9.8	1.4	8.7	1.4
21-23	9.8	0.9	10.0	1.5
24-26	10.5	1.2	9.6	1.1
27-29	10.8	1.7	9.8	1.2
30-32	10.7	1.3	10.3	1.0
33-35	11.7	1.1	10.2	1.3

Appendix Table 5.6 Height of all index children by age and ecological area

Age (in months)	Lowland		Coastal	
	Mean	SD	Mean	SD
0-2	54.8	4.3	4.6	0.9
3-5	63.1	3.0	6.1	0.8
6-8	67.1	3.4	7.2	1.0
9-11	70.4	2.5	7.8	1.0
12-14	74.2	2.4	7.9	1.0
15-17	76.2	2.9	9.2	1.1
18-20	78.6	3.5	8.7	1.4
21-23	79.7	3.8	10.0	1.5
24-26	82.0	3.9	9.6	1.1
27-29	84.1	3.8	9.8	1.2
30-32	85.0	3.9	10.3	1.0
33-35	88.0	3.2	10.2	1.3

Appendix 5.7 Prevalence of underweight in index children by age group and ecological area

Age (in months)	Lowland		Coastal	
	N	%	N	%
0-5	1	2.6	1	1.9
6-11	4	12.5	13	23.6
12-17	9	21.4	15	40.5
18-23	10	34.5	14	46.7
24-29	9	36.0	16	59.2
30-36	6	46.2	9	56.3

Appendix Table 5.8 Prevalence of stunting in index children by age groups and ecological area

Age (in months)	Lowland		Coastal	
	N	%	N	%
0-5	0	0	4	7.4
6-11	4	12.5	5	9.1
12-17	7	16.7	11	29.7
18-23	7	24.1	15	50.0
24-29	4	16.0	10	37.0
30-36	6	46.2	4	25.0

Appendix Table 5.9 Prevalence of wasting in index children by age groups and ecological area

Age (in months)	Lowland		Coastal	
	N	%	N	%
0-5	0	0	0	0
6-11	0	0	3	5.5
12-17	5	11.9	5	13.5
18-23	1	3.4	5	16.7
24-29	2	8.0	5	18.5
30-36	2	5.4	2	12.5

Appendix Table 5.10 Mean weight-for-age of index children in NCHS Z scores by age group and ecological area

Age (in months)	Lowland		Coastal	
	Mean	SD	Mean	SD
0-2	0.5	1.1	0.6	1.0
3-5	0.2	0.8	-0.3	1.0
6-8	-0.6	0.9	-0.8	1.0
9-11	-1.3	0.7	-1.5	1.1
12-14	-1.2	0.8	-1.9	1.0
15-17	-1.4	0.9	-1.4	1.0
18-20	-1.2	1.1	-2.1	1.2
21-23	-1.7	0.7	-1.6	1.2
24-26	-1.5	0.8	-2.2	0.9
27-29	-1.6	1.2	-2.3	0.9
30-32	-2.0	0.9	-2.2	0.8
33-35	-1.8	0.6	-2.0	0.9

Appendix Table 5.11 Mean height-for-age of index children in NCHS Z scores by age group and ecological area

Age (in months)	Lowland		Coastal	
	Mean	SD	Mean	SD
0-2	0.3	0.9	0.3	1.0
3-5	0.1	1.0	-0.7	1.1
6-8	-0.5	0.9	-0.9	0.9
9-11	-0.8	1.1	-0.9	1.0
12-14	-1.0	0.8	-1.3	1.2
15-17	-1.1	0.9	-1.1	1.0
18-20	-1.2	1.1	-2.0	1.6
21-23	-1.8	1.1	-1.6	1.2
24-26	-1.2	1.1	-1.7	0.8
27-29	-1.2	1.0	-1.7	1.2
30-32	-1.6	1.1	-1.6	0.6
33-35	-1.6	0.8	-1.7	1.1

Appendix Table 5.12 Mean weight-for-height of index children in NCHS Z scores by age group and ecological area

Age (in months)	Lowland		Coastal	
	Mean	SD	Mean	SD
0-2	0.2	1.0	3.2	17.2
3-5	0.1	0.8	0.3	1.0
6-8	-0.2	1.0	-0.2	0.9
9-11	-0.8	0.7	-1.0	0.8
12-14	-0.7	0.8	-1.3	0.8
15-17	-1.0	0.8	-1.1	0.9
18-20	-0.8	1.0	-1.3	0.7
21-23	-1.03	0.7	-1.0	1.0
24-26	-0.8	0.5	-1.2	0.6
27-29	-1.0	0.9	-1.5	0.6
30-32	-1.2	0.7	-1.4	0.9
33-35	-1.0	0.9	-1.3	0.7

Appendix 5.13 Multiple variable analysis: Logistic regression

Logistic regression is a method to predict the outcome of dichotomous dependent variables. The independent variables may be numerical or categorical. In this case the nutritional status of the index child is the dependent variable: stunted (yes or no), wasted (yes or no) and underweight (yes or no).

Most dependent variables were recorded into categories and a model with reference categories was used. For each independent variable one (theoretically best) category is taken as reference and the other categories are compared with this 'best' category. The odds ratio (OR) for the reference category is 1.0. Other categories have an $OR > 1$ if the risk for malnutrition is higher, and an $OR < 1$ if the risk is lower than the reference category. If the confidence interval for the OR includes 1 (e.g. 0.85 -1.40), it cannot be concluded that the risk is higher or lower (both are possible within the confidence interval). In this case the category does not differ significantly from the reference category.

The logistic model gives the probability that the outcome (e.g. stunting) occurs as an exponential function of the independent variables:

$$p_x = 1 / (1 + \exp [- (b_0 + b_1x_1 + b_2x_2 + b_nx_n)])$$

A major advantage of logistic regression is that it requires no assumptions about the distribution of the independent variables; another advantage is that the regression coefficient can be interpreted in terms of odds ratios in case-control studies.

A choice of 10 independent categorical variables was made as proxy for the household and the index child:

Household variables:	reference category	other categories
Households size	3 to 4	5 to 6 members; 7 or more persons
Nr dependants	1 dependent	2 to 3 dependents; 4 or more dependants
Nr under-fives	1 under-fives	2 or more under-fives
Mother's education	sec. finished	drop-out elementary; elementary graduate; drop-out higher education
Income per capita	above poverty threshold	below food security threshold; between food security & poverty threshold
Food shortage	no food shortage	any food shortage
Number of assets	4 to 6 assets	0-1-2-3
Mother's age	≥30 years	less than 25 years; 25-29 years
Child variables:		
Breastfeeding now	breastfed	not breastfed
Age group	6 to 11 months	12 to 17 months; 18 to 23 months; 24 to 36 months

Since the causes of malnutrition as well as the prevalence are different in very young infants, children below 6 months were excluded from the analysis. Separate models were used for wasting, stunting and underweight. To obtain better contrasts, the malnourished children

(below $-2Z$ score of the reference) were contrasted with children above minus 1.5Z score (and children in-between groups were left out). This made the sample size slightly different for the three parameters.

Lowland and coastal areas were treated separately. None of the variables was found associated with wasting in lowland areas. This resulted in only 5 logistic regression models, which are summarized in the tables below. The tables contain only those variables that had a significant association with nutritional status. Table 2 (Stunting in lowland ≥ 6 to 36 months) will be used as an example how to interpret the tables.

Stunting in lowland was associated with age of the child, household size and breastfeeding:

For each dependent variable, the upper box (in bold) shows the reference category and the lower box the other category.

The column N gives the numbers per category; the column % stunted shows the uncorrected percentage for that category.

The column OR gives the odds ratio per category. For the reference category it is defined as 1.0.

The last columns give the overall p-value (on the reference-category line) and the confidence interval (CI) for the odds ratio of the other categories as well as p-value per category (on the line of the other category).

Age of the child:

Compared to age group 6 to 11 months the odds ratio is 17.56 and 15.32 for age group 18 to 23 and 24-36 months, respectively; since the confidence intervals for these two categories are both >1 (e.g. 2.69 - 115.6 and 2.46 - 95.6), both older groups have significantly more chance of being stunted than children from age group 6-11 months. The age group 12 to 17 months has an odds ratio of 2.0 but the confidence interval includes 0.56 - 10.2, so the difference is not significant. This means that this category does not differ significantly from the reference category.

Household size:

Compared to households with 3 to 4 members the odds ratio is 2.89 if households have 5 to 6 members but confidence includes 0.81- 10.3, so the difference is not significant. Household size with 5 to 17 members has an odds ratio 7.78; since the confidence interval is 2.08- 29.1 (both > 1) large households size is predictive for stunting.

Breastfeeding:

Being breastfed was chosen as reference category since theoretically one would argue that it is the best for the child. However, the category not breastfed has a significantly lower odds ratio (0.12 with CI 0.03 - 0.49). This means that the chance of being stunted is lower for non-breastfed children.

Table 1. Factors influencing underweight in lowland index children (≥ 6 to 36 months)

Variable	Category	N	% Under-weight	Odds ratio	Confidence interval	P value
Child's age	6-11 months	25	15.4	1.0	-	0.009
	12-17 months	34	25.7	2.0	(0.53-7.70)	NS
	18-23 months	20	45.5	9.53	2.01-44.7	0.004
	24-36 months	33	45.5	9.97	2.18- 45.6	0.003
Breast feeding	Breastfed	47	38.3	1.0	-	0.018
	Not breastfed	65	30.8	0.27	0.09- 0.79	

*For breastfeeding, the variable you used was: is the child actually still breastfed?

Table 2. Factors influencing stunting in lowland index children (≥ 6 to 36 months)

Variable	Category	N	% stunted	Odds Ratio	Confidence Interval	P value
Child's age	6-11 months	29	13.3	1.0	-	0.013
	12-17 months	38	17.9	2.40	(0.56-10.2)	NS
	18-23 months	19	33.3	17.56	2.69- 115.6	0.003
	24-36 months	31	31.3	15.32	2.46- 95.6	0.003
Household Size	3-4 members	43	11.6	1.0	-	0.009
	5-6 members	42	23.3	2.89	(0.81- 10.3)	0.10
	7-15 members	32	36.1	7.78	2.08- 29.1	0.002
Breast feeding	Breastfed	50	30.0	1.0	-	0.003
	Not breastfed	67	19.4	0.12	0.03- 0.49	

Table 3. Factors influencing underweight in coastal index children (≥ 6 months)

Variable	Category	N	% Under-weight	Odds ratio	Confidence interval	P value
Child's age	6-11 months	47	27.7	1.0	-	0.0004
	12-17 months	30	51.6	3.0	1.09- 8.17	0.033
	18-23 months	25	56.0	4.42	4.06- 13.2	0.007
	24-36 months	34	73.5	9.91	3.35- 29.1	0.000
Number of Under-fives	One only	66	37.9	1.0	-	0.002
	2 or more	70	60.6	3.49	1.60- 7.61	

Table 4. Factors influencing stunting in coastal index children (≥ 6 to 36 months)

Variable	Category	N	% Stunted	Odds ratio	Confidence interval	P value
Child's age	6-11 months	42	11.9	1.0	-	0.002
	12-23 months	55	46.4	7.18	2.39- 21.5	0.0005
	24-36 months	32	40.6	6.45	1.90- 21.8	0.003
Number of Under-fives	One only	60	21.7	1.0	-	0.004
	2 or more	69	44.3	3.44	1.52- 7.92	

Table 5. Factors influencing wasting in coastal index children (≥ 6 to 36 months)

Variable	Category	N	% Wasting	Odds ratio	Confidence interval	P value
Child's age	6-11 months	48	6.3	1.0	-	(0.058)
	12-17 months	29	17.2	5.28	(0.92- 30.0)	(0.060)
	18-23 months	23	21.7	8.32	1.36- 50.9	0.022
	24-36 months	30	23.3	13.3	1.82- 95.6	0.010
Mother's age	30+ years	50	28.0	1.0	-	0.041
	< 25 years	39	7.7	0.13	0.02- 0.88	0.037
	25-29 years	41	7.3	0.17	0.04- 0.84	0.029
Per capita Income	> Poverty thresh.	68	10.3	1.0	-	(0.073)
	< Food security	40	27.5	5.73	1.02- 32.5	0.047
	< Poverty thresh.	22	9.1	1.16	(0.15- 9.12)	NS
Number of Dependants	One only	26	19.2	1.0	-	(0.087)
	2 or 3	57	7.0	0.11	0.01- 0.90	0.39
	4 or more	47	23.4	0.09	0.01- 0.86	0.37
Breast feeding	Breastfed	66	18.2	1.0	-	(0.062)
	Not breastfed	64	12.5	0.27	(0.07- 1.07)	

Reference Tables for Chapter 7

Appendix Table 7.1 Sources of staple food of households by rice production period in the dry season in 1999 by ecological area

SOURCES OF STAPLE FOOD	DRY SEASON																			
	Planting				Pre-harvest				Harvest				Post-Harvest				Land Preparation			
	Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal	
	N= 109	%	N= 106	%	N= 109	%	N= 102	%	N= 99	%	N= 106	%	N= 99	%	N= 102	%	N= 99	%	N= 102	%
Purchased/ Bought	81	74	83	78	83	76	86	81	64	65	80	75	56	57	79	77	80	81	83	81
Own-produced	3	3	4	4	3	3	0	9	3	3	2	2	3	3	4	4	3	3	4	4
Paid in-kind	10	9	4	4	8	7	1	1	18	18	2	2	32	32	5	5	19	19	4	4
Credit	10	9	2	2	24	22	8	8	13	13	7	7	4	4	10	10	12	12	16	16
Given	2	2	6	6	4	4	2	2	4	4	1	1	8	8	1	1	8	8	2	2
Gathered/ Bartered	5	5	0	0	5	5	1	1	4	4	1	1	4	4	0	0	3	3	0	0

NOTE: The values under each production period represent the distribution of households for that particular source of staple food (rice)

Appendix Table 7.2 Sources of staple food of households by rice production period in the wet season in 1999 by ecological area

SOURCE S OF STAPLE FOOD	WET SEASON																			
	Planting				Pre-harvest				Harvest				Post-Harvest				Land Preparation			
	Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal	
	N= 109	%	N= 102	%	N= 99	%	N= 102	%	N= 96	%	N= 98	%	N= 96	%	N= 8	%	N= 96	%	N= 98	%
Purchased/ Bought	62	73	82	80	80	81	87	85	76	79	71	72	78	81	77	79	85	89	77	79
Own- produced	3	3	2	2	2	2	4	4	3	3	4	4	3	3	2	2	3	3	2	2
Paid in- kind	12	13	2	2	9	9	3	3	29	30	2	2	18	19	1	1	12	12	2	2
Credit	14	15	23	22	18	18	20	20	8	8	19	19	6	6	19	19	5	5	17	17
Given	6	7	4	4	6	6	2	2	3	3	6	6	4	4	8	8	2	2	7	7
Gathered/ Bartered	3	3	0	0	2	2	0	0	3	3	0	0	3	3	0	0	0	0	0	0

NOTE: The values under each production period represent the distribution of households for that particular source of staple food (rice)

Appendix Table 7.3 Food consumption of households by rice production period in the dry season in 1999 by ecological area

							DRY SEASON													
Type of Food	Planting				Pre-Harvest				Harvest				Post-Harvest				Land Preparation			
	Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal	
	n=109	%	N=106	%	N=109	%	N=102	%	N=99	%	N=10	%	N=99	%	N=10	%	N=99	%	N=102	%
Rice	108	99	69	65	107	98	65	61	99	100	68	64	98	99	75	74	99	97	77	75
Corn			48	45			42	41			44	45			38	39			36	37
Fish	39	36	93	88	34	31	93	88	36	36	93	88	31	30	86	84	24	25	86	84
Pork	20	18	5	5	13	12	3	3	15	15	4	4	24	24	4	4	16	16	5	5
Green beans	7	6	7	7	3	3	7	7	5	5	6	6	5	5	4	4	8	8	6	6
Green leafy vgs.	3	3	81	76	38	35	70	66	38	38	68	64	14	14	63	62	14	14	65	64
Fruits	2	2	9	9	10	9	8	8	21	21	17	16	6	6	6	6	9	9	7	7

NOTE: The values under each production cycle represent the distribution of households with at least 3-4x weekly consumption

Appendix Table 7.4 Food consumption of households by rice production period in the wet season in 1999 by ecological area

					WET SEASON															
FOOD GROUP	Planting				Pre-Harvest				Harvest				Post-Harvest				Land Preparation			
	Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal		Lowland		Coastal	
	n=109	%	N=102	%	N=99	%	N=102	%	N=96	%	N=98	%	N=96	%	N=98	%	n=96	%	N=98	%
Rice	97	98	78	76	97	98	79	77	96	100	80	81	96	100	76	78	96	100	75	77
Corn			41	39			42	41			30	31			32	33			33	43
Fish	28	28	85	83	20	20	82	80	56	59	83	85	27	28	81	83	8	8	77	79
Pork	14	14	1	1	11	11	1	1	12	13	1	1	27	28	1	1	41	43	1	1
Green beans	2	2	6	6	1	1	4	4	3	3	0	0	0	0	0	0	0	0	0	0
Green leafy vgs.	13	13	59	58	22	22	62	61	22	23	60	61	8	8	57	58	8	8	59	60
Fruits	15	15	8	8	6	6	9	9	2	2	7	7	0	0	3	3	0	0	2	2

Note: The values under each production cycle represent the distribution of households with at least 3-4x weekly consumption

Reference Tables for Chapter 8

Appendix Table 8.1 Dietary adequacy of households and selected member between periods by ecological area (as % of RDA)

Selected household members	Lowland		Coastal	
	Period 1	Period 2	Period 1	Period 2
Men	N=14	N=14	N=16	N=16
Calories	84.4 (5.2)	86.1 (6.5)	49.4 (21.2)	60.9 (23.9)
Protein	119.4 (53.2)	107.2 (30.7)	88.7 (44.7)	86.2 (31.8)
Iron	106.4 (31.1)	103.0 (29.1)	60.4 (26.8)	73.6 (55.4)
Vit A	141.8 (263.7)	75.2 (77.6)	42.0 (29.8)	37.7 (27.9)
Women	N=20	N=20	N=16	N=16
Calories	87.5 (32.9)	84.8 (28.5)	57.3 (28.2)	59.2 (24.1)
Protein	95.2 (58.3)	85.6 (35.2)	73.6 (25.7)	71.1 (29.3)
Iron	36.2 (16.7)	36.1 (13.3)	23.3 (15.5)	24.7 (10.8)
Vit A	155.4 (484.6)	63.4 (51.3)	35.6 (16.7)	32.5 (24.6)
School children	N=20	N=20	N=16	N=16
Calories	84.2 (33.6)	79.5 (15.3)	52.2 (22.4)	60.2 (22.7)
Protein	116.4 (60.0)	100.7 (29.8)	79.6 (28.9)	81.6 (30.0)
Iron	71.7 (42.90)	70.7 (30.2)	33.9 (22.3)	43.3 (19.9)
Vit A	173.8 (549.1)	46.7 (39.7)	33.9 (19.7)	107.7 (24.8)
Preschool children	N=20	N=20	N=16	N=16
Calories	75.3 (36.1)	73.1 (25.3)	41.2 (25.3)	48.1 (17.9)
Protein	105.7 (61.4)	99.5 (58.6)	59.5 (33.0)	67.6 (30.1)
Iron	64.2 (49.3)	64.2 (28.9)	26.2 (12.8)	47.8 (29.1)
Vit A	112.8 (208.2)	59.4 (68.6)	21.3 (16.6)	21.1 (20.8)

Figures with parenthesis are standard deviation

Appendix Table 8.2 Dietary adequacy of men, women, school children and preschool children covering two periods by type of households in the lowland area

Selected household members	Period 1				Period 2			
	HHs with unemployed women		HHs with employed women		HHs with unemployed women		HHs with employed women	
	N=5	>80% req't (n)	N=5	>80% req't (n)	N=5	>80% req't (n)	N=5	>80% req't (n)
Father								
Calories	90.2	5	75.6	3	105.7	4	83.2	3
Protein	128.3	5	104.4	3	117.4	5	108.4	3
Iron	100.2	4	105.0	3	110.7	5	107.6	3
Vit A	62.3	3	81.3	3	41.8	0	72.5	2
Women								
Calories	82.7	4	91.3	3	92.3	4	80.1	3
Protein	89.1	4	101.3	3	93.1	4	81.2	4
Iron	43.3	1	40.1	1	37.7	0	37.4	0
Vit A	35.3	1	76.7	2	38.6	1	70.1	2
School children								
Calories	76.2	4	82.9	4	80.1	5	77.4	4
Protein	90.5	4	100.2	4	97.4	5	107.2	4
Iron	54.0	3	79.8	3	86.9	4	69.5	2
Vit A	30.5	0	98.6	2	27.3	0	80.0	2
Vit C	25.1	0	40.5	1	35.7	0	42.2	1
Preschool children								
Calories	60.2	3	90.3	3	65.1	3	73.	2
Protein	70.3	3	98.3		69.6	3	105.3	3
Iron	51.0	2	70.4	3	72.0	2	67.8	3
Vit A	49.5	2	76.0	3	18.3	0	66.8	3

Appendix 8.3 Dietary adequacy of men, women, school children and preschool children covering two periods by type of households in the coastal area

Selected household members	Period 1				Period 2			
	HHs with unemployed women		HHs with employed women		HHs with unemployed women		HHs with employed women	
	N=5	>80% req't (n)	N=5	>80% req't (n)	N=5	>80% req't (n)	N=5	>80% req't (n)
Household								
Calories	57.0	0	44.0	0	60.7	0	64.2	2
Protein	87.5	2	66.9	2	70.4	2	83.3	3
Iron	38.3	1	30.5	0	40.6	0	47.4	1
Vit A	35.0	1	29.5	0	30.0	0	45.4	1
Men								
Calories	48.6	1	60.0	1	56.0	2	62.8	2
Protein	50.2	1	58.4	2	76.6	3	79.8	3
Iron	45.8	1	40.5	0	60.0	1	74.3	1
Vit A	40.1	1	30.2	0	28.5	0	38.0	0
Vit C	20.3	1	16.7	0	15.0	0	19.8	0
Women								
Calories	60.4	1	45.3	0	68.0	1	69.7	2
Protein	77.8	1	60.2	0	65.8	1	78.2	2
Iron	25.8	0	23.2	0	20.7	0	30.6	0
Vit A	35.9	0	30.0	0	26.9	0	35.0	0
School children								
Calories	60.5	2	58.3	3	60.5	2	68.9	2
Protein	70.4	2	80.7	2	90.1	3	95.3	3
Iron	43.5	1	45.1	0	58.1	1	60.3	2
Vit A	20.6	0	35.8	0	38.0	0	43.0	0
Vit C	16.8	0	30.6	0	22.2	0	32.2	0
Preschool children								
Calories	30.4	0	40.2	0	45.8	0	50.5	1
Protein	60.0	0	58.6	0	60.8	0	69.5	1
Iron	32.2	0	41.9	0	37.7	0	45.8	0
Vit A	20.7	0	26.2	0	29.0	0	36.2	0

CURRICULUM VITAE

Emelita Marfori-Balatibat was born 3rd July 1959, in Pila, Laguna, Philippines. She obtained her BS in Agriculture major in Agricultural Economics and MPS in Food and Nutrition Planning from the University of the Philippines Los Baños (UPLB). In 1997 she came to Wageningen University to develop her thesis proposal. She started Ph.D. work in 1998.

Since 1982, she was employed as a researcher at College Human Ecology, UPLB. Besides research, she was actively involved in training and extension work. Her research experience comprises a development of a methodology and models for monitoring and evaluating integrated development programmes. She also participated in the development and establishment of a data information system, which is an important tool for a people-based participatory planning and implementation. In June 2001, she joined a micro-finance organization as the Executive Director where she supervises the delivery of a package of micro-finance services to empower women through proper use of credit, and to improve food and nutrition security of rural households in general, and children in particular.

She is married to Prof. Juancho B. Balatibat and a mother of three girls.

