Philippine agriculture, food security, and APEC

edited by Liborio S. Cabanilla

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PASCN Philippine APEC Study Center Network

PIDS Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

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Foreword

Attainment of food security is an important goal for the Philippines as well as the rest of the Asia-Pacific region. Substantial resources have been channeled toward attainment of this goal. In the Philippines, food security and agricultural efficiency had always been a priority program of every administration. However, there are still a number of existing policy and institutional constraints that block the realization of a "food-secure" country.

The research project "Food Security, Agricultural Efficiency and APEC" aims to shed light to the issues and challenges encountered in creating a "food-secure" country. The five studies conducted under this project explore the different dimensions of this goal, ranging from the role of the local government, to the assessment of our own physical resource capacity, to the extent of problems in the region and the efforts undertaken, to cooperativism as a strategy in promoting efficiency in agriculture, and other urgent issues such as the role of biotechnology.

Food security can only be achieved if certain conditions in the economy are met. To a large extent, it is dependent on the rate of economic growth and distribution of incomes in a country. Since the Philippines and other developing economies are basically agricultural economies, where a large portion of its population, especially the poor, depend on food or food-related activities, the need to ensure sustainable agricultural growth and development becomes an imperative.

This book is an important contribution from the Philippine APEC Study Center Network and the Philippine Institute for Development Studies to the country's quest toward attaining food security in the context of a growing regional and economic interdependence.

JOSEF T. YAP, Ph.D.
President, PIDS
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Preface

One immutable fact about development is the eventual decline of the share of agriculture in a country's economic output and total employment. This occurs not through the instruments of policymakers but by economic forces that, together, in the long term, transform a country's economic structure and allow the nonagriculture sector to lead. The nature and timing of policy intervention, however, determine to a large extent whether or not the outcome of this transformation process is beneficial to society—commonly referred to in general terms as higher economic well-being. For ease of measurement, higher economic growth and better income distribution are some of the common proxies used to gauge well-being, albeit the fact that divergent views have been proffered on the issue.

The concept of food security has likewise become a fashionable topic of debate since the food crisis of the mid-70s. Food policy analysts and government policymakers have different interpretations about the matter. The predominant view among those that decide for agriculture in less developed countries is to equate food security with self-sufficiency for the reason that food, particularly food grains, are political commodities. Food policy analysts, on the other hand, put premium on income in gauging food security based on the claim that poverty is the main cause of food *in*security.

The latter view accords well with internationally accepted definition of food security that evolved through time in conjunction with the changing world food situation. The post-food crisis record of the world's capacity to feed its burgeoning population plays a key role in the changing perception of food security. Trade growth also has a hand in the matter. Through commercial trade, even food-deficit countries subjected to politically-motivated food embargoes have secure food supplies. So what is paramount, food policy analysts argue, is for countries (and households) to possess the economic means to access food.

Thus, both on historical and analytical grounds, it is clear that policy should do for agriculture what is appropriate for the whole economy, not for the sector alone because agriculture is not the end but rather a means to an end. Food self-sufficiency through high food price policy, for example, would be counterproductive because its wage effect is a drag to growth with dire

consequences on employment. It also penalizes poor consumers including food-deficit farmers.

With Philippine agriculture as the subject, the theme of this book is anchored on the above argument. It advocates in broad terms key reforms in the agriculture sector that are consistent with the emerging global economic environment. Chapter I, which integrates four research reports on this topic submitted to the Philippine APEC Study Center Network (PASCN), provides the overall framework. In general, the chapter argues for a more outward orientation and the eventual diversification of agriculture—the two basic requisites for a country's food security—referred to in this volume as availability of and economic access to food. The chapter presents both theory and specific country experiences as bases for the suggested reforms.

Chapter II compares the land and water resources of the Philippines with three other ASEAN countries—Malaysia, Thailand, and Vietnam—with the main objective of highlighting a basic source of comparative advantage/disadvantage in food production, particularly rice. In essence, the chapter serves as an aid in understanding, for example, why the Philippines has been a chronic net importer of rice in contrast to Thailand and Vietnam. Chapter III and Chapter IV tackle specific institutional issues in agriculture and food security. In the advent of devolving national government functions to local government units (LGU), Chapter III discusses the role of and constraints faced by LGUs in the pursuit of agricultural development and food security. Analysis is based on the Food Security Plans prepared by 10 case provinces (five major and five minor food producers).

Using four case cooperatives, Chapter IV, on the other hand, tackles the role of cooperatives in agricultural modernization. Chapter V discusses the role of trade in regional food security with specific reference to 21 APEC countries. It uses the Ohkawa model in estimating the supply and demand balance of key food commodities for each member country and suggests possible areas of cooperation in the pursuit of food security.

For general applicability, Philippine agriculture here is treated as that which represents the rural economy.

LIBORIO S. CABANILLA

Chapter I

Philippine Agriculture, Food Security and APEC: An Integrative Report

Liborio S. Cabanilla

INTRODUCTION

Philippine agriculture has recently been dominated by rice and corn. In the last 10 years, these crops contributed more than a quarter of gross value added (GVA) in agriculture, and occupied more than 50 percent of total cultivated area (Figure 1). With almost 60 percent of the Department of Agriculture's (DA) annual budget allotted to rice and corn in the late 1990s (Figure 2), national agricultural development programs have been largely anchored around these staples. Domestic price has been set higher than world price since the mid–1990s. Food security objectives have been equated to self-sufficiency in rice and corn.

These grains have been referred to as political crops (Panganiban 1998). The decisions of those running the national affairs in agriculture have been influenced by the belief that success in achieving self-sufficiency in these staples (especially rice) is a barometer of the performance in agricultural development, of the incumbent political leadership. The perceived political value of these crops weighed heavily in policy and program decisions albeit the overall socioeconomic benefits from self-sufficiency may not be as high since families could go hungry amidst expanding rice production. Incidence of hunger could also be high even in food-surplus areas. In 2004, a survey by Social Weather Stations (SWS) reported many Filipino families to be hungry primarily for lack of economic access to food. Incidence of hunger

Figure 1. Percent share of total cultivated area, 1992–2000

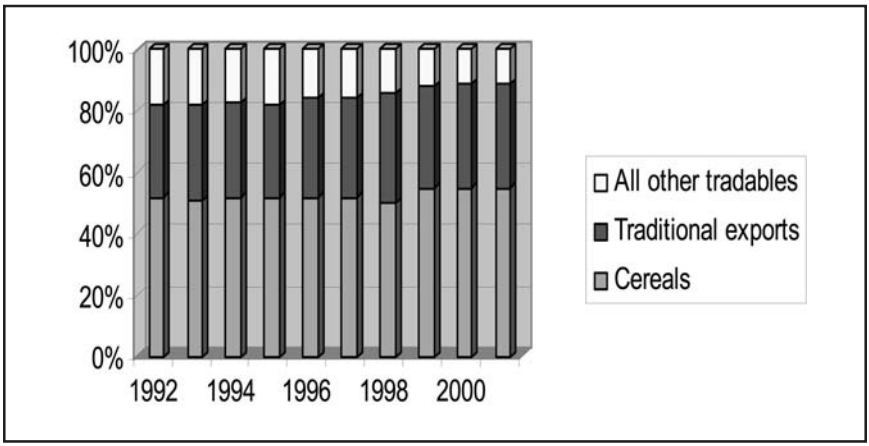
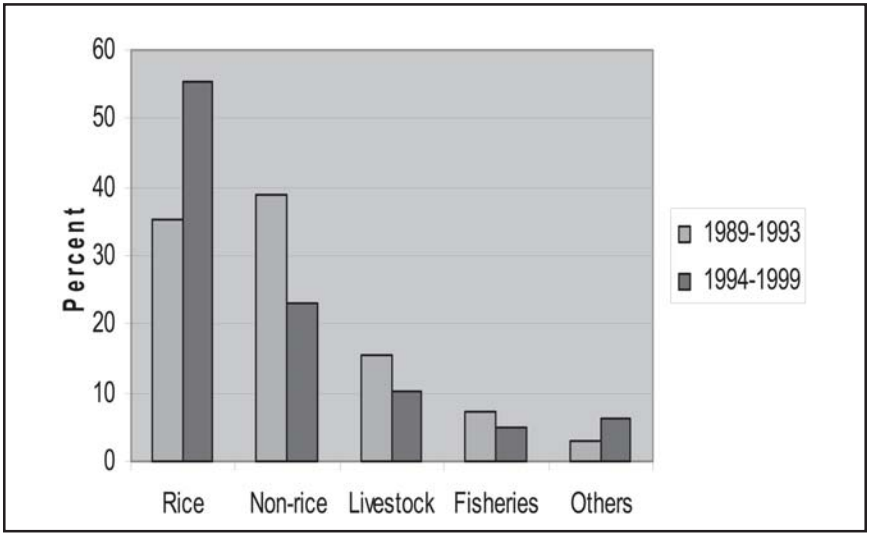


Figure 2. Philippine agricultural budget allocation



Source: David 2000

was highest in Mindanao, a food-surplus region.[1] This suggests that food availability does not necessarily mean food security.

Food security, as internationally advocated (WB 1986; FAO 1996), is availability and accessibility of food, hence, may not be equated to self-suffi-

[1] In its third quarter survey, the SWS noted a near-record-high of 15.1 percent of household heads reporting that their families had experienced hunger (without having anything to eat) at least once in the last three months (SWS 2004).

ciency. At the national level, it matters less where the food is produced. In the advent of globalization, producing most efficiently a mix of products that generate the highest income possible and enabling the poor a fair share of this income is what matters more.[2] Market liberalization and increased trade are the means in making this possible, more so in the context of the paradigm of greater cooperation among countries such as those within APEC.[3] Through trade, new sources of growth in agriculture in place of traditional engines of growth eventually emerge. However, this entails a high degree of flexibility in the production system that is made possible only when the policy environment is not heavily biased in favor of a certain commodity group. The main concern in this regard, is to reorient rural and agricultural development to be consistent with the demands of the emerging global economic environment. Employment and income generation are key concerns and efficiency in resource allocation is paramount. The role of government is best served in providing the enabling mechanisms for the pursuit of agricultural/rural development.

This paper has two main objectives. First, it examines the implications of a rice and corn self-sufficiency policy in light of the changing world food situation. It discusses the effects of the current food policy on resource allocation, consumption (i.e., consumer welfare), and growth. Second, it identifies areas of intervention that deserve more attention in line with the food security framework discussed below. It is guided by the view that policy should enable agriculture to diversify according to the principles of comparative advantage, open new opportunities of higher incomes for the rural population in particular and more efficient sources of growth in gross value added for agriculture in general. Analysis is complemented by the reports submitted to the Philippine APEC Study Center Network (PASCN) under the broad topic: Food Security, Agricultural Efficiency and APEC (contained as separate chapters in this volume).

This section offers a brief review of the standard theory on the role of agriculture in economic development. This will serve as the basis for establishing a framework for food security. Section II presents a framework for food security. Section III describes the general policy environment and performance of Philippine agriculture in the context of the framework presented in Section II. The role of APEC in Philippine agricultural develop-

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[2] In the FAO-sponsored World Food Summit of 1996, trade was emphasized to be one key element in achieving food security (refer to Commitment Four of the Rome Declaration on World Food Security).

[3] Increased trade implies not only liberalizing one's domestic market but more so includes active participation in foreign markets.

ment and food security is presented in Section IV. Finally, Section V presents the concluding comments for topics discussed in this chapter.

FRAMEWORK FOR ACHIEVING FOOD SECURITY

In developing a framework for achieving food security, this section first reviews what theory says about the role of agriculture in economic development. This brings into focus the significance of the interactions between agriculture and nonagriculture sectors in the process of economic development; thus, the need for a set of (agricultural) policies that promotes broad development objectives. This section also reviews the consensus on the concept of food security in relation to the evolving world food situation.

Role of agriculture in the economy

> *The agriculture sector is a means to an end—not an end in itself (Timmer 1988).*

At the core of many economic development models is the interaction between agriculture and nonagriculture in the process of development. This is underscored in standard Dual-economy Development Models which argue that agriculture has four distinct contributions to economic development: (a) factor contribution (labor and capital); (b) foreign exchange contribution; (c) market contribution; and (d) product contribution. All four are highly significant especially in the early stages of a country's development when agriculture is the dominant sector. They also highlight the strong linkages between agriculture and the rest of the economy.

In a nutshell, a country's overall economic performance depends, to a large degree, on the agriculture sector's capacity in fueling growth of the nonagriculture sector. It serves as the resource reservoir in the initial stages of development and provides the market base for products of nonagriculture. Moreover, with a relatively larger share in the gross domestic product (GDP), as is the case in majority of less developed countries (LDCs), a high growth rate in agriculture's output also directly translates into a high overall economic growth. With majority of the population residing in the rural areas, the strategy adopted for agricultural development is crucial in view of its ramifications on growth and equity.

Generally, food represents the bulk of agriculture's output and food prices affect a country's industrialization process since food is a wage good. This, in fact, is a source of major dilemma among policymakers. Higher food prices serve as incentive for farmers to expand output but, at the same time, squeeze the profits of industrialists. This results in diminished capital accu-

mulation thereby jeopardizing the industrialization process. This policy is also highly adverse to the poor who spend more than 50 percent of their income on food.

Through time, the share of agriculture in economic output and employment declines. As economic development proceeds, this transformation occurs not by design but rather due to economic forces that enable the nonagriculture sector to ultimately become the lead sector in economic growth. Agricultural development strategy, in this sense, should be consistent with the requirements of an efficient, equitable, and high-rate of overall economic development. Output mix and production systems must be allowed to respond to price signals attuned to international markets. Manipulation of and insulating domestic prices from the world market to serve mainly noneconomic objectives create inefficiencies, poor economic performance, and often cause inequities in the society.[4]

Trade and agricultural development

International trade is important in agricultural development on two aspects. First, it serves as the 'vent-for-surplus' in agriculture (Myint 1971) providing an effective demand for the output of the surplus resources (e.g., labor) which would have remained unused in the absence of trade. Second, it provides the mechanism by which food deficit countries avoid a Ricardian food trap. Through trade, countries with poor land and water resources (hence, do not possess comparative advantage in food production) become assured of needed food supplies. Indirectly, agricultural trade enables countries to share resources, which are intrinsically nontradable.[5]

Although there has been a general apprehension about the reliability of the world market to supply deficit countries' food needs, experience in the post-WWII era indicates that the world as a whole is capable of producing enough food to feed its burgeoning population. Malthusian fears of food scarcities (Brown 1987) have largely been unrealistic. After the food crisis of 1974, world food scarcity now seems remote (Falcon et al. 1987) and food prices have been noted to be on a long-term decline (Schuh 1987). World food trade, which has been generally competitive, has enabled food deficit countries to achieve high degrees of food security. Even countries which

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[4] The basic foundation of this argument dates back to the British Repeal of the Corn Laws in 1846 calling for the liberalization of corn trade as a means of checking the rising domestic price of corn which stifles the industrialization process.

[5] FAO (2004), however, warns that over reliance on the world market for domestic food supplies puts a heavy strain on the foreign exchange earnings (which are of extreme necessity for capital goods imports) among many poor countries.

have been subject to politically-motivated food embargoes managed to purchase sufficient food from the world market (Donaldson 1984).

For rice, Dawe (2001) in a more recent report noted the remarkable change in the structure of the rice world market. A greater proportion of world output is now traded internationally and the number of rice exporting countries has increased with the emergence of Vietnam as one among the major rice exporters. World price of rice has been sustained at a low level during the past 15 years (1985–1999).

Food security: an evolving concept

The linkages between food deficit and food surplus countries made possible through trade and the realization that the world as a whole is capable of producing enough food for its growing population have led to a change in the perception among food policy analysts about the nature of hunger and food insecurity. During the food crisis of 1974, the common perception was that the solution to the food problem was expanded food production particularly among poor countries. Then, food security was largely equated to physical availability rather than to consumption of poor people or the nutritionally vulnerable groups.

A decade later, the perception about food security changed. During this time, it became more apparent that the common bond among the food insecure is poverty. Falcon et al. (1987) noted that, very often, the malnourished are food producers themselves. In the Philippines, food and nutrition surveys show that individuals who have more stable and higher income streams have higher levels of nutrient intake relative to food producers (Cabanilla 1999). Earlier accounts of hunger and famine point to the same observation. In the 1943 Bengal famine and the 1968–1972 famine in the Sahel, the most vulnerable were those with deficient command for food (Sen 1981).

Thus, together with the changing world food situation, there has been an evolution in the concept of food security as exemplified in the following definitions.[6] In particular, one notes in the following the increasing concern about economic access—the demand side of the food security equation.

- *Availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in*

[6] Based on a paper by E. Clay of the Overseas Development Institute, London, UK, for the FAO Expert Consultation on Trade and Food Security: Conceptualizing the Linkages, Rome, 11–12 July 2002 posted in http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/005/Y4671E/y4671e06.htm

production and prices. This reflects the global concerns in 1974 on the volume and stability of food supplies.

- *Ensuring that all people at all times have both physical and economic access to the basic food that they need*. The 1983 FAO definition, this new concept includes securing access by vulnerable people to available supplies. Attention was called to the balance between demand and supply side of food security equation.

- *Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life* (FAO 1996 World Food Summit).

- *Food security [is] a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life* (FAO 2002, The State of Food Insecurity 2001).

The common thread that ties all these definitions is the notion that food insecurity exists when people have no adequate physical and economic access to food. This brings to focus the capability of individuals to acquire food – very much in line with the concept of entitlements as proposed by Sen (1981).[7] Employment and income opportunities are crucial in this regard. The significance of food availability is reflected primarily in its impact on prices, hence, real incomes. This paper adopts the last definition of food security presented above with emphasis on the aspect of economic access to food.

Related issues

The emphasis in agricultural development should be to improve the income of the rural population, which in most developing countries is still the main component of poverty. The perspective should be one of producing new income streams (Schuh 1990).

[7] In Sen's dissertation, command for food is gained through four types of entitlements: trade-based entitlement; production-based entitlement; own-labor entitlement; and, inheritance-based entitlement.

Adherence to the above concept of food security brings to fore a number of issues related to current programs for achieving general as well as sector-specific targets. Foremost among these is high food price policy as an incentive to expand domestic food production.

High food price policy

The role of food prices is seen largely in terms of its effect on welfare, growth and efficiency—concerns which are of crucial significance in less developed countries. As is well known, food is a wage good. Thus, food prices do not only affect producers' and consumers' welfare but also economic growth and efficiency in resource allocation.

Welfare/equity effects

At the micro level, welfare effects of a high food price policy depend on one's status in the food system. A large, surplus producer of food clearly benefits from high food prices but producers who are net food buyers are adversely affected. The latter group includes small landholders who barely produce any marketable surplus. Landless laborers and poor urban consumers are net losers while the rich who spend only a small fraction of their income on food are largely unaffected. Low, rather than high, food prices benefit the poor including the smallscale food producers.[8] Thus, from a macro point of view, a high food price policy is actually iniquitous in a situation where the majority of food producers are net food buyers. A high food price policy favors only large producers. On the other hand, landless laborers and the urban poor, who do not have any direct link to food production, are likewise adversely affected.

Growth

The effect of food prices on growth operates indirectly through its impact on domestic industries. For example, wage rises with food prices and, hence, stifles growth as this diminishes economic profitability of domestic industries. Negative effects on growth are magnified by the diversion of foreign investments to countries where wages are relatively lower. Even industries within agriculture are affected by high food prices. The livestock industry where corn comprises a big proportion of livestock feed cost is a good case in point. Food processing industries are affected in a similar manner. In the

[8] In Indonesia, it was found that a 15 percent decline in the price of rice would lift around 10 million of the 46 million poor individuals from poverty (BAPPENAS/Departmen Pertanian/USAID/DAI Food advisory Team 2001).

midst of high food prices, food production becomes the major source of growth in agriculture since its wage-price spiral effects constrain the growth of other sectors in the economy.

Efficiency

When domestic food prices are artificially high, resources are drawn away from other activities which may possess strong comparative advantage relative to food production. High wage rates resulting from high food prices also lead to choice of production techniques biased against the use of labor which is in abundant supply. In both cases, competitiveness of domestic industries is jeopardized.

Agricultural/rural diversification

In relation to food security, the importance of diversification as strategy for agricultural development could be seen from two points of view. From a narrow point of view, agricultural diversification means increasing the variety of agricultural commodities produced at the farm level (Goletti 1999). Thus, it involves expanding the combination of outputs outside the usual subsistence food crops. In the context of Southeast Asian experience, Hayami (1991) mentions the cultivation of cash crops such as sugar, coffee, tea, and rubber as a manifestation of agricultural diversification in the 19th and 20th centuries.

More recent experience, however, indicates that other activities such as vegetables, ornamentals and other high value commodities represent alternative opportunities in the rural areas (Barghouti et al. 1992; Barker and Dawe 2002). Diversification also paves the way for new sources of export revenues. Thailand and Vietnam, the top two rice exporters of the world, successfully developed export markets in cassava, sugar and, lately, poultry (for Thailand), and coffee (for Vietnam). In both countries, the share of total crop area devoted to rice has declined since the early 1960s by 10 to 20 percentage points (Barker and Dawe 2002).

From a broader point of view, diversification essentially involves expanding economic opportunities in the rural areas to include noncrop activities. The main concern of the broader view of diversification is to expand employment and income opportunities in the rural areas. Agroprocessing, services and other nonfarm activities are among the key opportunities outside of farming. Their contribution to food security through poverty alleviation is far-reaching.

At the farm level, diversification is an effective means of reducing risks that may result from weather (hence, price) variability. At the macro level,

diversification is seen in the long run as a means of reducing the rural-urban income disparity as economic development and structural transformation proceed. This is particularly so in light of the inability of the urban/industrial sector to absorb labor (Timmer 1992) and the declining importance of food crops (e.g., rice) production (Barker and Dawe 2002) as a source of employment and income in the rural areas (Table 1).

Table 1. Change in percent income from rice, other farming, and nonfarm, selected villages in the Philippines and Thailand

Country/Source	Irrigated		Rainfed		Upland	
Philippines	**1985**	**1997**	**1985**	**1999**	**1985**	**1999**
Rice	42	29	55	41	25	17
Other farming	18	6	26	10	42	22
Nonfarm	10	65	19	49	33	61
Thailand	**1987**	**1995**	**1987**	**1995**	**1987**	**1995**
Suphan Buri						
Rice	56	21	53	17	83	27
Other farming	36	31	27	18	8	36
Nonfarm	8	48	20	65	39	37
Khon Kaen						
Rice	46	8	28	8	30	19
Other farming	10	5	14	7	19	32
Nonfarm	44	87	58	85	51	49

Source: Barker and Dawe 2002

Despite the success of the green revolution in solving the food supply problems in many Asian countries, there is increasing recognition that rice production alone could not provide a sufficient source of income that will uplift farmers from their state of poverty. Using data from Asian countries, Francesca Bray (1986) argued that "despite its potential for responding positively to increases in labor inputs, the intensification of rice monoculture is a far less efficacious way of absorbing labor and generating extra income than is economic diversification." It is in this sense that the role of cash crops as an alternative income source for rural households is highlighted.

Cash crops are complementary to staple food production. A report by J. von Braun and E. Kennedy (1987) argues that contrary to criticisms, increased cash cropping does not necessarily result in reduction in staple food production. Cash crops and food/subsistence crops do not necessarily compete for land resources, as they may be grown in different seasons or in different locations with soils or altitudes inappropriate for subsistence food crops. In

the same report, evidence was shown that, indeed, in a number of countries cash crops improved labor employment and income among rural households.

Recap

Under the current world food situation, the consensus among food policy analysts views food security not in terms of food availability (especially from domestic production) but rather in terms of economic access to food. This puts emphasis on employment and income generation in the process of rural/agricultural development. It also underscores the need to enable agriculture to transform in accordance with the changing pattern of demand both in the domestic and international market. Government should facilitate the growth of rural activities which have high pay-off in terms of employment and income generation. It is in this context that rural and agricultural diversification gains significance while staple crops become less important sources of employment and income for rural households.

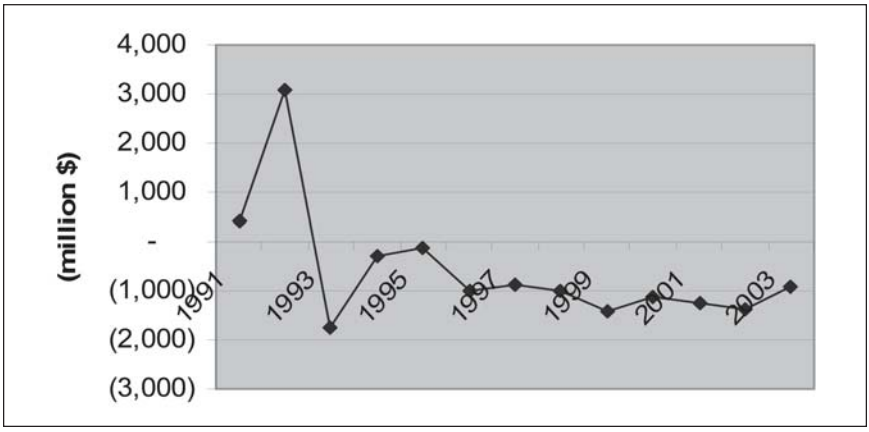
PHILIPPINE AGRICULTURE: REVIEW OF POLICY AND PERFORMANCE

The contribution of agriculture to the Philippine economy has remained relatively unchanged over the past two decades—contributing an average of 22 percent to GDP and 45 percent to total employment. Its share in total employment declined by just 12 percentage points from 1982 to 1999 while its share in total GDP declined by five percentage points over the same period. This is a manifestation that the nonagriculture sectors have not been able to absorb enough labor from the rural areas. It also underscores the continued importance of agriculture in economywide growth.

Growth in agriculture, however, has not been very impressive. From 1982 to 1999, the average annual growth rate of GDP (at constant 1985 prices) originating from agriculture was 1.2 percent per year—much lower than the three percent growth rate during the same period in Thailand. Philippine agriculture has also experienced deterioration in its trade balance—turning from a net exporter in the early 1990s to a net importer during recent times (Figure 3). These observations suggest that general as well as sector-specific policies for agriculture have not responded to the demands of a changing world economic environment.

This section reviews the current policy environment affecting agriculture. It also reviews the performance of agriculture with particular focus on production and trade. The central concern of this review is whether or not policy and performance are consistent with the framework proposed above.

Figure 3. Net agricultural trade of the Philippines, 1991–2003

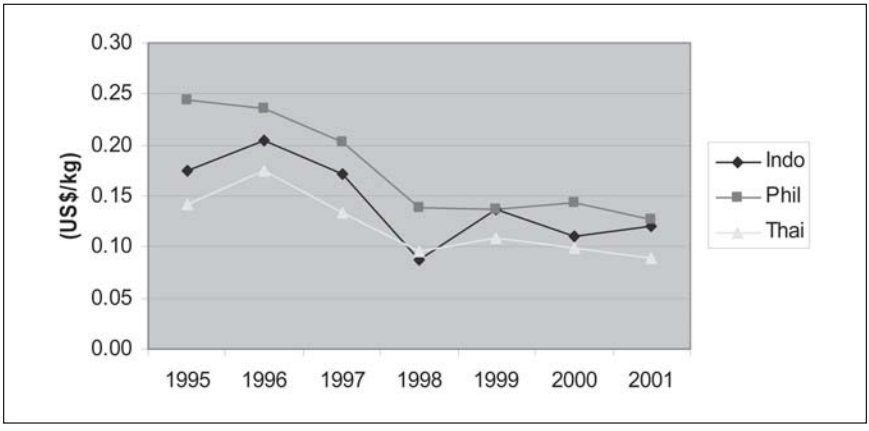


Source of data: NSO 2005

Policy environment

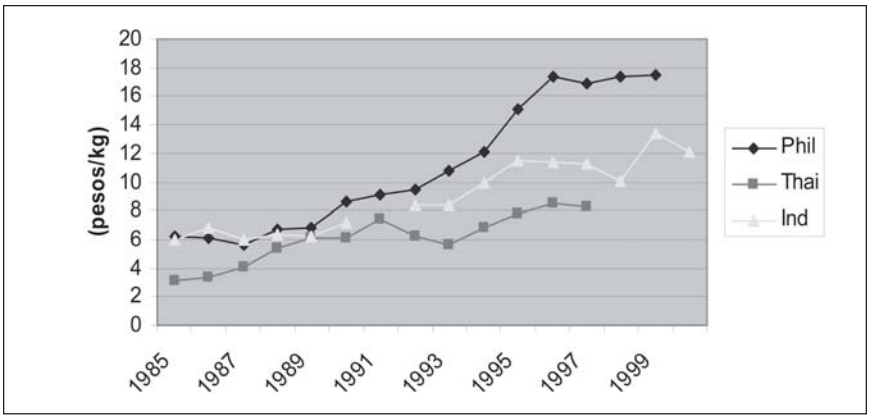
In Chapter III of this volume, it is noted that the policy environment in agriculture has been biased in favor of rice and corn. Domestic prices of these commodities have been set higher than world market price—a stark contrast to the pricing policy in the 1980s when domestic prices of these crops were lower than world prices. It comes as no surprise therefore that rice and corn prices in the Philippines have been higher than in neighboring countries (Figures 4a and 4b).

Figure 4a. Corn producer price, 1995–2001



Source: FAOSTAT 2004

Figure 4b. Wholesale price of rice, 1985–1999



Note: Prices converted to pesos using official exchange rate.
Source of basic data: IRRI 2004

Tariff rates are highest for rice and corn (Table 2) and government has fortified its control on the market for these commodities by granting the National Food Authority (NFA) full control over imports. Recent statutes such as the Agriculture and Fishery Modernization Act (RA 8435) of 1997 and Executive Order 86 dated March 1999 mandate that it is the country's central objective to achieve self-sufficiency in rice and corn. Allocation of financial resources has been consistent with this objective with 60 percent of the DA's budget allotted to rice and corn in the 1990s.

Medium term agricultural development plans explicitly mention the promotion of high value crops (HVCs) production but commensurate budgetary allocation has not been provided (CPDS 1996; WB 1999). Continued emphasis on self-sufficiency in rice and corn has rendered HVC production a minor agricultural undertaking. There has been no program for HVC that approximates the magnitude of programs implemented for rice and corn.

Even institutional reforms that would facilitate the needed rural transformation are constrained by the policy bias for rice and corn. For example, the enactment of the Local Government Code of 1991 (RA 7160) provides the means for an increased involvement of local government units (LGUs) in pursuing agricultural development programs. However, fiscal constraints have compelled planners at the local level to implement programs that are attuned with national food self-sufficiency objectives. Based on the analysis of the Food Security Plans of 10 provinces, Chapter III of this volume concludes: "In their attempt to access national budget for food security, local government units prepare plans that resemble national biases for specific

Table 2. Philippine tariff rates on selected agricultural products, 2004 and 2005

Items	2004			2005		
	In-quota	Out-quota	Other	In-quota	Out-quota	Other
Live Animals*						
Swine	30	35		30	35	
Goats	30	40		30	40	
Poultry						
Fowls	35	35		35	35	
Turkey	35	40		35	40	
Ducks	35	40		35	40	
Meat						
Bovine	10	10		10	10	
Swine	30	40		30	40	
Chicken	40	40		40	40	
Turkey						
Whole (fresh, chilled)	40	40		40	40	
Whole (frozen)	30	35		30	35	
Ducks	40	40		40	40	
Vegetables						
Potatoes (fresh chilled)	40	40		40	40	
Onions			40			40
Garlic			40			40
Cauliflowers			25			25
Cabbages			40			40
Lettuce			25			25
Carrots			40			40
Cassava			40			40
Sweet Potato			40			40
Coffee						
Not Roasted						
Not decaffeinated	30	40		30	40	
Decaffeinated	40	40		40	40	
Roasted	40	40		40	40	
Corn	35	50		35	50	
Rice			50			50

* Only for animals not used for breeding purposes
Source: Tariff Commission 2004

commodities. Thus, plans and programs implemented at the local level may be not fully consistent with the demands of the community." Under this situation, efforts towards rural diversification are stifled.

The Philippines' avowed objective of rice and corn self-sufficiency has deep historical roots. Nationalistic ideals exemplified by the enactment of RA 3018 (otherwise known as the Rice and Corn Nationalization Law of 1960) have influenced succeeding statutes governing agricultural policy.[9] Said law,

[9] This law was repealed in 2000 by Republic Act No. 8762 (Catindig 2001).

in fact, paved the way for the creation of government monopolies in food trade (e.g., Rice and Corn Board, National Grains Authority, and National Food Authority). The more recent Agriculture and Fisheries Modernization Act of 1997 (RA 8435), the latest attempt to modernize Philippine agriculture, also provides for the achievement of self-sufficiency in rice and corn. The Governors' Food Security Covenant initiated by former President Joseph Estrada in 1999 and domestic pricing policy (which started in the 1990s) have been geared towards the overall objective of self-sufficiency in rice and corn. In a much earlier period, President Ferdinand Marcos, through General Order 47 (otherwise known as Corporate Rice Farming Program of 1975), mandated private corporations to produce rice for their employees as part of the government's effort to cushion the adverse impact of the food crisis in 1974.

Irrigation investments are directed to rice with irrigation infrastructures having been designed primarily for rice production (Dawe 2002).

Performance

The policy bias in favor of rice and corn has brought about an agricultural structure based on these staples. Output mix has not diversified. Exports have not expanded beyond the traditional export commodities. New sources of growth for agriculture have not emerged. Exports remained concentrated basically on the traditional export commodities. Taken together, these developments have far-reaching implications on growth, rural-urban income gap and food security in the context defined above.

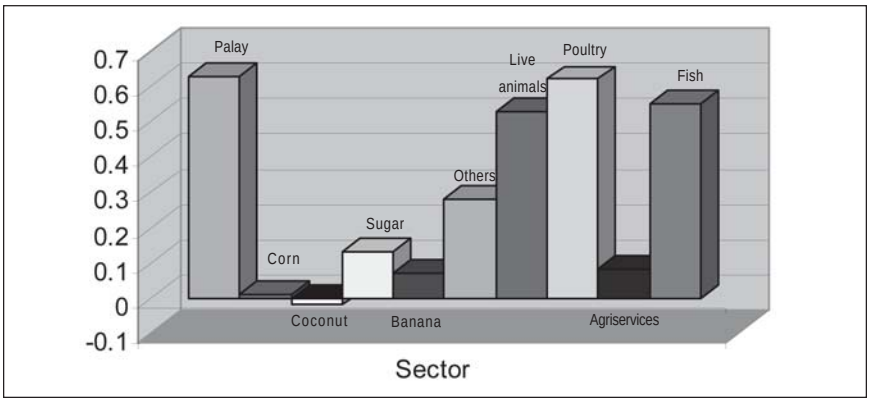
Production and trade performance of the key subsectors in agriculture are briefly discussed below with particular focus on crops and livestock.

Grains

Rice output has grown at 3.2 percent per year from 1992 to 2002 but corn output registered an average growth of –0.4 percent per year during the same period primarily due to the decline in area harvested. For rice, studies have shown that growth of output has come mainly from productivity increases (Barker and Dawe 2002). Of the three percent annual growth of agriculture GVA in 1988 to 2002, around 0.64 percentage points were contributed by rice and corn with rice contributing the bulk (Figure 5).

Notwithstanding the policy bias and the emphasis for self-sufficiency, the Philippines continues to import rice and corn. For the most part of the last century, the country has been a net importer of rice (Dawe 2001). Corn imports averaged about a quarter of a million tons every year in the last 20 years. In the early part of the 20th century (1901–1936), Corpuz (1997) notes

Figure 5. Percentage point contribution to agriculture gross value added growth, 1988–2002



Source of data: NSO 2004

that the country's total rice imports had a value of at least P333,500,000 bought mostly from Saigon (French Indo-China) and Rangoon (British Burma).

In recent times, Thailand, Vietnam and, occasionally, the USA are the common sources of imported rice. For corn imports, the United States has been the main supplier, with China serving as supplemental source. Long-term trade data reveal the country's lack of comparative advantage in these two crops. It does not have the land and water supply amply available to the major exporting countries in Asia (e.g., Thailand and Vietnam for rice). Data suggest higher cost of rice production in the Philippines (Table 3) and estimates of Domestic Resource Cost (Estudillo et al. 2002) lend support to this phenomenon.

Table 3. Comparative costs of rice production Philippines and Thailand (US$/ton), 1999

Cost Item	Central Luzon Philippines	Central Plain Thailand
Material Inputs		
Fertilizer	15	12
Seeds	7	6
Pesticides	5	8
Other costs	3	0
Labor and Machinery		
Labor	54	19
Machinery and fuel	12	14
Total cost/ton of pady	96	59

Source: Moya et al. 2004

Agricultural production is highly natural resource-based. Particularly for rice, water is a critical resource. Around 3,000 to 5,000 liters of water is required to produce a kilo of rice.[10] Unfortunately, the Philippines is not as well endowed with water resources. It has an average of 6,332 cubic meter per capita of water annually available compared to Thailand's 6,526 cubic meter and Vietnam's 11,406 cubic meter per capita. Clearly, Thailand and Vietnam have the advantage of over the Philippines in this aspect (Table 4). Available data also show that Thailand has more extensive river basins covering a total watershed area of 521,066 square kilometers (Table 5) compared to the Philippines' river basins that cover 105,329 square kilometers (Table 6).

Table 4. Water resources in selected Asian countries

Country	Year	Total Annual Water Resources (AWR) Cu. Km.	Total Water Resources per capita Cu m.
Vietnam	2000	891	11,406
Philippines	2000	479	6,332
Thailand	2000	410	6,526
Malaysia	2000	580	26,105
Indonesia	2000	2,838	13,381

Source: FAO Aquastat 2004

Compounding the country's problem for rice production is weather. The Philippines is visited by an average of 19 typhoons every year mostly during the rice growing months—a weather disturbance seldom, if ever, experienced by other countries such as Thailand and Vietnam (Velasco and Cabanilla Chapter II of this volume). However, despite the prevalence of typhoons, the Philippines, being an island nation, does not have the advantage of easy water harvesting enjoyed by continental nations like Thailand, Myanmar, and Vietnam (Dawe 2002).

Export crops

Coconuts, sugar, and banana remain the major export crops of the Philippines. Together, they contribute nine percent to GVA and 38 percent to total exports of the agriculture sector (including agricultural inputs) from 2000 to 2003. Coconut is the top export earner contributing 22 percentage points.

[10] The International Rice Research Consortium notes "the water needed to grow one ton (about 20 sacks) of rice would fill one or two Olympic-sized swimming pools."

Table 5. Thailand river basins

Basin No	Name	Watershed Area sq.km.	Mean Runoff mcm	l/s/sq.km.
1	Salawin	17,920	8,570.70	15.17
2	Mae Khong	57,422	20,532.00	11.34
3	Mae Kok	7,895	5,279.30	21.2
4	Chi	49,477	11,187.50	7.17
5	Moon	69,700	21,092.10	9.6
6	Ping	33,898	8,577.90	8.02
7	Wang	10,791	1,513.40	4.45
8	Yom	23,616	3,650.80	4.9
9	Nan	34,330	11,017.40	10.18
10	Chao Phraya	20,125	4,925.00	7.76
11	Sasae Krang	5,191	1,297.00	7.92
12	Pasak	16,292	2,820.20	5.49
13	Tachin	13,682	2,815.00	4.52
14	Mae Klong	30,837	7,973.00	8.2
15	Prachinburi	10,481	5,267.50	17.01
16	Bang Prakong	7,978	3,712.70	13.56
17	Khameh Lake	4,150	6,266.20	47.88
18	Eastern Coast	13,830	11,113.90	25.48
19	Phetchaburi	5,603	1,379.00	7.8
20	Western Coast	6,745	629.3	2.96
21	Penninsular East Coast	26,353	23,270.00	28
22	Tapi	12,225	12,977.80	33.66
23	Songkla Lake	8,495	4,896.00	18.28
24	Pattani	3,858	5,808.00	47.74
25	Penninsular West Coast	21,172	24,894.40	37.28
Total		521,066		

Source: Thailand Department of Irrigation and Engineering 1997

Stiff competition from other vegetable oils (e.g., soybean oil) in major market destinations, such as the US, has constrained expansion of coconut exports. The state of local production system has also been a bottleneck. Also, the average age of coconut trees in the Philippines is 50 years (University of the Philippines -Los Baños Professor D. Angeles, personal communication), which accounts for low productivity. Replanting of old coconut trees is a must to increase productivity and ensure long-term competitiveness. More importantly, Malaysia's oil palm industry uses biotechnology in improving productivity whereas no similar technological breakthroughs have occurred in the Philippines.

For bananas, growth of exports has been constrained among others by the policy of limiting the hectarage planted to Cavendish banana. In 1973, Letter of Instruction (LOI) Number 58 was issued limiting hectarage to 21,000. This was increased to 25,000 in 1979 through LOI Number 790. On the

Table 6. Major river basins in the Philippines

	Region	River Basins	Drainage Area(Km²)	River Length(km)
	CAR			
I		Abra	5,125	178
II		CagayanAbulug	25,6493,372	505175
III		PampangaAgno	9,7595,952	260206
IV		Pasig-LagunaBay	4,678	78
V		Bicol	3,771	136
VI		Ilog-Hilabangan	1,945	124
		Panay	1,843	132
		Jalaud	1,503	123
VII				
VIII				
IX				
X		Agusan	10,921	350
		Cagayan	1,521	350
XI		Tagum-Libuganon	3,064	89
		Davao	1,623	150
XII		Mindanao	23,169	373
		Buayan-Malungun	1,434	360
CARAGA				
ARMM				
Total			105,329	

Source: Concepcion 2004

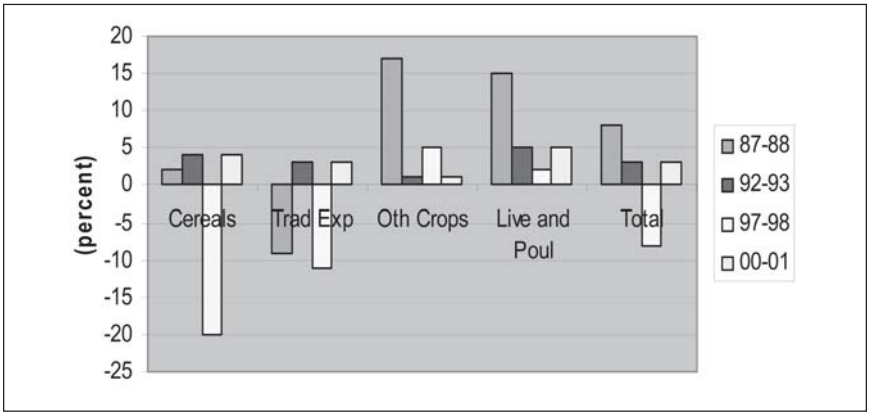
other hand, expansion of sugar exports is bleak primarily because of low productivity both at the farm and processing level. Continued access to the US sugar market is the only assurance that Philippine sugar exports remain stable.

Mangoes are regarded as having good export potential but, to date, this has not been fully exploited. Sanitary and phytosanitary issues have to be addressed and farm-level technology improved continuously. To date, only a small fraction of the fruit bearing trees in the Philippines are considered productive.

Livestock and poultry

Livestock and poultry have been the most consistent sources of growth in agriculture— registering positive growth rates even at times when the rest of agriculture activities are contracting (Figure 6). Growth in livestock and poultry, however, has been constrained by the high domestic price of corn, which represents as much as 60 to 70 percent of feed cost. With high feed cost, it would be difficult to exploit whatever technical advantage the country may enjoy in livestock and poultry. The ease of containing/preventing the spread of the Asian Bird Flu, for example, is a natural advantage in domestic chicken

Figure 6. Growth in agriculture GVA Philippines



Source of data: NSO 2004

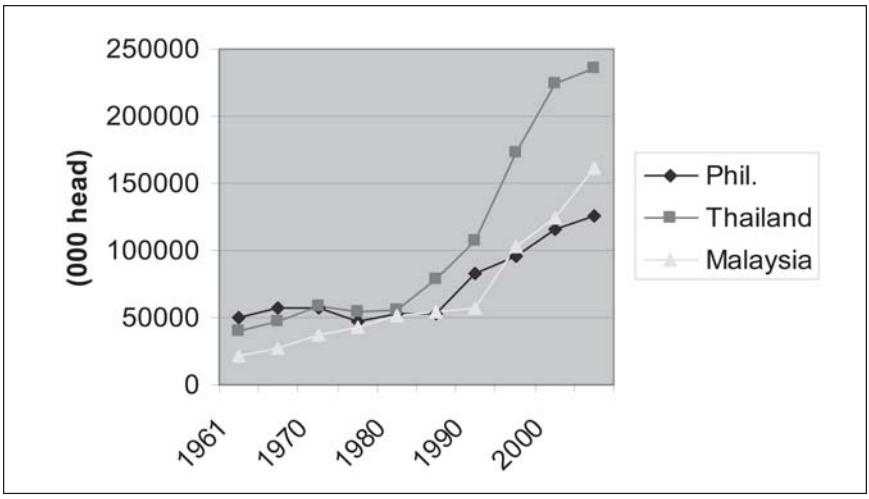
production but, as data will show, the local industry has not been as competitive compared to Thailand's.[11] With the demand for chicken in the world market growing, this must be exploited to the fullest.

The present high price policy for feed corn, however, runs counter to this objective. The main reason the Philippines could not be competitive with Thailand in the robust Japan market for chicken meat is the high domestic price of corn. Price of corn in the Philippines has been consistently higher by as much as three pesos per kilogram than in Thailand. Everything else the same (including feed conversion efficiency), chicken production systems operating under a liberalized corn market will have a competitive edge.

It must be noted, however, that success in poultry/livestock industry does not rest solely on the success of domestic corn production, as exemplified by Thailand. In the 1960s, Thailand and the Philippines started out on equal footing insofar as poultry production is concerned. At the time, chicken inventory was the same in both countries, with the Philippines having a slightly higher inventory. Recently, chicken inventory in Thailand has become twice that of the Philippines' (Figure 7). Thailand emerged as the top Asian country exporting chicken to Japan (Figure 8), even as it turned to be a net importer of corn (Table 7).

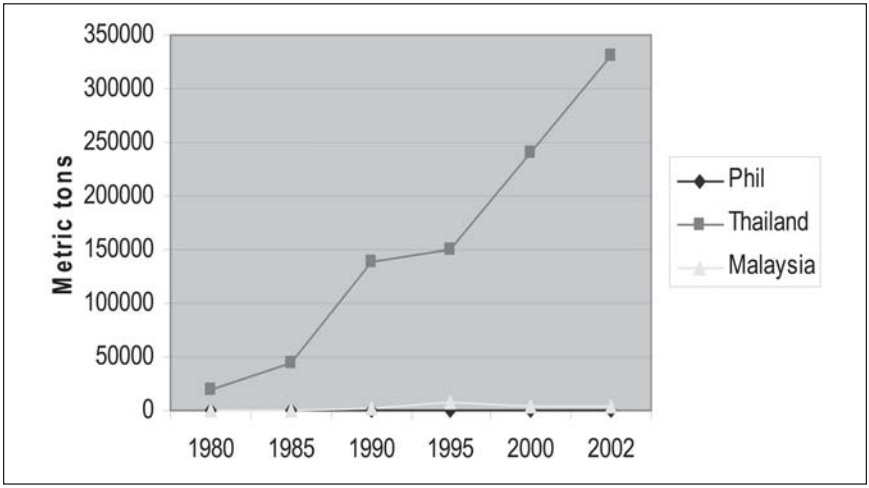
[11] An expert at the University of the Philippines at Los Baños says that the isolation of the Philippines from other chicken-growing countries serves as an advantage in disease prevention, assuming that quarantine regulations are strictly enforced (Dr. Cecilio Arboleda, personal communication).

Figure 7. Chicken inventory, 1961–2000



Source: FAOSTAT 2004

Figure 8. Chicken exports to Japan, 1980–2002



Source: FAOSTAT 2004

Agro-processing

Agro-processing industries serve as direct link between agriculture and industry. In essence, they provide forward and backward linkages between rural and urban sectors and, in the process, create opportunities outside of the traditional agricultural production systems. They help stabilize food prices

Table 7. Net corn exports of four ASEAN countries, 1985–2000

	1985	1990	1995	2000
Indonesia	-46495	132785	-89049	-1236509
Malaysia	-1180951	-1476607	-2374486	-2229966
Philippines	-280901	-342916	-207958	-447681
Thailand	2750565	1234406	-173554	-316111

Source: FAOSTAT 2004

at the farm gate, facilitate storage, and lessen transport cost. They enhance trade of agricultural products. More importantly, they provide additional sources of value-added and employment opportunities.

The list of possible products from agro-processing is long. For example, practically all fruits produced in the rural areas (e.g., mango, calamansi, papaya, bignay, pineapple, passion fruit, lacatan, saba, etc.) can be processed into fruit powder and instant fruit juice (Professor L. Raymundo, University of the Philippines, personal communication). Farm gate prices of these fruits are highly volatile due to surges in supplies during harvest periods but, through processing, price volatility is minimized with corresponding expansion of value-added in the rural areas.

Growth of domestic agro-processing, however, is constrained by the shortage of raw materials (WB 1985 as cited by De Dios 1994) and the high cost of packaging materials. Labor cost is also a problem as wages are much higher in the Philippines compared with other ASEAN countries (Table 8). Based on standard theory, this phenomenon is mainly due to high food prices—in this case, rice. Under this situation, other government initiatives to promote agro-processing through exports (e.g., RA 7844 otherwise known as Export Development Act of 1994) remain ineffective.

Other (tradable) crops

Outside of rice and corn and traditional export crops (coconut, sugar, ba-

Table 8. Daily minimum wage in selected Asian countries

Country	Daily Min Wage(US$)
China	1.21
Indonesia	1.24
Philippines	5.03
Thailand	3.03 to 3.76
Vietnam	0.93

Source: Tolentino 2002

nana, and pineapple), there are 25 other major commodities/commodity groups grown in the Philippines. Coffee and rubber are among the major tree crops while onions, garlic, tomato, peanuts and mongo beans are among the important cash crops planted as dry season crops usually after the wet rice harvest. Virtually all of these commodities are tradable and considered to possess good export potential (Lantican 1998 for vegetables; Grino 1998 for tree crops; and Roperos 1998 for fruits).

As alternatives to dry season rice, the advantage of cash crops is that they provide higher returns per unit area (Alviola undated), and more labor intensive providing the much needed employment opportunities for landless laborers. They also require much less water. Although, some of them (onions, garlic, and tomato) require intensive use of purchased inputs which is considered to be more risky financially for small farmers to grow.

It should be noted, however, that total land area allocated to these crops have declined through time (Figure 9). Imports of cash crops have also been substantial and, for some, even increased relative to domestic production. Table 9 shows that for garlic, imports have increased significantly relative to total production—from four percent in 1994 to 150 percent in 2003. Mongo beans and peanuts have exhibited the same phenomenon—an indication that alternative production activities exist outside of rice especially during the dry season.

Recap

The significance of rural diversification could not be overemphasized. It has become an integral component of the development process among industrializing countries. Taiwan, whose main exports were rice and sugar in the

Figure 9. Area allocated for all other crops (000 hectares), 1992–2002

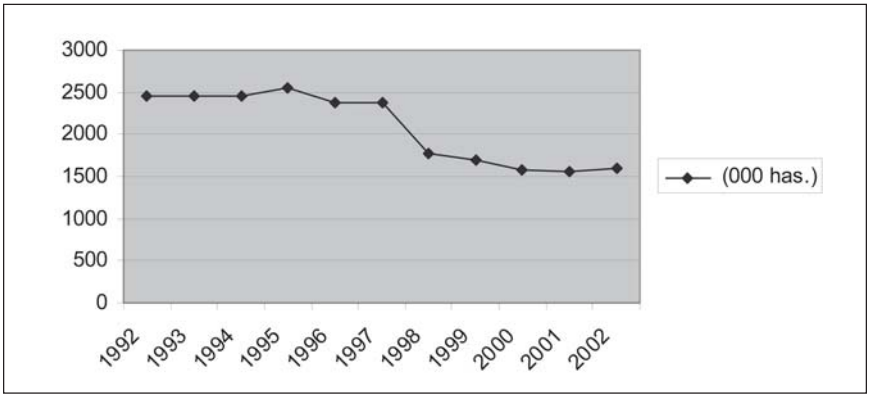


Table 9. Production and imports of key cash crops (metric tons)

	1994	2002	2003
Production			
Mongo	24,218	27,351	25,984
Onions	73,635	96,358	93,893
Garlic	15,728	16,257	15,529
Peanut	36,574	26,246	26,119
Tomato	150,632	149,259	150,059
Imports			
Mongo	20,248	37,677	41,350
Onions	1,881	11,969	16,511
Garlic	640	19,834	23,249
Peanut	41,693	48,801	37,222
Tomato	104,902	180,255	133,733
Imports/Production			
Mongo	0.84	1.38	1.59
Onions	0.03	0.12	0.18
Garlic	0.04	1.22	1.50
Peanut	1.14	1.86	1.43
Tomato	0.70	1.21	0.89

Source: Production data from BAS online. Trade data NSO

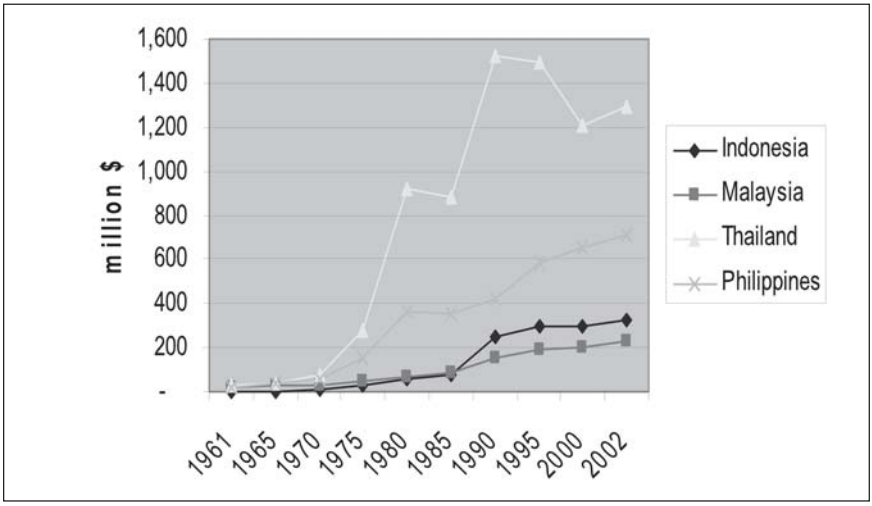
For Processed Products the following conversion factors were used
Tomato Paste: 1 kg paste = 8-10 kgs of tomatoes
Garlic powder: 1 kg powder = 3.6 kgs garlic
Onion powder: 1 kg powder = 4.3 kgs onions
Peanut butter: 1 kg butter = 500 gms peanuts

Source of data: NSO

1960s, shifted to fruits, vegetables and livestock as major sources of agricultural export earnings in the 1980s. Thailand is actively pursuing the same paradigm with particular focus of catering to the world market demand (Ahmad and Isvilanonda 2003). Within ASEAN, Thailand emerged as the leading exporter of chicken meat, fruits and vegetables (Figure 10) and cutflowers (Table 10).

A policy biased heavily for staple food production curtails the dynamism that is required for a sustained growth in the rural areas. It stifles the growth of activities that otherwise would be competitive under a more neutral policy environment. As a result rural income would continue to lag behind urban income. That the Herfindahl Index on area allocation increased between 1992 and 2002 (Figure 11) indicates that Philippine agriculture

Figure 10. Fruits and vegetable exports, 1961–2002



Source: FAOSTAT 2004

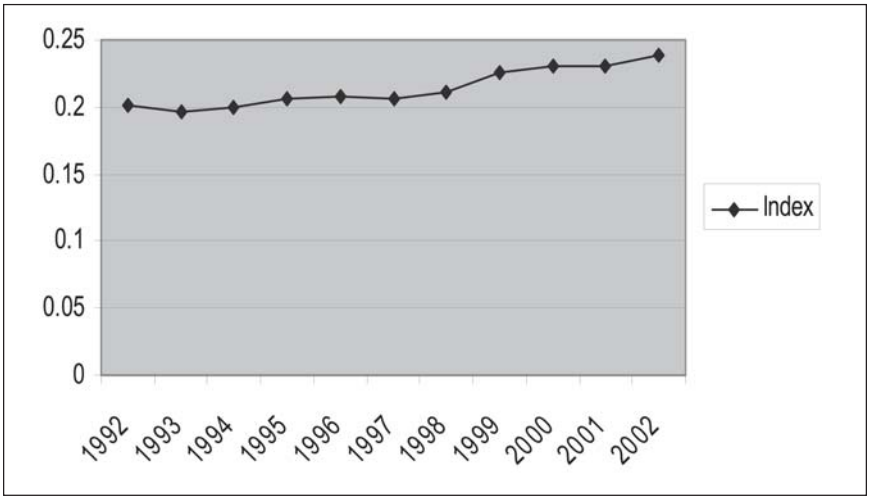
Table 10. World cutflower exports: value by major exporting country, 1995–1999

	Export Value (FOB $ 000)					
Country	1995	1996	1997	1998	1999	Average annual growth (%)
World	3830984	3869510	3615735	3686417	3880886	0.34
Netherlands	2363880	2306384	2001276	2035299	2187789	-1.29
Colombia	476719	509946	545821	556382	550376	2.97
Israel	163769	183840	169021	173768	178634	1.96
Ecuador	79423	99091	119031	161962	180400	8.47
Italy	122690	133851	109087	112334	110352	-1.64
Spain	90836	80541	110394	112484	104889	1.77
Kenya	64885	72180	77950	85951	90270	6.32
United States	40314	47502	48753	44553	41354	0.93
Belgium /Luxembourg	28001	35124	41579	51328	49648	2.8
Thailand	34521	30480	27406	27287	30221	-2.29
Others	365946	370571	365417	325069	356953	-0.27

Source: Floraculture International 2000 as cited in DA 2002

has in fact become less diversified. Furthermore, the fact that rural income has remained close to half that of urban income (De la Cruz 2005) suggests that the current approach to agricultural development has not been successful in improving economic access to food by the rural population.

Figure 11. Herfindahl index crop area, 1992–2002



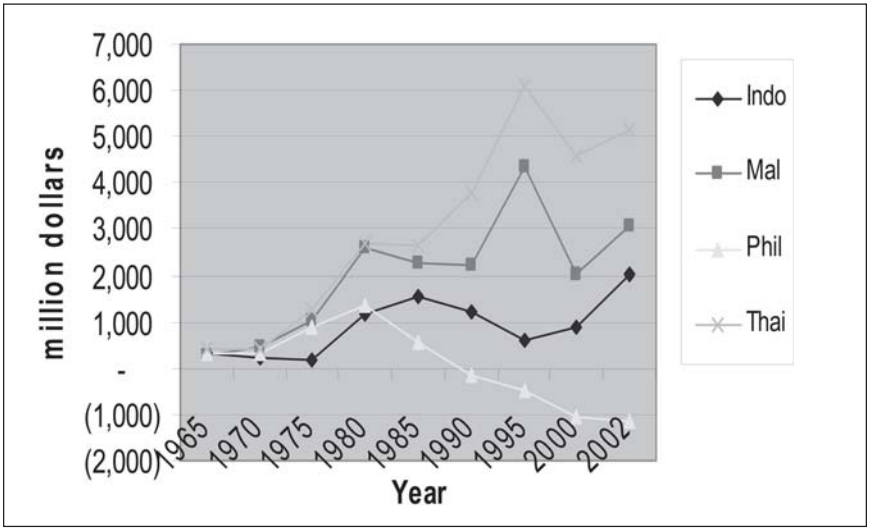
Source of data: NSO

FOOD SELF-RELIANCE AND THE ROLE OF APEC

The paradigm of diversification is consistent with the policy of food self-reliance. Reiterating a point made above, its success is not dependent on food self-sufficiency. As an operational model, it would be useful to cite the case of Malaysia. A country that is more endowed with land than the Philippines, Malaysia has adopted a policy of rice and corn self-reliance instead of self-sufficiency (one of the main points made in Chapter V of this volume)—importing an average of 30 percent of rice requirement annually and an average of over two million tons of corn per year during the last 10 years. Malaysia, however, has successfully diversified agriculture with emphasis on plantation crops for export (Barker and Dawe 2002). Despite huge rice and corn imports bill, Malaysia had maintained a favorable agricultural trade balance (Figure 12).

As in other Asian countries, the Philippines' objective of rice self-sufficiency is based on the belief that world rice trade is an unreliable source of supply especially during times of domestic production shortfalls. World prices

Figure 12. Net agricultural trade in selected Asian countries, 1965–2002



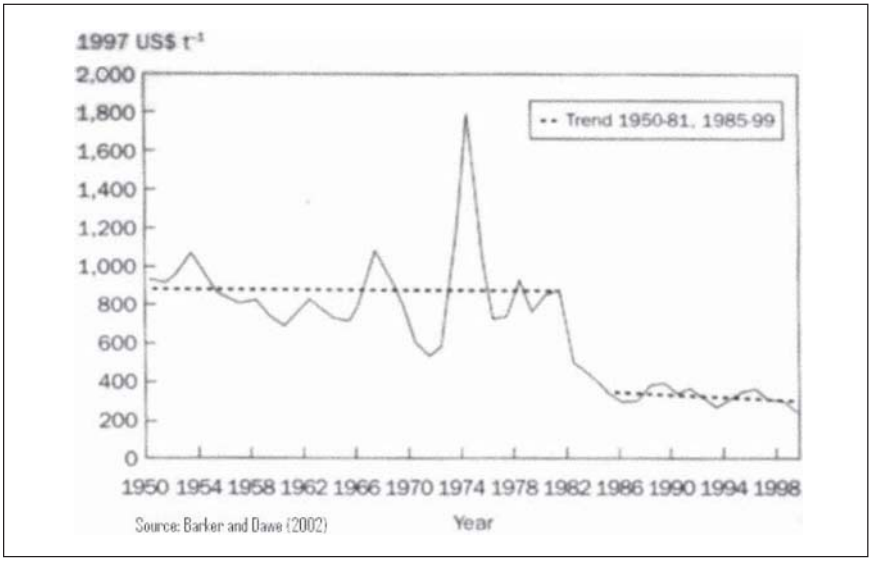
Source: FAOSTAT 2004

are also believed to be highly volatile. Recent evidence, however, shows that real world price of rice has become more stable and much lower (Figure 13). The proportion of world rice output that entered the world market has also doubled in the last 40 years and APEC member-countries have become major sources of supply.

APEC, composed of 21 member-countries with varying demographic and economic characteristics (Table 11), represents a potent economic grouping in dealing with individual countries' food security. The diversity of their agro-climatic environments serves as one good reason for cooperation in agriculture, particularly in the area of food trade. Countries, which face inherent disadvantage in food production brought about by unfavorable weather conditions, for example, could theoretically depend on other members for supplemental supplies. The rich member countries, particularly those with unfavorable man-land ratios, could serve as important markets for surpluses produced by other member countries.

The fast-growing APEC economies offer good market destination of high-value commodities and agroprocessed products. The feasibility of expanding exports of these products has been demonstrated by Taiwan and Thailand. The diversification efforts in Indonesia and other countries such as Myanmar (Goletti 1999) could be interpreted as moves towards this direction. The Philippines must explore this possibility. It has good reason to do

Figure 13. Trend in world price of rice, 1960–1998



Source: Barker and Dawe 2002

so as agricultural trade of the Philippines with majority of the APEC member-countries has deteriorated (Table 12).

At the very least, the Philippines should put more attention on opportunities beyond the local markets, and outside of the traditional production systems. One imperative is to understand better the domestic bottlenecks that hinder the growth of nontraditional production activities. Institutions that improve rural marketing systems (e.g., cooperatives as discussed in Chapter IV of this volume) and facilitate rural transformation (e.g., local government units tackled in Chapter III of this volume) must be supported by government.

As a whole, APEC has been a net exporter of both rice and corn over the last 20 years contributing as much as 70 percent to world corn exports and 60 percent of rice exports. Five of the top ten rice exporters of the world are APEC member countries (Table 13) with a combined share of 64 percent of world exports between 1999 and 2002. China, which has been portrayed to be the main source of volatility in the world food trade, has in fact become a major rice and corn exporter.

Projections of food demand and supply balances suggest that China is far from being the source of volatility in world rice trade as portrayed in the past. In 2025, China is projected to be short in rice production by 186 thou-

Table 11. Selected demographic and economic characteristics of APEC member-countries

Member	Area (000 sq km)	Population (million)	Current Price GDP (US$bn)	CurrentGDP perCapita (US$)	Exports FOB (US$)	Imports CIF (US$bn)
Asia						
Brunei Darussalam	6	0.36	4	12,911	3,380	1,612
China	9,561	1,285	1,287	1,002	325,642	295,303
Hong Kong	1	7	162	23,720	201,149	207,167
Indonesia	1,904	214.8	173	807	65,292	40,035
Japan	378	127.3	3,986	31,408	417,165	337,957
South Korea	99	47.1	476	9,965	162,471	152,126
Malaysia	333	22.6	95	3,869	95,111	82,149
Philippines	300	77.1	78	939	37,365	40,300
Singapore	1	4.1	87	20,895	125,087	116,482
Taiwan	36	22.3	282	12,467	130,554	112,814
Thailand	513	63.6	126	1,991	68,594	64,614
Vietnam	331	79.2	34	423	15,236	18,295
Russia	17,075	144.7	347	2,385	101,807	46,465
North America						
Canada	9,971	31	736	23,428	252,381	244,179
Mexico	1,973	100.4	637	6,256	149,196	157,856
USA	9,373	285.9	10,446	36,407	693,103	1,161,366
Oceania						
Australia	7,682	19.3	399	20,143	65,064	69,551
New Zealand	271	3.8	58	14,916	14159	15,097
Papua New Guinea	463	4.6	3	558	2,702	1,195
South America						
Chile	757	15.4	66	4,414	18,285	17,288
Peru	1,285	26.1	57	2,126	6,933	7,167

Source: Key indicators, APEC website

sand metric tons. The Philippines will be short by 471 thousand metric tons, Malaysia by 1.1 million metric tons, and Indonesia by three million metric tons (Table 14).[12] These shortfalls, however, are more than covered by the production surpluses in Thailand and Vietnam, which are projected to remain top rice exporters.

In the case of the Philippines, the projected shortfall represents four percent of domestic production—a big decline from its shortfall of 19 per-

[12] Separate estimates using the Ohkawa model presented in Chapter V of this volume are generally consistent with these results.

Table 12. Philippine agricultural trade with APEC, 1991 and 2004

Country	Imports		Exports		Net Agri Trade	
	1991 Imports (US$)	2004	1991	2004	1991	2004
Australia	151,045,992	233,128,611	24,531,336	22,094,066	#####	(211,034,545)
Brunei Durassalam	11,798	5,779	403,112	1,078,628	391,314	1,072,849
Canada	32,855,573	119,044,698	37,159,928	41,785,972	4,304,355	(77,258,726)
Chile	1,930,983	5,872,607	1,928,947	2,609,905	(2,036)	(3,262,702)
China	52,013,103	237,959,449	74,242,581	85,847,406	22,229,478	(152,112,043)
Hong Kong	15,580,580	68,369,161	68,730,749	71,480,650	53,150,169	3,111,489
Indonesia	39,156,697	104,074,246	8,606,769	69,654,904	(30,549,928)	(34,419,342)
Japan	75,623,188	417,341,404	593,086,199	507,486,029	517,463,011	90,144,625
Korea	17,752,866	109,100,008	87,126,214	153,684,264	69,373,348	44,584,256
Malaysia	25,607,244	157,814,593	23,553,848	97,065,904	(2,053,396)	(60,748,689)
Mexico	3,080,119	2,998,398	3,636,522	2,455,478	556,403	(542,920)
New Zealand	55,061,804	273,732,878	3,828,546	12,994,323	(51,233,258)	(260,738,555)
Papua New Guinea	20,162,948	1,538,485	778,365	2,796,505	(19,384,583)	1,258,020
Peru	9,808,969	5,581,984	202,628	108,663	(9,606,341)	(5,473,321)
Russia	23,207,071	5,750,254	14,706,500	9,579,549	(8,500,571)	3,829,295
Singapore	36,384,006	182,539,970	22,325,622	52,667,864	(14,058,384)	(129,872,106)
Chinese Taipei	37,777,016	89,176,618	31,014,630	105,494,022	(6,762,386)	16,317,404
Thailand	16,003,863	230,785,791	42,875,912	96,391,683	26,872,049	(134,394,108)
United States	424,891,727	698,977,140	621,737,337	627,954,568	196,845,610	(71,022,572)
Vietnam	1,176,992	189,874,118	17,819,337	81,022,054	16,642,345	(108,852,064)
APEC	1,039,132,539	3,133,666,192	1,678,295,082	2,044,252,437	639,162,543	(1,089,413,755)

Source: NSO 2004

Table 13. Top ten rice exporters in the world, 1999–2002

Country	Exports (000 MT)				Average
	1999	2000	2001	2002	
Thailand*	6,839	6,141	7,685	7,338	7,001
Vietnam*	4,508	3,477	3,729	3,241	3,739
USA*	2,668	2,736	2,622	3,267	2,823
India	1,895	1,533	2,194	5,053	2,669
China*	2,819	3,071	2,011	2,068	2,492
Pakistan	1,791	2,016	2,424	1,684	1,979
Myanmar	54	251	939	900	536
Australia*	669	622	615	331	559
Italy	667	666	563	593	622
Egypt	307	393	656	464	455
Total top 10	22,217	20,906	23,438	24,939	22,875
Total APEC members	17,503	16,047	16,662	16,245	16,614
World	25,277	23,561	26,838	27,524	25,800
Percent of world total					
Top 5 exporters	74	72	68	76	73
Top 10 exporters	88	89	87	91	89
APEC countries	69	68	62	59	64

Source: FAOSTAT 2004

cent in 1997. Covering this shortfall by expanding domestic production implies expanding irrigated areas and/or increasing average farm yields. The cost of irrigation development, however, has been increasing and the opportunity cost of water due to competition with non-agricultural uses is rising. As much as P400,000 is needed to develop a hectare of irrigated rice land cropped twice a year (WB 1999). With a yield of 3.6 tons per hectare, simple calculations show that covering the projected shortfall through irrigation development would entail as much as 40 billion pesos (a huge amount for a cash-strapped economy). The fact that the Philippines already irrigate a relatively higher proportion of rice area compared to Thailand and Vietnam suggests that irrigation investments do not effectively correct the country's disadvantage in rice production vis-à-vis Thailand and Vietnam. It does not have the land and water supply the two countries are well endowed with (Dawe 2002). Plus, the fact that the Philippines has to contend with an average of 19 typhoons a year (Velasco and Cabanilla 2003).

CONCLUSION

By pursuing food self-sufficiency objectives instead of self-reliance, agricul-

Table 14. World net balances in rice 1997 and projections for 2025 (000 tons)

Country /region	1997			2025		
	Production	Demand	Net Trade	Production	Demand	Net Trade
India	83,498	82,509	2,552	124,666	124,112	554
Pakistan	4,439	2,669	1,627	6,836	5,164	1,672
Bangladesh	18,816	18,559	(842)	27,213	27,581	(368)
Other South Asia	4,249	4,649	(404)	7,094	8,584	(1,490)
South Asia (excluding India)	27,504	25,877	379	41,143	41,329	(186)
South Asia	111,003	108,386	2,931	165,809	165,441	368
Indonesia	33,287	34,891	(1,604)	44,840	47,834	(2,994)
Thailand	15,273	8,682	5,478	17,971	9,260	8,711
Malaysia	1,397	1,989	(710)	1,737	2,854	(1,117)
Philippines	7,290	7,831	(1,394)	10,699	11,171	(471)
Vietnam	18,468	14,778	3,333	29,497	21,701	7,796
Myanmar	11,597	11,209	90	19,444	16,492	2,952
Other Southeast Asia	3,349	3,068	(82)	6,530	5,363	1,167
Southeast Asia	90,660	82,448	5,111	130,718	114,674	16,044
China	133,484	132,638	821	148,598	148,784	(186)
Japan	8,151	8,788	(376)	6,410	7,810	(1,399)
Soth Korea	4,716	4,604	(62)	4,005	3,856	149
Other East Asia	1,169	1,482	(353)	1,347	1,305	42
East Asia (excluding Japan)	139,370	138,724	406	153,950	153,945	5
Asia	341,033	329,558	8,449	450,477	343,060	16,417
World	384,078	380,827		516,312	516,312	

Source: Sombilla et al. 2002

tural policy in the Philippines has been, in a sense, inward-looking. Judging by the country's agricultural trade performance, the policy has not been a success. Agriculture has been suffering from a trade deficit since the nineties. So, too, when judged on the basis of the latest Social Weather Station report that more families are hungry today. Food self-sufficiency is not an adequate condition for food security. At the household level, income is the key and cereal production does not offer the best potential source of income in the rural areas as shown in many areas of the country. At the community or regional level, this implies exploiting and generating new income opportunities outside of the traditional cereal-based production system. The rural economy must diversify. Rice production could not absorb the rapidly growing rural labor force. Diversification strategy worked in Taiwan and it is working in Thailand. There are now efforts to implement it in Indonesia.

The unfavorable weather pattern affecting the country implies that comparative advantage in Philippine agriculture lie not so much in rice. With increasing competition for the use of water from non-agricultural activities, irrigation development is a costly approach to self-sufficiency. In fact, the economic cost of self-sufficiency goes well beyond the budgetary outlays to achieve this objective. A high food price policy is counterproductive. Its wage- and cost-spiral effects deter growth of rural industries depriving rural labor employment opportunities outside of rice production. The welfare of landless workers, urban poor, and rice farmers themselves, who could not produce marketable surplus, worsens.

The policy of food self-reliance and the paradigm of agricultural/rural diversification require major institutional reforms. One of these much-needed reforms is the privatization of NFA. The resolution of this issue is long overdue. It has been a part rather than a solution to the food security problem. NFA's procurement operation has been insignificant to create a positive impact on the farmers' income. Its monopoly position in international trade of rice has been an instrument in insulating the domestic rice economy from the world market, rendering domestic prices to be higher. NFA has become a big contributor to the current fiscal crisis.

Diversification and food self-reliance are consistent with the objectives of APEC. The APEC member countries, contributing the bulk of global agricultural exports, are reliable sources of the major food staples (rice, wheat, corn, soybeans). The rich but less land-endowed member countries could also serve as major markets for tropical foods and other cash crops (ornamentals, fiber, etc.). The Philippines, which has for a long time aimed for food self-sufficiency, has foregone the opportunities found in a diversified rural economy. Diversification of the rural economy has been a common feature among the fast growing economies, particularly Thailand and Taiwan. The past record in these countries should be good reason for a shift in paradigm.

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Chapter II

Philippines' Land and Water Resources: Important Considerations in Agricultural Development

Liborio S. Cabanilla and Luis Rey I. Velasco

INTRODUCTION

Agriculture is natural resource-based. Technology is important but without good quality land and sufficient water, agricultural production is close to nil. It is a costly activity under poor natural resource conditions. Ceteris paribus, a country that is well endowed with land and water possesses a strong comparative advantage in agriculture. The development strategy most appropriate to a country, therefore, must be largely based on its resource endowments. Deviating from this principle will result in economic inefficiency which brings about slow and, often, inequitable economic growth.

This chapter takes a look at the physical resources of the Philippines that are critical to agricultural production. It undertakes a cursory description of its land and water resources, and uses this as a basis for assessing the country's capacity to expand agricultural production particularly rice, corn, and coconuts—the crops that currently occupy the largest land area. The chapter also makes a general comparison of the Philippines' current stock of resources with those in Thailand, Vietnam, Malaysia, and Indonesia. It attempts to provide insights to, among others, the lingering issue on why the Philippines has remained a net importer of key grain staples (e.g., rice and corn) while Vietnam turned from a net importer to net exporter of rice, and Thailand remained a major rice exporter.

Section II describes the Philippines land and water resources, and assesses suitability of these resources for rice, corn, and coconut production. Past studies were the main basis for the analysis in this section. Section III describes the weather pattern affecting Philippine agriculture and Section IV provides a comparison between the Philippines on the one hand and selected ASEAN countries on the other.

PHILIPPINES LAND AND WATER RESOURCES

The Philippines has a total land area of 30 million hectares, approximately one third of which is used for agricultural production (Table 1). Rice, corn, and coconuts are the dominant crops. During the period 1992–2002, an average of three and a half million hectares per year were planted to rice, 2.5 million hectares to corn and three million hectares to coconuts. Only 1.5 million hectares annually were devoted to other crops. Luzon, being the largest of the three island groups of the country, has the biggest agricultural land area (42 percent), followed by Mindanao (33 percent), and the Visayas (25 percent).

Table 1. General land use in the Philippines, 1990

	Luzon	Visayas	Mindanao	Total Land Area (has.)
Agricultural Areas	4,383,980	2,512,324	3,439,437	10,335,741
Grassland/Shrubland	4,023,003	2,020,839	2,951,337	8,995,179
Woodland	4,780,661	895,927	3,269,274	8,945,862
Wetland	275,692	164,215	333,895	773,802
Miscellaneous	676,156	85,230	205,947	967,333

Source: De Jesus 2001

Luzon, however, has the highest population density compared to Visayas and Mindanao (Table 2). Four of the seven Regions in Luzon had population densities higher than the national average in year 2000. In contrast, all regions in Mindanao had population densities lower than the national average. Thus, on the basis of land availability, Mindanao has the advantage over Luzon and the Visayas in agricultural production.

Over the past 20 years (1980–2000), population density has grown at an average of 2.6 percent per year. In conjunction with this, there has been an increase in the number of farms, and, a decrease in average farm size. In 1971, agriculture census data show that there were 2.3 million farms all over the country. This has doubled in 1991 (Tables 3a and 3b). Between the two census years, farm size distribution has become more concentrated towards the small-size group (Figures 1a and 1b).

These developments have important implications on efficiency/competitiveness of agriculture in the long run. They also affect the capability of a family farm to address the food security requirements of a farm household. They must be taken into consideration in the design of development strategies that are appropriate to the Philippines.

Table 2. Population density (persons/km2) by region, 1980, 1990, and 2000

				Percent Increase/Year	
Region	1980	1990	2000	1980–1990	1990–2000
Philippines	160	202	255	2.6	2.6
NCR	9600	12876	16091	3.4	2.5
CAR	47	59	70	2.6	1.9
Region I	222	269	328	2.1	2.2
Region II	62	75	90	2.1	2.0
Region III	261	337	437	2.9	3.0
Region IV	124	168	239	3.5	4.2
Region V	192	216	258	1.3	1.9
Region VI	220	262	301	1.9	1.5
Region VII	239	289	359	2.1	2.4
Region VIII	120	131	155	0.9	1.8
Region IX	103	128	161	2.4	2.6
Region X	109	136	170	2.5	2.5
Region XI	104	141	183	3.6	3.0
Region XII	81	112	144	3.8	2.9
CARAGA	64	82	98	2.8	2.0
ARMM	54	73	95	3.5	3.0

Source: NSCB 2004

Table 3a. Selected farm characteristics in the Philippines by region, 1971

	No. Of	Area	Number of Farms by Size					
Region	Farms	(hectares)	< 1 ha	1 – 2.99	3 - 4.99	5 - 9.99	10 - 24.99	>25
Philippines	2,354,469	8,493,735	319,363	1,117,581	558,347	243,847	101,130	14,201
NCR	2,787	6,244	228	1,760	1,566	643	610	1,437
CAR	67,036	161,451	18,809	32,143	11,173	3,702	1,063	146
Region I	75,308	297,200	55,583	95,558	19,111	3,951	463	12
Region II	144,827	502,439	12,854	81,325	34,628	12,496	3,032	492
Region III	168,162	538,946	13,476	87,305	48,945	15,535	2,377	527
Region IV	268,240	1,068,454	30,112	121,105	64,211	35,184	15,834	1,791
Region V	223,023	921,276	25,706	100,630	54,196	26,268	14,201	2,022
Region VI	190,704	781,954	27,261	105,615	35,854	12,529	6,886	2,559
Region VII	221,742	479,133	78,025	106,620	25,371	7,785	3,173	768
Region VIII	200,147	674,136	27,190	96,795	47,248	18,998	8,816	1,100
Region IX	131,546	552,868	4,793	58,403	39,994	18,376	9,281	699
Region X	167,264	726,710	10,027	69,652	48,571	26,562	11,297	1,155
Region XI	179,154	898,110	8,521	70,090	52,535	31,038	15,202	1,768
Region XII	104,379	462,799	3,327	44,794	34,101	16,443	5,225	489
ARMM	110,150	422,016	2,572	46,262	41,982	14,875	3,931	528

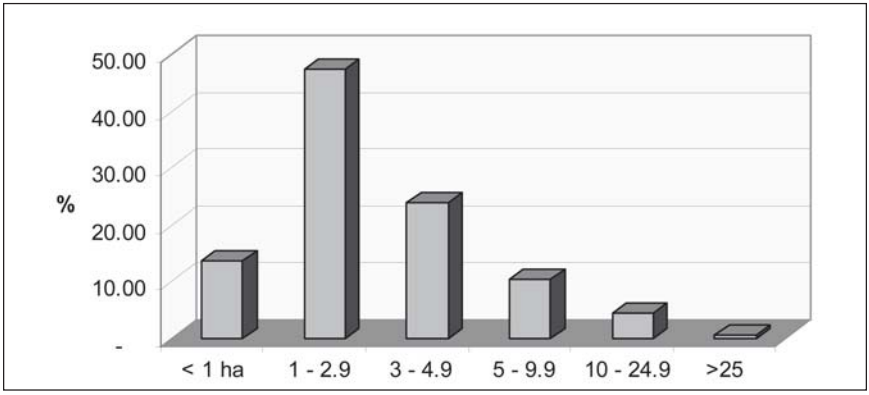
Source: NSO 1971

Table 3b. Selected farm characteristics in the Philippines by region, 1991

Region	No. of Farms	Area (hectares)	Number of Farms by Size					
			< 1 ha	1 - 2.99	3 - 4.99	5 - 9.99	10 - 24.99	>25
Philippines	4,610,041	9,974,871	1,685,380	1,967,639	523,201	325,543	95,537	13,042
NCR	15,136	53,646	11,103	2,374	676	650	175	157
CAR	108,251	155,581	61,549	35,631	6,301	3,636	928	206
Region I	311,757	324,501	187,008	107,978	11,903	4,069	709	91
Region II	285,721	530,143	95,242	142,854	31,602	13,321	2,437	266
Region III	335,271	594,266	115,884	163,658	38,949	13,913	2,777	420
Region IV	544,629	1,311,296	187,495	218,397	70,583	50,533	15,941	1,680
Region V	377,791	936,174	435,489	147,572	46,328	34,303	12,536	1,564
Region VI	411,572	754,386	203,058	161,040	27,460	13,294	4,652	2,067
Region VII	424,825	549,895	254,194	135,564	21,224	10,216	2,912	714
Region VIII	321,456	695,711	118,342	132,482	38,136	24,335	7,291	871
Region IX	251,811	751,097	54,579	117,757	39,954	28,911	9,683	927
Region X	374,655	998,080	103,228	172,016	51,835	36,100	10,162	1,314
Region XI	410,464	1,220,991	91,383	185,444	66,320	49,693	15,798	1,826
Region XII	229,235	621,507	43,133	115,036	34,794	28,388	7,206	675
ARMM	207,469	477,928	23,696	129,834	37,135	13,881	2,662	261

Source: NSO 1991

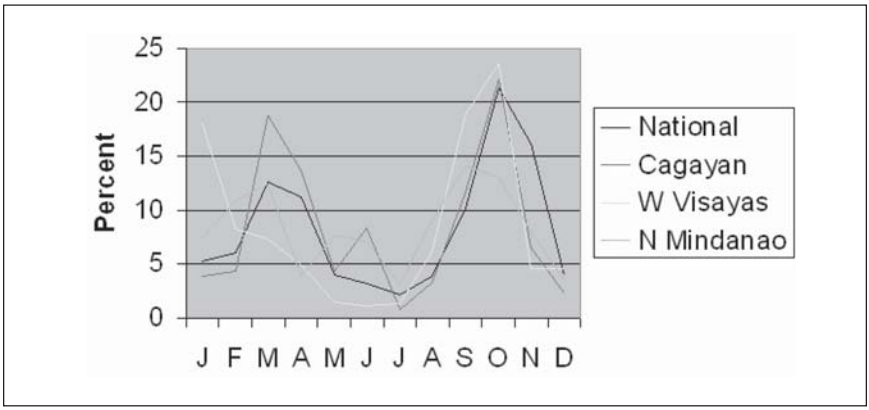
Figure 1a. Distribution of farm size, 1971



Source: NSO 1991

The first part of this section tackles land resource and crop suitability in the Philippines and the second part deals with the country's water resources.

Figure 1b. Distribution of farm size, 1991



Source: NSO 1991

Land area and crop suitability

Rice

Rice requires 3,000–5,000 liters of water to produce a kilogram of grains. Thus, it grows very well under flooded conditions, which are possible only on clayey and less permeable soil with a slope of less than one percent. The ideal areas for wetland rice culture would be depositional landforms and associated landforms that are drainage areas of river basins. Fernandez (1999) estimates there are about 4.17 million hectares possessing these characteristics and most of them located in regions that are now predominantly rice growing areas.

Of 4.17 million hectares, about 2.33 million can be classified as highly and moderately suitable for wetland rice production. Regions I, II, and III in Luzon with a combined land area of 1.5 million hectares (44 percent of which is classified as highly and moderately suitable) and Regions X, XI and XII in Mindanao with a combined land area of 0.98 million hectares (65 percent of which is classified as highly and moderately suitable) are the biggest contiguous depositional areas identified for wetland rice.

Technical experts are of the opinion that there are about 0.5 million hectares more in Mindanao available for wetland rice production pending development of irrigation facilities. Another one million hectares located in small valleys of tributaries in the upper reaches of river systems can also be used for expansion (Fernandez 1999). However, the projected yield levels in these areas are only about 2–3 tons/hectare. Furthermore, these areas may be difficult to manage as they are composed of small fragmented

pockets of land. Utilization of these additional areas for commercial rice production would most likely be a costly endeavor.

The total land area traditionally devoted to rice in the Philippines is about three million hectares (Fernandez 1998). In general, the rice producing regions are identified as Central Luzon, Cagayan Valley, Western Visayas, Southern Tagalog, and Ilocos. These regions contribute about 63 percent to the national rice production (PhilRice–BAS 2000). Except for Region II, these are also the regions with high population densities and high rate of urbanization. Land-use conversion to non-agriculture is quite rapid in these regions and this speaks well about the increasing opportunity cost of land for agricultural use.

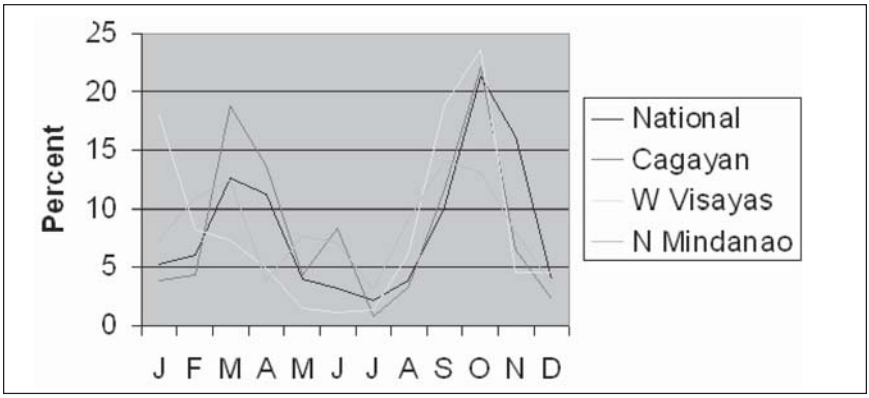
Table 4 shows the quantity of rice harvest by region. Regions I, II, and III are the major rice producers in Luzon, Region VI in the Visayas, and Region XII in Mindanao, each producing more than a million tons of rice in the last five years. Throughout the country, rice is harvested twice a year with bulk of the output harvested during the wet season crop (Figure 2). Fifty-eight percent of the annual output during the last five years is harvested during the wet season and 42 percent during the dry season. Yield is higher during the dry months but water is a major constraint.

Table 4. Palay output (000 MT) by region, 2000–2004

Region	Average					
	2000	2001	2002	2003	2004	2000-2004
Philippines	12,359	12,955	13,271	13,500	14,497	13,316
CAR	256	314	304	306	356	307
Region I	1,208	1,227	1,222	1,304	1,318	1,256
Region II	1,785	1,810	1,708	1,666	1,892	1,772
Region III	1,960	2,174	2,240	2,385	2,466	2,245
Region IVA	376	396	377	376	402	385
Region IVB	759	746	800	818	800	785
Region V	672	697	757	761	943	766
Region VI	1,608	1,589	1,733	1,767	1,936	1,727
Region VII	215	225	219	193	229	216
Region VIII	518	566	622	674	722	620
Region IX	444	431	505	524	547	490
Region X	500	532	532	490	466	504
Region XI	388	402	440	459	480	434
Region XII	1,045	1,063	1,061	1,025	1,097	1,058
CARAGA	308	336	327	345	352	334
ARMM	347	445	423	399	791	481

Source: BAS 2004

Figure 2. Monthly harvested area, 1997



Land area and crop suitability

Corn

Corn grows well on soil with the following conditions; slope not more than 60 percent, in almost any kind of soil except sandy and heavy clay, good to moderate soil drainage property, with soil depth less than or equal to 50 centimeter, soil pH from slightly acidic to neutral (5.0–7.3), and with available moisture during the growing period. It thrives well in locations which are typhoon-free and where rainfall is evenly distributed throughout the year.

Based on technical parameters, Orno-Coladilla and Rocamora (2001) estimate that at the national level, there are about 6.5 million hectares of land highly suitable for corn production. Forty-two percent of this is found in Mindanao (Table 5). There are 47 provinces identified to possess these required technical characteristics (Table 6). Note, however, that in some of these provinces (e.g., Nueva Ecija, Pangasinan, Isabela), rice is also a major crop and, therefore, suggests a certain degree of competition for land-use especially in the dry season.

Thus, for other reasons that are nontechnical in nature, only around 2.5 million hectares are planted to corn annually from 2000 to 2004. Regions II, X, XII, and ARMM are the top corn producers. Eighteen percent of the total corn area in 2000–2004 was in Region XII, 15 percent in Region X, and 12 percent each in Region II and ARMM (Table 7).

Of the 5.4 million metric tons harvested annually, 35 percent comes from Luzon, 58 percent in Mindanao, and seven percent in the Visayas. There are two distinct harvesting periods in Luzon (Figure 3), one each in

Table 5. Total area (has) of highly and moderately suitable soil series by region for corn production

Region	Highly Suitable	Moderately Suitable
CAR	44,454	41,071
Region I	136,058	299,328
Region II	255,904	88,564
Region III	626,418	270,295
Region IV	578,602	381,981
Region V	495,150	51,001
Region VI	507,863	408,806
Region VII	386,883	50,710
Region VIII	722,728	270,633
Region IX	129,930	109,574
Region X	911,105	139,844
Region XI	1,298,341	285,508
Region XII	345,204	68,631
ARMM	56,091	904
Total	**6,494,731**	**2,466,850**

Source: Orno-Coladilla and Rocamora 2001

Table 6. Area (has) highly suitable for corn production by province

Province	Area (has)	Province	Area (has)
Abra	10,136	La Union	24,712
Agusan	317,495	Laguna	34,650
Albay	110,672	Lanao	345,204
Antique	32,192	Leyte	93,597
Bataan	85,625	Marinduque	20,944
Batanes	1,155	Masbate	298,097
Batangas	51,344	Misamis Occ.	111,756
Bohol	230,873	Misamis Or	126,231
Bukidnon	355,623	Negros Occ	295,283
Bulacan	24,600	Negros Or	73,650
Cagayan	56,983	Nueva Ecija	409,687
Camarines S	36,359	Nueva Viscaya	17,174
Capiz-Aklan	45,625	Palawan	35,200
Catanduanes	16,052	Pampanga	21,569
Cavite	40,322	Pangasinan	101,666
Cebu	82,360	Quezon	304,747
Cotabato	624,229	Rizal	57,520
Davao	674,112	Romblon	33,875
Ifugao	3,865	Samar	629,131
Ilocos N	8,248	Sorsogon	33,970
Ilocos S	1,432	Sulu	56,091
Iloilo	134,763	Zambales	84,937
Isabela	180,592	Zamboanga N	129,930
Kalinga-Apayao	30,453		

Source: Orno-Coladilla and Rocamora 2001

Table 7. Corn harvested area (has) by region, 1994–2004

Region	1994	1996	2000	2002	2004	Average 1994-1996	Average 2000-2004	Change
Philippines	3,005,820	2,715,723	2,510,342	2,395,756	2,527,135	2,860,772	2,477,744	(383,027)
CAR	21,870	22,777	27,337	32,954	34,961	22,324	31,751	9,427
Region I	60,940	62,208	52,490	52,869	56,305	61,574	53,888	(7,686)
Region II	244,460	226,911	294,546	273,562	316,411	235,686	294,840	59,154
Region III	14,060	18,809	24,517	33,739	36,921	16,435	31,726	15,291
Revion IVA	53,630	43,017	36,757	35,403	37,298	48,324	36,486	(11,838)
Revion IVB	53,000	10,108	33,369	31,318	29,729	31,554	31,472	(82)
Region V	116,900	120,140	81,124	88,429	81,068	118,520	83,540	(34,980)
Region VI	79,680	92,573	81,813	77,440	88,700	86,127	82,651	(3,476)
Region VII	293,220	259,280	228,981	241,833	244,259	276,250	238,358	(37,892)
Region VIII	85,920	59,396	58,303	57,415	56,858	72,658	57,525	(15,133)
Region IX	213,610	211,635	173,562	176,455	183,005	212,623	177,674	(34,949)
Region X	427,340	460,205	384,388	339,707	393,149	443,773	372,415	(71,358)
Region XI	244,310	213,523	181,340	189,582	203,420	228,917	191,447	(37,469)
Region XII	713,120	566,328	472,694	433,379	418,019	639,724	441,364	(198,360)
CARAGA	62,560	51,042	49,713	51,357	57,055	56,801	52,708	(4,093)
ARMM	321,200	297,771	329,408	280,314	289,977	309,486	299,900	(9,586)

Source: BAS 2005

Figure 3. Corn production (in percent) by month in Luzon, 1998

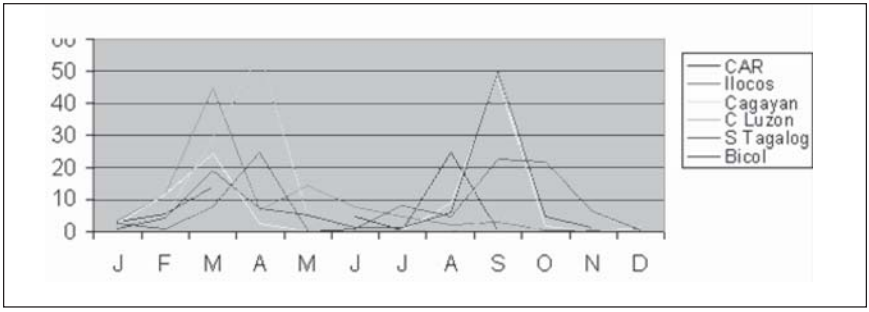
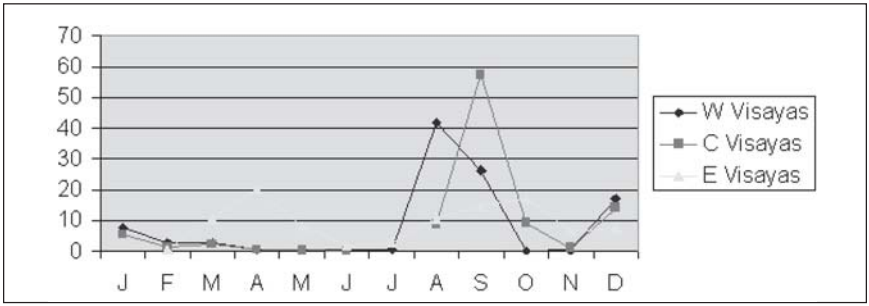


Figure 4. Corn production (in percent) by month in Visayas, 1998



the Visayas (Figure 4), and Mindanao (Figure 5). The bulk of the total annual output is harvested during the dry months.

Coconuts

Coconut grows well between latitudes 20°N and 20°S at altitudes of 600 meters or below. The optimum temperature range for coconut-growing is from 24–29 °C with a relative humidity requirement of 80–90 percent, and an annually distributed rainfall requirement of 1,500 to 2,300 millimeter. High production can also be expected in soil with pH of 6–7 (neutral); in soil that is rich in organic matter and is fertile; and in deep (minimum of 75 centimeter), well drained, light- to medium-textured (sand-clay) soil with a high water holding capacity (at least 30 percent clay content).

Based on the above environmental requirements, only nine provinces can be considered as highly suitable for coconut production (Table 8) covering a land area of 0.124 million hectares—or seven percent of the country's total potential coconut area. The biggest areas identified to be highly suitable for coconuts are in Luzon, particularly Quezon Province and Albay.

Some 1.56 million hectares were also identified as moderately suitable for coconut. With topography being the most constraining factor, more than 50 percent of these identified land suitable for coconut production can be found in areas that are sloping and most of these are in Luzon.

Agriculture census data show that actual land area devoted to coconut production is three million hectares. Mindanao has the largest coconut area and also records the highest average yield of 40.6 nuts per tree annually. Of the three million hectares planted to coconuts, 52 percent is located in Mindanao (Figure 6). Regions XI, IX and X are the top producers in Mindanao (Figure 7). In Luzon, Regions IV and V are the top producers with Region IV having more than 50 percent of the total area planted to coconuts in the island of Luzon (Figure 8). In the Visayas, which has a 19

Figure 5. Corn Production (in percent) by month in Mindanao, 1998

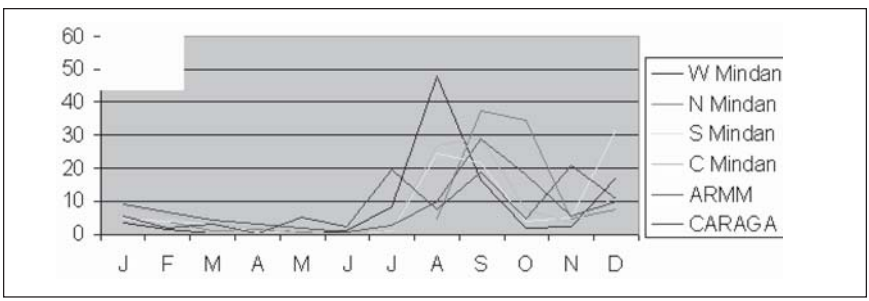


Table 8. Highly and moderately suitable potential areas for coconut production in the Philippines

Province	Highly Suitable	Moderately Suitable (With Limiting Factor)						Total (ha)
		Soil Texture	*Precipi-tation*	*Soil Drainage*	*Topo-graphy*	*Soil Drainage*	*Water Release*	
Luzon	**105409**	**21296**	**15583**	**12645**	**768790**	**450**	**30954**	**955127**
Abra	0	0	0	0	0	0	3180	
Batanes	213	0	0	0	0	0	0	
Ifugao	0	0	237	0	0	0	0	
Tarlac	0	0	0	0	0	0	19487	
Cavite	0	0	14714	0	0	0	8287	
Quezon	64630	3704	0	7165	56863	0	0	
Camarines Norte	0	0	0	0	94020	0	0	
Albay	29150	0	0	0	5338	450	0	
Sorsogon	1210	0	0	5480	1030	0	0	
Samar	10206	17592	0	0	611539	0	0	
Marinduque	0	0	632	0	0	0	0	
Visayas	**10393**	**0**	**18606**	**1163**	**124709**	**10834**	**3692**	**169397**
Masbate	0	0	0	0	0	0	3692	
Leyte	0	0	8945	0	0	0	0	
Bohol	0	0	470	0	0	0	0	
Negros Occ	0	0	9191	1163	0	0	0	
Capiz-Aklan	6375	0	0	0	18717	10834	0	
Antique	4018	0	0	0	105992	0	0	
Mindanao	**7640**	**0**	**331490**	**19302**	**68474**	**0**	**131762**	**558668**
Agusan	5626	0	0	19302	59099	0	0	
Lanao	2014	0	37025	0	0	0	0	
Davao	0	0	244629	0	0	0	0	
Cotabato	0	0	21250	0	0	0	27500	
Misamis Occ	0	0	23877	0	0	0	2011	
Misamis Or	0	0	4709	0	0	0	0	
Zamboanga del Norte	0	0	0	0	9375	0	102251	
Total	**123442**	**21296**	**365679**	**33110**	**961973**	**11284**	**166408**	**1683192**

Source of data: Monreal and Victorio 2001

percent share of the national coconut area, Region VIII is the top coconut-producing region.

Water resources

The concern for water quality and availability is global.[1] Although the nature of concern varies across countries, the severity of the problem seems

[1] In the past decade, it has been noted that there is growing evidence that lack of water is already constraining agricultural output in many parts of the world (Postel 1996; UNCSD 1997).

Figure 6. Percent share in national coconut area, 1993–2002

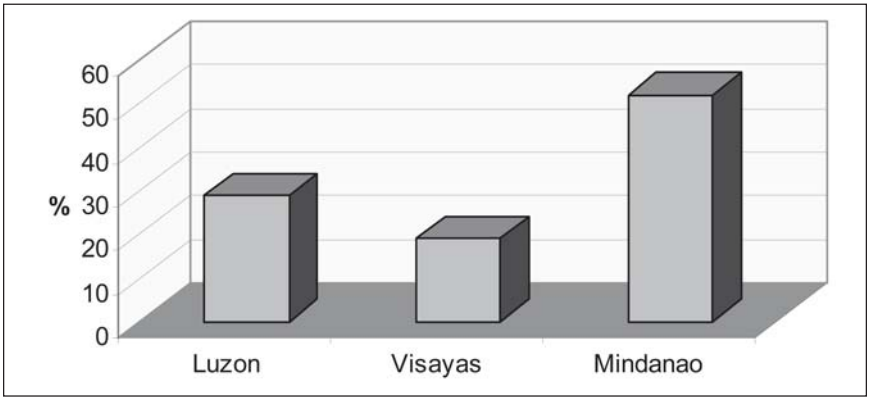


Figure 7. Percent share in Mindanao coconut area, 1993–2002

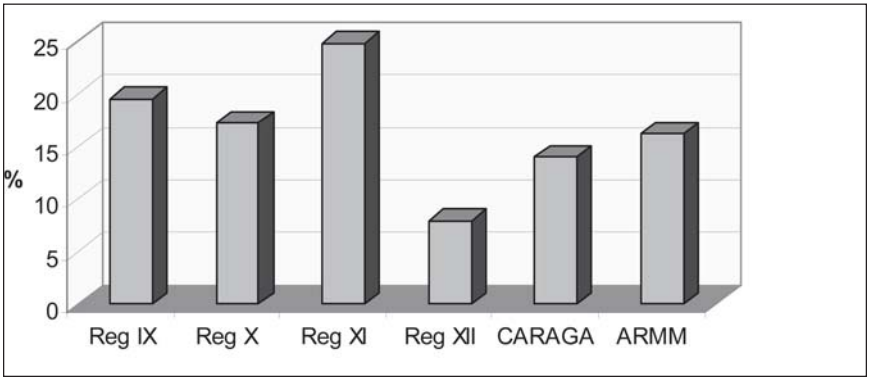
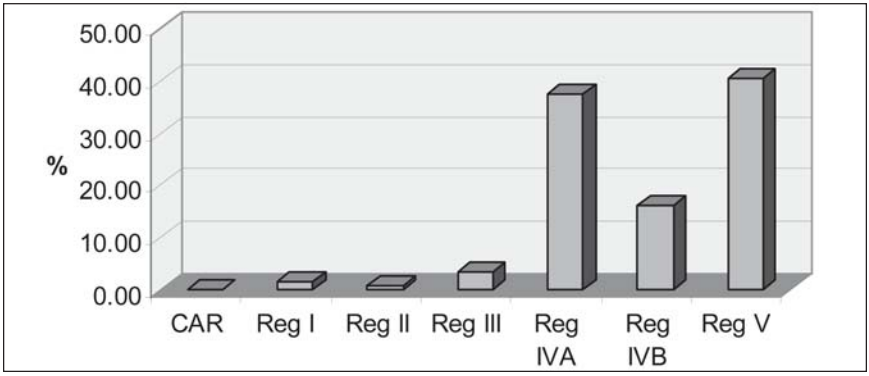


Figure 8. Percent share in the Luzon coconut area, 1993–2002



to progress through time. Published reports in the Philippines suggest a high degree of severity of the water problem (David 2003). Key officials of the Department of Agriculture have expressed alarm (Sun Star 2004) and the Asian Development Bank has made available a "Cooperative Fund for the Water Sector" for addressing water shortage problems (ADB 2001).

Water pollution, desalinization, and environmental degradation leading to scarcity of water supply and the increasing cost of delivering water are among the problems cited (Rosegrant 1997). The need for more efficient use of water is immediate if the recurring problem of water scarcity is to be resolved. And since in developing countries, about 80 to 90 percent of water is used for agricultural production activities, the marginal contribution of agriculture in the effort to save water in these countries is expected to be highest in the short-run.

This may entail increasing irrigation efficiency, which has been reported to be very low in many countries.[2] For example, in the Philippines, irrigation efficiency is reported to range from 25–40 percent (the same with Thailand, India, Pakistan, and Mexico). In Malaysia and Morocco, it is 40–45 percent (Rosegrant 1997). These figures are low compared to what has been achieved in Taiwan, Israel, and Japan where irrigation efficiencies were reported to range from 50 to 60 percent (Rosegrant and Shetty 1994).

It may also entail a shift in agricultural production from high- to low-water intensive system. Crop mix may have to change and the role of rainfed agriculture may have to be enhanced considering that the cost of irrigation development has been on the rise.[3] As Rosegrant (1997) reports: "Real costs of Indian and Indonesian new irrigation more than doubled from 1970 to 1990 (Rosegrant and Svendsen 1993); and in Pakistan, they more than doubled between 1980 and 1990 (Dinar and Subramanian 1997). In the Philippines costs have increased by more than 50 percent, in Thailand they have increased by 40 percent, and in Sri Lanka they have tripled."

Some advocate for adoption of water-saving technologies especially among smallscale farms. The Irrigated Rice Research Consortium (IRRC) estimates that based on a one-hectare average farm size, there will be 17 million farmers worldwide who may face water severity by 2025. Among the promising field-level water-saving technologies recommended include al-

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[2] Irrigation efficiency is defined as the ratio of the volume of water required for a specific beneficial use as compared to the volume of water delivered, or applied, for this purpose (http://www.nalms.org/glossary/lkword_i.htm).

[3] Rainfed agriculture is primarily dependent on rain water, thus, does not compete with urban and industrial users. However, given current crop technologies, rainfed lands are generally less productive than irrigated lands.

Table 9. Estimated water consumption by crops worldwide, 1995

Crop	Global Production (MT)	Estimated Water Requirement	
		(cu km/year)	(cu m/MT
Wheat	541,120,000	601	1,111
Rice	550,193,000	611	**1,111**
Maize	514,506,000	429	**834**
Other grains	290,236,000	323	1,113
Roots and tubers	609,488,000	111	182
Pulses	55,997,000	140	2,500
Soybeans	125,930,000	229	1,818
Other oilseeds	125,749,000	314	2,497
Groundnuts	27,990,000	40	1,429
Vegetables and melons	487,287,000	49	**101**
Fruits (except melons)	396,873,000	113	**285**
Sugar cane	1,147,992,000	177	**154**
Sugar beets	265,963,000	36	135
Toacco	6,447,000	13	2,016
Others		21	
Total		3,207	

Source: Postel 1998

ternate wetting and drying (or controlled irrigation), direct seeding, raised beds, and aerobic rice (IRRC 2003).

Within individual countries, it is also important to consider promoting the production of crops that utilize less water. For example, among the crops commonly grown in the Philippines, maize, vegetables, fruits, and sugar cane are less water demanding than rice (Table 9).

Sources of irrigation water

Rivers and water aquifers are the most common sources of water for irrigation. Water from rivers is collected usually by constructing dams and diverted to agricultural production areas. Low lift pumps or shallow tubewell pumps are used to lift underground water to irrigate farms not supplied by gravity irrigation systems. Irrigation development programs, therefore, depend on the most predominant source of water. For example, in Bangladesh, around 60 percent of irrigated agriculture is supplied with water through shallow tubewell pumps (BADC 2002). In the Philippines, almost all of the irrigation systems developed by the National Irrigation Administration (NIA) are gravity systems established within the country's major river basins/watersheds (Table 10). The sustainability of water supply in gravity irrigation systems is largely dependent on the state of these watershed areas. Forest denudation, which has become a chronic phenomenon in the Philippines,

Table 10. Philippines' river basins

Region	River Basins	Drainage Area(Km²)	River Length(km)
CAR			
I	Abra	5,125	178
II	Cagayan	25,649	505
	Abulug	3,372	175
III	Pampanga	9,759	260
	Agno	5,952	206
IV	Pasig-Laguna Bay	4,678	78
V	Bicol	3,771	136
VI	Ilog-Hilabangan	1,945	124
	Panay	1,843	132
	Jalaud	1,503	123
VII			
VIII			
IX			
X	Agusan	10,921	350
	Cagayan	1,521	90
XI	Tagum-Libuganon	3,064	89
	Davao	1,623	150
XII	Mindanao	23,169	373
	Buayan-Malungun	1,434	60
CARAGA			
ARMM			
Total		105,329	

Source: Concepcion 2004

jeopardizes water supply and adversely affects irrigated agricultural production.

As of 1995, the FAO (AQUASTAT) reports that there were a total of 54 small dams (with a total capacity of 80 million m3) and six large dams (storage capacity of 50 million m3 each and structural height is more than 30 m) constructed to impound water from river tributaries. FAO further reports: Three of the large dams are managed by the National Power Corporation (NPC) (Angat, Ambuklao, and Palangui IV for a total capacity of 1,426 million m^3), the two largest dams being managed by the NIA (Magat—Magat River Integrated Irrigation System [MRIIS] and Pantabangan—Upper Pampanga River Integrated Irrigation System [UPRIIS] for a total capacity of 3,196 million m^3). One large dam (La Mesa, 51 million m^3) is managed by the Metropolitan Waterworks and Sewerage System, which is also responsible for the management of a small dam (Ipo, with a capacity of 36 million m^3).

Some countries, because of their geographic location, benefit from supply of water from river tributaries in neighboring countries. For example,

the Mekong River is the heart and soul of mainland Southeast Asia. The 12th longest river in the world, the Mekong runs 4,800 kilometers from its headwaters on the Tibetan Plateau through Yunnan Province of China, Burma, Thailand, Cambodia, Lao PDR and Vietnam (http://www.irn.org/programs/mekong/).

The Philippines, being an island nation, wholly relies on internally generated water supply. Fortunately, however, it is relatively well endowed with good groundwater resources. Available information shows that there are four major groundwater reservoirs (Cagayan, 10,000 km^2; Central Luzon, 9,000 km^2; Agusan, 8,500 km^2; Cotabato, 6,000 km^2) which, when combined with smaller reservoirs already identified, would aggregate to an area of about 50,000 km^2 (FAO AQUASTAT 2005).

For the period 1977–2001, the Philippines has an annual average national renewable water resources of 479 km^3 (surface and underground). This is equivalent to per capita water availability (in 2002) of 6,093 km^3. Given these water resources, it has been estimated that there are a total of 3.1 million hectares of potentially irrigable area in the country. As of 2003, 1.4 million hectares or 45 percent of the potentially irrigable area has been developed (Table 11).

Table 11. Status of irrigation development by region and type of system, 2003

Region	Potential Irrigable	Service Area				Irrigation Dev't. (%)
		Total	National (hectares)	Communal*	Private**	
Philippines	3,126,340	1,396,082	689,732	532,150	174,200	44.7
CAR	99,650	73,864	17,551	33,401	22,912	74.1
Ilocos	277,180	177,934	55,972	91,733	27,329	64.2
Cagayan Valley	472,640	200,217	136,792	40,330	23,095	42.4
Central Luzon	498,860	267,527	169,820	77,152	20,555	53.6
Southern Tabalog	246,960	121,419	5,410	51,047	17,962	49.2
Bicol Region	239,660	118,562	20,496	68,582	29,484	49.5
Western Visayas	197,250	76,809	52,216	19,094	5,499	38.9
Central Visayas	50,740	27,927	5,512	19,876	2,539	55.0
Eastern Visayas	84,380	49,804	16,436	28,902	4,466	59.0
Western Mindanao	76,080	35,713	15,162	18,579	1,972	46.9
Northern Mindanao	120,700	51,170	25,623	21,565	3,982	42.4
Southern Mindanao	149,610	53,973	32,391	13,639	7,943	36.1
Central Mindanao	293,610	78,892	54,974	20,997	2,921	26.9
CARAGA	162,300	39,787	18,412	18,059	3,316	24.5
ARMM	156,720	22,484	16,065	6,194	225	14.3

* Includes 2003 newly developed areas
** Data of private irrigation systems are based on 1998 inventory
Source: Orno-Coladilla and Rocamora 2001

PHILIPPINE WEATHER PATTERN

The Philippines is a tropical country surrounded by large bodies of water. It is bounded by the South China Sea in the west, by the Philippines Sea (Pacific Ocean) in the east, by the Sulu Sea and Celebes Sea in the south, and by the Bashi Channel in the north. Its northernmost islands are approximately 240 km south of the island of Taiwan, and the southernmost islands lie 24 km off the coast of Borneo (FAO AQUASTAT 2005).

Its climate is monsoonal and has an average annual rainfall estimated at 2,373 mm/year for the period 1961–1990. Recorded rainfall varied from 961 mm (in General Santos City) to more than 4,051 mm (in Infanta). The extreme annual rainfall events ever recorded are 94 mm at Vigan in Ilocos Sur (northern Luzon) in 1948 and 9,006 mm in Baguio City (northern Luzon) in 1910 (FAO AQUASTAT 2005). Compared with the average annual rainfall of other countries such as Thailand (1,622 mm), Vietnam (1,821 mm), Malaysia (2,875 mm), and Indonesia (2,702 mm), the Philippines' has a relatively high amount of rainfall.

Based on rainfall distribution, the Philippines has four types of climate (Figure 9). Type I is characterized by having two pronounced seasons—dry season from November to April and wet season for the rest of the year. The whole of Luzon, Negros, Mindoro, and parts of Palawan are of this type. Type II climate has no dry season with a pronounced rainy period during November to January while Type III is characterized by no very pronounced wet or dry season with the dry months lasting only from one to three months. Type IV has the most even distribution of rainfall all year round. Mindanao is predominantly of the Type IV climate.

The country is within the path of tropical cyclones (Figure 10) and hit by an average of 19 typhoons every year (Figure 11). While these weather disturbances are important sources of internally generated water, they are also a common cause of destruction of agricultural crops. Typhoons hit most part of the Philippines normally during the rice-growing season (Figure 12). Only Mindanao is spared by the heavy destruction brought about by typhoons. Available reports indicate that rice production losses due to typhoons are substantial. In 1994, 81 percent of the total rice losses in Central Luzon were attributed to typhoons, 78 percent in Bicol, and 71 percent in the Visayas (Figure 13). From 1970 to 1990, rice production losses attributed to typhoons was highest in 1971 (Figure 14).

Drought, also referred to as El Niño phenomenon, is another extreme weather disturbance to contend with. Available reports indicate that El Niño events occur every four-and-a-half years on the average—one major event occurred during the 1982–1983 crop year (Gallo 1998) and an-

Figure 9. Types of climate of the Philippines based on rainfall distribution

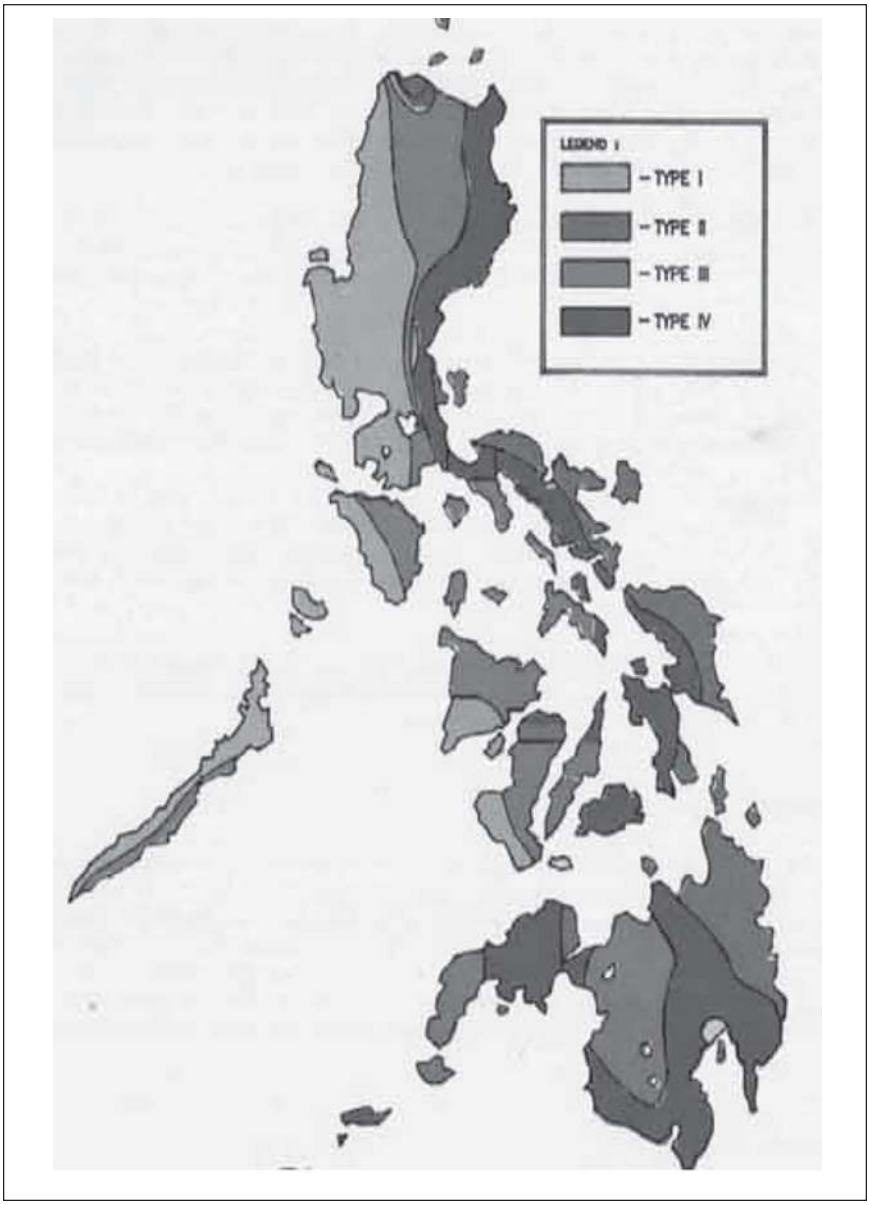
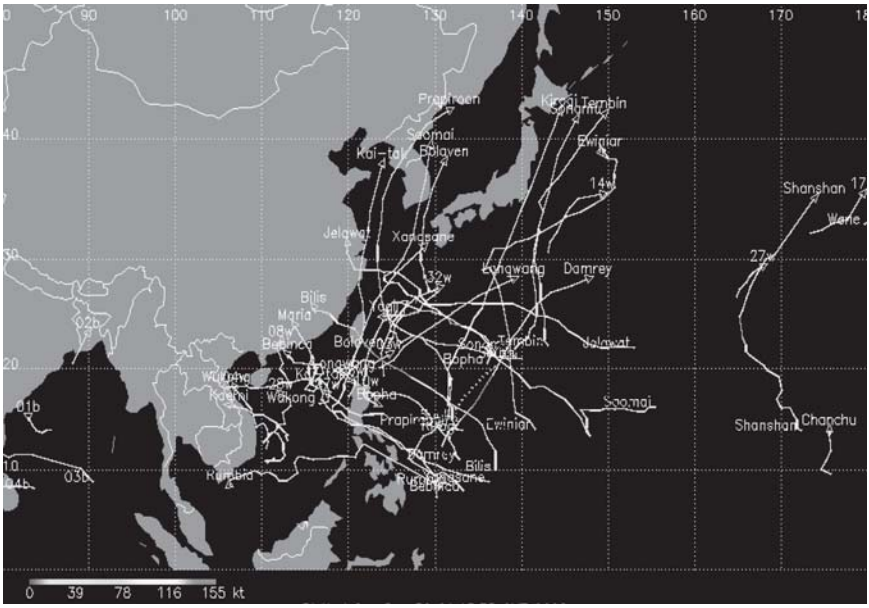
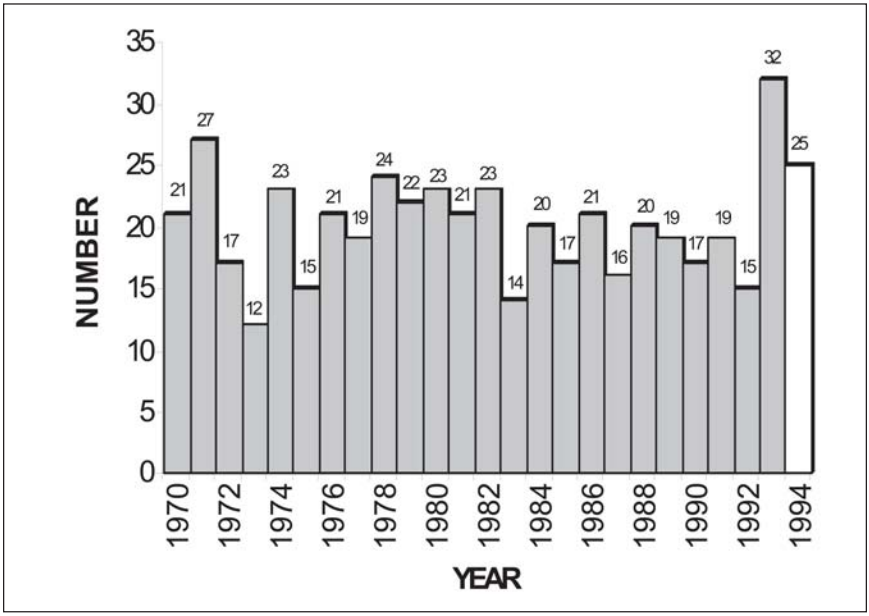


Figure 10. Northwest pacific tropical cyclones



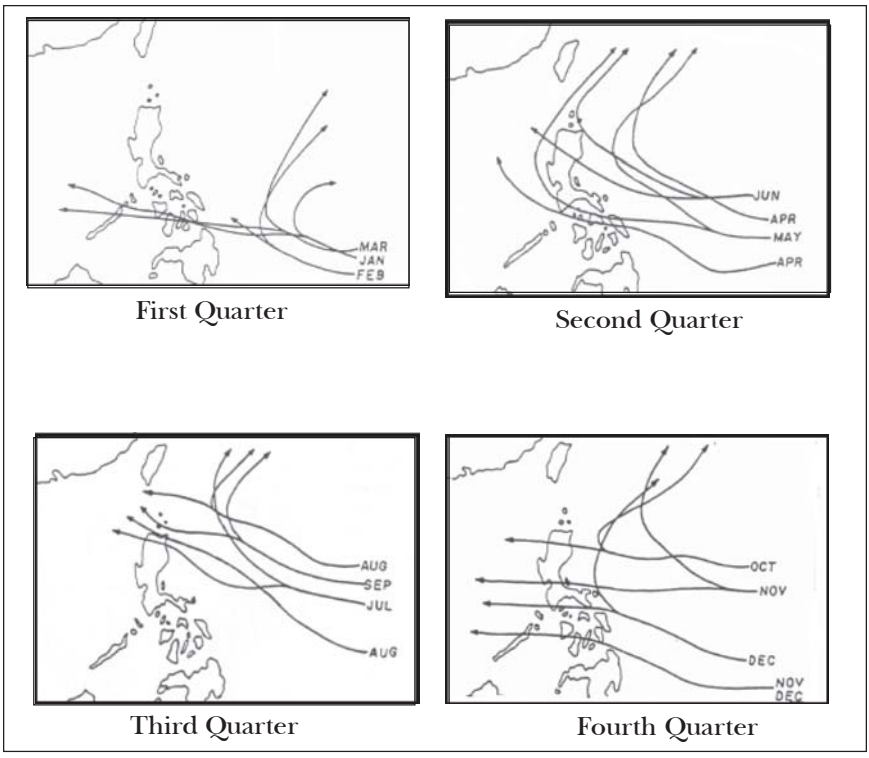
Source: http://www.ifa.hawaii.edu

Figure 11. Annual occurrence of tropical cyclones in the Philippines



Source: Gonzales 1994

Figure 12. Typhoon occurrence in the Philippines, by quarter



Source: Valenzuela 1989 cited in Gonzales 1994

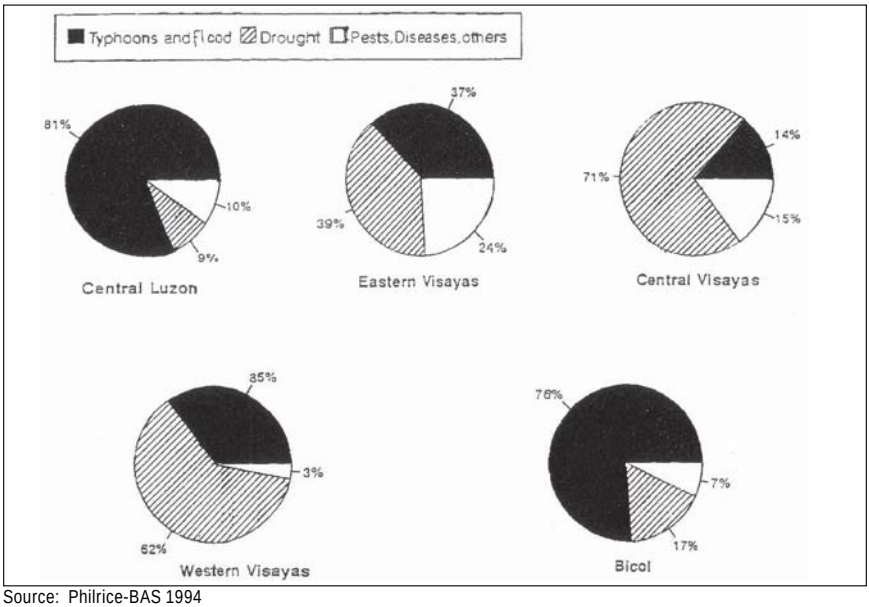
other in 1997–1998. Both events caused adverse effects on agricultural production, especially on crops that are susceptible to water stress. Rice is a good example. During the 1982–1983 and 1997–1998 El Niño events, rice yields in the Philippines dropped by at least 20 percent from the previous crop year. Corn yield, on the other hand, did not manifest any discernible drop in yield (Figure 15).

SUMMARY OF KEY POINTS

Rice is currently the most important crop in the Philippines. It occupies the largest land area and sits at the core of national agricultural development programs. Self-sufficiency in rice continues to be a paramount goal of government. This goal, however, may be achieved only at extremely high economic costs given current circumstances. Irrigation investments crucial in rice production are getting more costly.

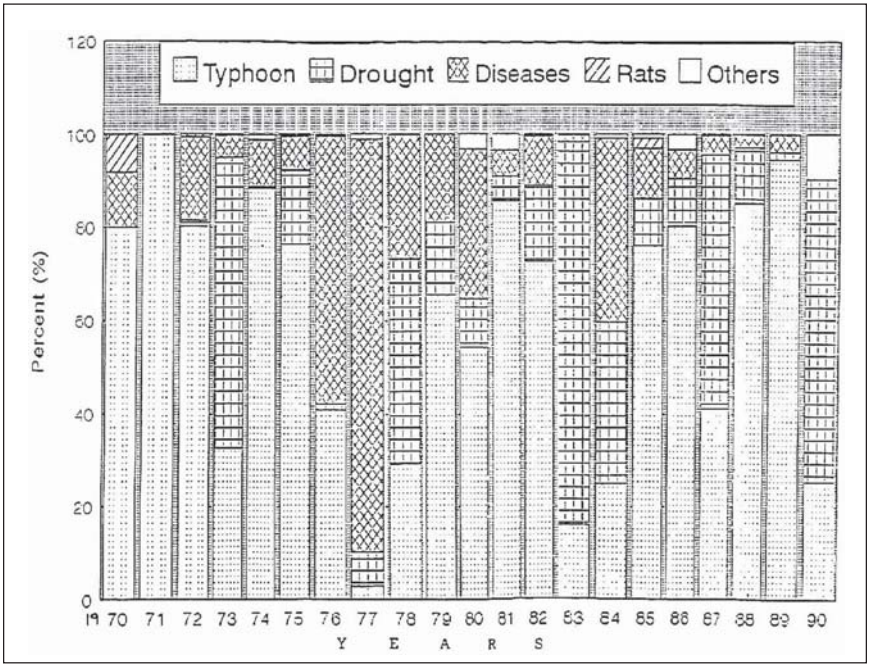
Being the highest user of irrigation water, rice faces tight competition from nonagricultural users of water and this competition is expected

Figure 13. Losses due to typhoons by region, 1994



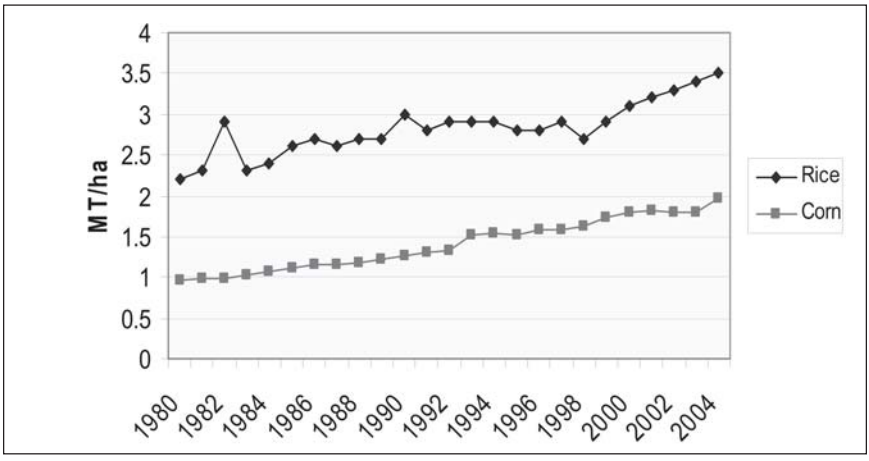
Source: Philrice-BAS 1994

Figure 14. Losses due to typhoons by year



Source: Philrice-BAS 1994

Figure 15. Trend in rice and corn yield, 1980–2004, Philippines



Source: BAS 2005

to become tighter and remedial measures more costly as unfavorable weather disturbances become more severe. The El Niño phenomenon, which drastically decreases internally generated water resources, is becoming more frequent. Typhoons, which occur mostly during the rice-growing period, hit the Philippines 19 times every year on the average. Both phenomena put rice production in the Philippines at a disadvantage relative to other countries not prone to these weather disturbances.

These have important implications on the country's current agricultural production thrust. The low priority being given to other tradable commodities (especially high value commodities) should be reconsidered. The economic opportunities foregone from these activities may outweigh the perceived benefits from rice self-sufficiency. Many annual crops thrive well during the dry season and they generate relatively higher farm incomes than rice (Alviola et al. 2002). Under the current world-trading regime, agricultural development must be strategic—with economic efficiency as the paramount concern.

THE OTHER COUNTRIES: WHERE LIES THE DIFFERENCE?

An excellent piece of general information is provided by Dawe (forthcoming). He notes that based on long-term data, island nations in Asia, including the Philippines, have been net rice importers while countries in the mainland continent (e.g., Thailand, Vietnam, Cambodia) are net exporters. This observation is used as the initial basis for the succeeding discus-

sion. Relevant food policy issues are also briefly reviewed in order to highlight specific points of concern.

Vietnam and Thailand stand out insofar as rice exports are concerned. They are the top two rice exporters with a combined contribution of 42 percent to total world rice exports in 1999–2002. Based on available information, their relative strengths lie not so much on crop technology, irrigation development, or productivity. It will be noted, for example, that the Philippines has a more extensive adoption of modern rice varieties with 96 percent of its rice area planted with modern varieties compared to 86 percent in Vietnam and 16 percent in Thailand (Table 12). The Philippines also has a relatively higher proportion of rice area irrigated (Table 13). Rice yield could not be a major explanation either because although yield in the Philippines has been lower than in Vietnam, it is significantly higher than in Thailand (Figure 16).

Table 12. Area (000 has) planted to modern varieties, selected Asian countries

Country	Total	Area MV	Percent MV
Indonesia	11141	8992 (1997)	81
Malaysia	723	316 (1997)	44
Philippines	4065	3889 (2001	96
Thailand	9913	1537 (1997)	16
Vietnam	7654	6545 (1999)	86

Sources: IRRI 2004

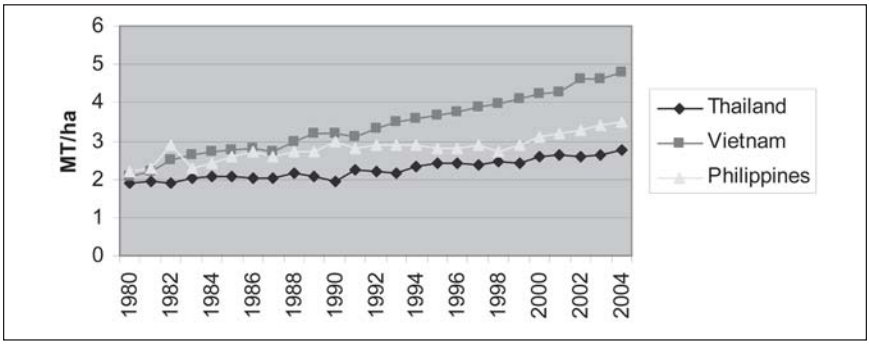
Table 13. Rice area (000 has) by ecosystem, selected Asian countries, 2001

			Distribution of Area (%)		
Country	Area	Irrigated	Rainfed lowland	Upland	Deep Water
Indonesia	11700	54	35	11	0
Malaysia	692	66	21	12	1
Philippines	4065	67	30	3	0
Thailand	9800	20	74	2	4
Vietnam	7500	56	39	5	3

Source: IRRI 2004

What is clear is that both exporting countries have more land and water resources. In 2004, on a per capita basis, Thailand has 2.5 times more rice land compared to the Philippines and Vietnam has 1.9 times more. Vietnam has 1.8 times more water available per capita per year than the Philippines; and Thailand, 1.05 times more (Table 14). The Mekong River

Figure 16. Rice yield in Thailand, Vietnam and Philippines



Source: IRRI 2004

Table 14. Water resources and freshwater ecosystems in selected ASEAN countries

Item	Thailand	Philippines	Vietnam	Malaysia	Indonesia
Internal Renewable Water Resources (IRWR)					
Surface water produced internally	199	444	354	566	2,493
Groundwater recharge	42	180	48	64	455
Overlap (shared by groundwater and surface water	31	145	35	50	410
Total IRWR	210	479	367	580	2,838
Per Capita IRWR (cu m)	3,264	6,093	4,568	25,178	13,046
Natural Renewable Water Resources (includes flows from other countries)					
Total, 1977-2001 (cu km)	410	479	891	580	2,838
Per capita, 2002 (cu m/person)	6,371	6,093	11,109	25,178	13,046
Annual River Flows					
From other countries (cu km)	200	x	525	x	x
To other countries (cu km)	x	x	x	x	x
Freshwater Seafood Production					
Freshwater fish catch					
1990 (metric tons)	135,457	235,799	125,915	12,995	312,818
2000 (metric tons)	209,404	149,665	161,000	22,636	392,727
Freshwater aquaculture production					
1987 (metric tons)	78,428	83,737	106,457	2,738	204,922
1997 (metric tons)	257,371	97,189	369,000	20,303	407,990

Source: Earthtrends 2003

is a significant source of externally generated water supply for both countries. Furthermore, they have been spared drastic variations in rice yields due to extreme weather disturbances particularly typhoons—an advantage that is enjoyed only by the southern parts of Mindanao, Philippines.

Malaysia and Indonesia, like the Philippines, are also net rice importers but with one important difference—they have successfully maintained a net surplus in agricultural trade during the last decade. In fact, within the ASEAN–Five (Philippines, Thailand, Vietnam, Malaysia, and Indonesia), only the Philippines experienced a chronic trade deficit in agriculture during the last decade. This might be an indication that the Philippines no longer possesses comparative advantage in agriculture. Bear in mind that in a highly globalized world, success in trade is largely dependent on effectively exploiting one's comparative advantage. If warranted, resources must be allowed and induced to shift to economic activities where they provide the greatest marginal contribution. In the last 10 years, there are no clear indications that this has happened in the Philippines. Rice continues to dominate and, compared with other countries, Philippines' agricultural exports are not as diversified (Table 15).

Coconuts (primarily oil) and bananas remain the major export commodities but both face constraints affecting production expansion. LOI 58 limits hectarage for bananas while coconut oil has to contend with increas-

Table 15. Top agricultural exports and imports, selected ASEAN countries, 2002

Commodity	Proportion in Total of Agriculture (%)				
	Philippines	Thailand	Vietnam	Malaysia	Indonesia
Major Exports					
Coconut Oil	23.4				
Bananas	20.5				
Dessicated Coconut	6.3				
Rubber, Natural (dry)		17.3	12.5	7.9	16.6
Milled Rice		17.1	34.3		
Chicken Meat		6.5			
Coffee, Green			15.2		
Oil of Palm				51.9	33.7
Fatty Acids				5.8	
Cocoa beans					8.4
Major Imports					
Wheat	18.4			4.7	14.9
Soybean cake	8.8	11.9	10.5		
Rice	8.0				
Cotton Lint		15.5	9.3		16.8
Soybeans		10.9			7.1
Cigarettes			15.8		
Maize				6.1	
Raw Sugar				6.0	

Source: FAOSTAT 2004

ing competition from 16 other fats and oils in the world market. In the edible (food) market, coconut oil competes with soybean oil, sunflower oil, rapeseed oil, olive oil, corn oil, and, palm oil (an important export item of Malaysia and Indonesia).

For coconut oil to remain competitive, productivity at the farm level must increase. Unproductive, senile trees must be replaced. Research and development deserve higher attention. These are imperative in the face of the technological breakthrough now available in the other edible oils. Biotechnology has tremendously improved technical production possibilities in soybean and rapeseed (canola). Similar achievements have been reported for oil palm.

Other countries (particularly Thailand) have successfully gained inroads in the high value, low volume agricultural products trade—a feat still to be realized by the Philippines. Thailand is now the leading exporter of chicken within the ASEAN; and among the world's leading exporters of horticultural products, particularly cutflowers. Also a former corn exporter, it appeared that during the early 1980s, high corn yield was Thailand's source of advantage in chicken production. Starting the mid–1980s, however, Thailand became a net corn importer but maintained a price policy that was competitive in the world market. The Philippines, in contrast, pursued a high price policy in line with its corn self-sufficiency objectives. This pricing policy jeopardized the growth of its domestic livestock sector.

The case of Malaysia opting for lower levels of rice sufficiency is another point of interesting comparison. It has a lower population density with 13 persons per hectare of arable land compared to the Philippines' 14 persons per hectare of arable land in 2002. It has four times more natural renewable water resources per capita than the Philippines. Malaysian scientists, however, believe that producing rice domestically is much more costly than importing it from neighboring countries. As Arshad et al. (1996) note, Malaysia has the resources to achieve rice self-sufficiency but that it will be realized at "the expense of high financial costs to the government and relatively heavy taxes on poor consumers." That it has maintained a favorable trade balance in agriculture despite importing 30–35 percent of rice requirements and an average of two million metric tons of corn annually speaks well of the policy choices made.

CONCLUSIONS

The assessment of resources and the implications drawn in the analysis are quite rudimentary. However, it is hoped that practical issues long masked by the zealous pursuit of rice self-sufficiency objectives have been high-

lighted here. Two points are worth reiterating. Firstly, in the current world-trading regime, it is imperative to abide by the principles of comparative advantage. On the basis of resource availability, the strong advantage enjoyed by Vietnam and Thailand in rice production has been established. It would be best for the Philippines to import production shortfalls from these countries—lest it suffers the adverse consequences from inefficiency and lost economic opportunities. Drawing resources into rice production to achieve self-sufficiency means foregoing other economic activities which may generate higher value added. Amidst a rapid growing population/labor force, a self-sufficiency policy may in fact be a double-edged sword.

Secondly, the agricultural development framework derived from the analysis implies the adoption of production zoning. Through these production zones, scale economies made possible through agglomeration of interrelated production systems are achieved. There have been attempts in the past to adopt this concept (e.g. Key Production Areas) by the Department of Agriculture but the leaders who pushed for its adoption did not stay long enough to see it succeed. Similarly, the 1997 Agricultural Fisheries Modernization Act provides for the establishment of Strategic Agriculture Fishery Development Zones specifically to achieve the same objective. However, the funding intended for the implementation of this law was never released.

Rice continues to dominate government plans and programs. Consequently, institutions on the ground evolved to support existing programs for self-sufficiency. Under these circumstances, other activities that may possess relatively strong comparative advantage given current resources (land and water) would not become competitive and the adverse effects would be felt economywide.

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Personal communication with Dr. Clar de Jesus, University of the Philippines Los Baños College of Agriculture, 2001.

Chapter III

Achieving Food Security: The Role of and Constraints Faced by LGUs

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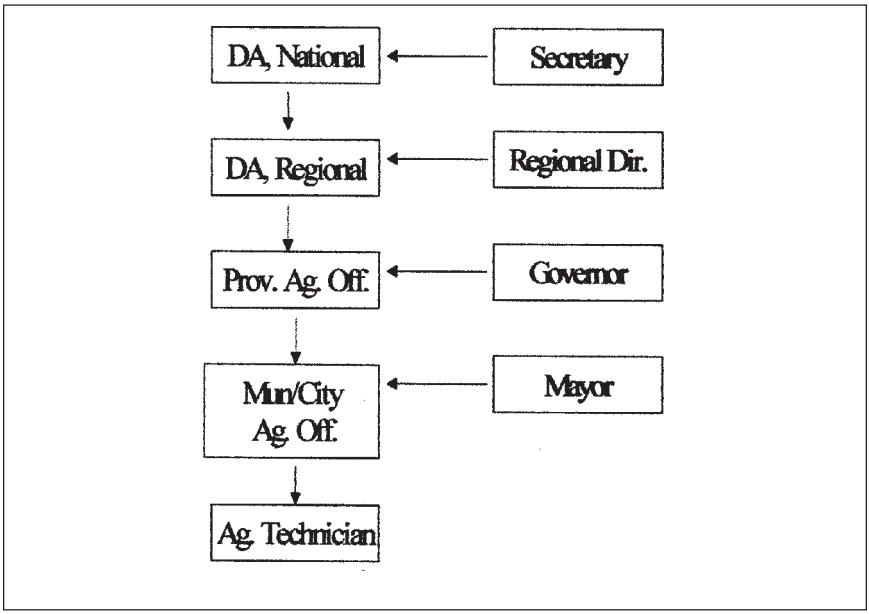
. . . If ideas are not coming from the masses, it is impossible to establish a good line, good general and specific policies and methods . . . . Without democracy, you have no understanding of what is happening down below; the situation will be unclear; you will be unable to collect sufficient opinions from all sides; there can be no communication between top and bottom; top-level organs of leadership will depend on one-sided and incorrect material to decide issues, thus you will find it difficult to avoid being subjectivist; it will be impossible to achieve unity of understanding and unity of action, and impossible to achieve true centralism. —Mao Zedong 1974 (cited in Sen 1983)

INTRODUCTION

There are two laws enacted in recent times establishing the foundation for an increased role of local government units (LGUs) in pursuing national development concerns that explicitly cover food security. Firstly, the Local Government Code (LGC) of 1991 (RA 7160) specifically states: "Local government units shall endeavour to be self-reliant and shall continue exercising the powers and discharging the duties and functions currently vested upon them. They shall also discharge the functions and responsibilities of national agencies and offices devolved to them pursuant to this Code. Local government units shall likewise exercise such other powers and discharge such other functions and responsibilities as are necessary, appropriate or incidental to efficient and effective provision of the basic services and facilities enumerated herein" (Section 17a of the LGC).

Figure 1. Relationship between national and local government units after RA 7160



The enactment of this law has opened up new challenges for local government units. Among development practitioners and academicians, the LGC is considered as a major manifestation of a shift in development paradigm. Through this law, local government executives now carry a critical responsibility in planning and implementing development programs intended to improve societal welfare.

In the pursuit of agricultural development, for example, the delivery of extension services that used to be performed by the Department of Agriculture is now devolved to LGUs. On the one hand, this is considered an appropriate move as it decentralizes decisions on matters pertaining to technology dissemination and identification of appropriate development projects. With localized decisionmaking, needs of the community are better identified, thus, appropriate technologies and projects have better chances of being adopted. On the other hand, the new setup could also be interpreted to mean less effective implementation of national development programs. As could be gleaned from Figure 31, the national government agency (NGA), in this case, the DA, no longer has operational control over the personnel working directly with the farmers. Here, the NGA's influence in LGU's decisions is mainly executed through the budgetary process since budget for

agricultural development projects remains under the control of the Department of Agriculture.

Secondly, RA 8435 of 1997, otherwise known as the Agriculture and Fisheries Modernization Act (AFMA), also outlines the important role played by LGUs in agricultural development. Section 92, for example, calls for a stronger collaboration between LGUs and state universities and colleges (SUC) in the generation and dissemination of new technologies. Furthermore, they are mandated to prepare their own agriculture and fishery modernization plan (AFMP) every year.

In addition to the programs called for by these two laws, a national food security program requiring the active involvement of LGUs was initiated in 1999 by former President Joseph Estrada. This effort is manifested in a "Food Security Covenant" signed by provincial governors on January 12, 1999 (Annex A).

Among other initiatives to pursue agricultural and rural development, the above strategies calling for an increased involvement of local government units are considered to have strong implications on the efficiency/inefficiency of resource allocation. For example, in view of the fact that many local government executives are observed to put low priority on agriculture (Alcober et al. 1994; Brown and Librero 1995) one important question is whether or not the food security programs developed by LGUs are consistent with existing resource endowments within the locality under their political jurisdiction. In addition, these initiatives also test the capability of LGUs in managing programs designed to converge at the local level.

A decade has passed since the 1991 Local Government Code and more than four years since the AFMA of 1997 were enacted. It is interesting at this point to revisit the experience of LGUs in carrying out their tasks related to food security. Thus, this chapter seeks to provide additional information in understanding the implications of giving more responsibilities to LGUs in the pursuit of agricultural development particularly in the achievement of food security objectives. Indirectly, it will test the hypothesis that the food security programs of LGUs are consistent with the resource endowments of each geographical area under the jurisdiction of LGUs.

The specific objectives of the chapter are as follows:

- Describe, in general, the process involved in drawing up the food security programs of provincial government units.
- Compare the food security plans and programs of provincial government units, taking into consideration stated targets and approaches.
- Determine the resource allocation (financial budgets, personnel, and physical land areas) proposed in the food security plans.

- Describe in general terms the agricultural resource base of the Province.
- Provide insights on the efficiency implications of the food security programs drawn up by provincial governments.
- Highlight the major constraints faced by LGUs in pursuing their respective food security programs that may be inherent to the implementation of the local government code.

Data used in this study were gathered from ten provinces classified on the basis of their capacity to produce rice and/or corn—the main food products of the country. Five were major grain-producing and five were nonmajor grain-producing (Table 1). The food security plan of each province was the main source of data used in the analysis. This was supplemented by interviews with the provincial agricultural officer (PAO) whenever feasible. Due

Table 1. Rice/corn production and estimated consumption of the 10 sample provinces, 1995

Province	Population	Estimated Production (in MT)	Population's Requirements (in MT)	Production Surplus/Deficit (Rice/Corn in MT)
Major Grain Producers				
Palay		2,146,649	438,763	1,707886
Corn		946,245	153,886	792,359
Isabela				
Palay	1,160,721	799,787	108,179.20	411,682
Corn	1,160,721	411,266	85,011	326,255
Nueva Ecija (Palay)	1,505,827	877,849	140,343.08	430,259
Camarines Sur (Palay)	1,432,598	268,944	133,518.13	41,295
Oriental Mindoro (Palay)	608,616	200,069	56,723.01	73,322
Bukidnon (Corn)	940,403	534,979	68,875	466,104
Nonmajor Grain Producers				
Palay		497,353	667,736	(170,383)
Laguna (Palay)	1,631,082	95,099	152,016	(90,202)
Pampanga (Palay)	1,635,767	216,829	152,453	(11,515)
La Union (Palay)	628,827	89,976	58,607	(122)
Batangas (Palay)	1,658,567	60,200	154,578	(115,448)
Cavite (Palay)	1,610,324	35,249	150,082	(127,170)

Notes: Rice at 65 percent milling recovery; and at 93.2 kg. per capita consumption.
Corn at 73.24 kg. per capita consumption, based on national average.
Corn consumption: food and feeds use.
Source: Philippine Statistical Yearbook 1998

to the wide variation in the nature and quality of data available, averaging of numbers was not always feasible. In many instances, the analysis of specific issues was focused only on particular provinces where appropriate data are available.

FOOD SECURITY DEFINITION

For the purpose of this chapter, in a general sense, the World Bank definition of food security as the availability and affordability of food to all the citizens in a country is being adopted. "Its essential elements are the availability of food and the ability to acquire it" (World Bank 1986). In contrast to self-sufficiency, it allows for the option to procure food from the world market whenever the situation calls for it. With this definition, food production is considered important, but it could not, by itself, solve the food security problem particularly at the household level. Families could be food insecure amidst national food self-sufficiency.

By the same analogy, even a country whose capacity to produce food domestically is close to nil, could be food secure for as long as it possesses the capability to procure its food needs from the world market. This definition is supported by the experience of countries like Singapore, Hong Kong, and the oil-rich Middle Eastern countries. Thus, by the same token, a political/geographical unit (e.g., province) within a country need not produce its total food requirement.

It is now well recognized that food insecurity is largely associated with poverty. As advocated by scholars in this field (e.g., Schuh 1987; Routlinger 1987; Sen 1987), food insecurity must be addressed through the creation of efficient income-generating activities particularly in the rural areas. Taken as an integral part of agricultural development, the emphasis in food policy should not be purely food production per se. Rather, "it should be to improve the income of the rural population, which in most developing countries is still the main component of poverty" (Schuh 1990). Available data strongly suggest that the very people engaged in food production are the ones who are relatively deprived of adequate food and nutrition (Table 2).

There are several implications of the above line of argument. Firstly, it underscores the point that food security, as a national concern, does not rest solely upon the shoulders of one government entity (e.g., Department of Agriculture). No agency monopolizes the means that enable the rural poor to improve their income potential, hence, their capability to procure more food. There is no doubt that agriculture remains to be the main source of livelihood among the majority of the rural households. However, many of the

Table 2. Nutrition adequacy (percent) by occupation of highest income earner, Philippines, 1993

Occupation	Energy	Protein	Iron	Calcium
Professional	101	124.7	75.6	99.2
Large Farm Managers/owners	91.2	107.1	67.8	74.1
Small Farm Managers	91.3	109.2	72.1	66.1
Share Tenants	86.9	100.9	60.9	61.0
Kaingineros	73.2	70.9	40.9	39.6
Small Fishermen	85.8	106.3	55.6	64.4

Source: Cabanilla 1997

basic requisites that will increase productivity in their present economic activities are outside the domain of the agency mandated to directly oversee the affairs of agriculture.

Secondly, price policy alone, could not solve the problems faced by poor food producers and consumers. A price policy biased for a specific interest group may result in inefficient allocation of resources particularly the nontradables. Likewise, to the extent that other industries are dependent on the food-producing sector, the price that is favorable to the food producers may put a drag on the growth of the dependent sector. This is the classic case of the dependence between livestock producers and corn farmers. Through forward and backward linkages, many other sectors of the economy may also be adversely affected. Direct price intervention is not an efficient solution to food security.

Thirdly, it underscores the role of the foreign market in resolving food security problems. This market could serve both as a source of food imports in times of domestic production shortages. It also serves as an important market for agricultural surplus, thus provides the foreign exchange revenues for other development needs. This point is crucial in the light of the country's membership in the World Trade Organization (WTO) and the Asia Pacific Economic Cooperation (APEC).

In short, resolving the food security problem involves a close scrutiny at the conditions affecting both supply and demand. On the supply side, the concern is not limited to domestic production but foreign sources as well. On efficiency grounds, domestic food production should be pursued only up to the point where the marginal returns to domestic resources used in food production are equal to other activities. As argued elaborately by Timmer (1990), "the US should not grow all of its sugar and bananas, Japan should not grow all of its wheat, and Europe need not grow all of its soybeans".

Following the above argument, a provincial government need not produce all of the rice and corn needed by its political constituents. The efficiency losses brought about by the misallocation of resources at the margin will put a drag on the growth of the rest of the economy especially when the relative size of the inefficient industry is large. Very often, policies used to achieve self-sufficiency result in the expansion of domestic production toward marginal and fragile ecosystems, bringing about unsustainable agricultural production systems (Coxhead 1996).

On the demand side, the affordability aspect is not solely reflected in low food prices, which, in absolute terms, benefit all food consumers regardless of income class. In fact, low food price policy, though it increases the real income of the landless farm workers and poor urban consumers who do not have any link with staple crop production, may exacerbate the other important problem of inequality as this jeopardizes the income potential of many poor food producers. Therefore, the emphasis should be in the provision of efficient income-generating activities among the poor households. This means sticking to the rules of comparative advantage—a principle that may not be clearly appreciated by local government executives who oversee their respective food security programs.

From a purely price policy perspective, it is useful to link recent approaches in food policy–the two more popularly known of which are production incentives and basic needs. The production incentives school emphasizes the need to "get prices right" (which usually meant raising agricultural prices) in order to increase farmers' incentives to produce. The basic needs approach, on the other hand, stresses keeping food prices low in order to ensure that the poor could afford adequate diet (Eicher and Staatz 1990).

However, because of general and specific operational concerns faced by policy makers and development practitioners, the view must be expanded beyond the confines of price policy alone. Dealing with emergency food shortages, such as those caused by adverse weather disturbances (e.g., 1995 Philippine rice crisis), is one case in point. For this, Amartya Sen (1990) proposes to deal with what is referred to as "acquirement problem." This is a concept related to what has been referred to in Sen's earlier work as "entitlement approach" (Sen 1981). As enunciated, the entitlement of a person "stands for the set of alternative commodity bundles that the person can acquire through the use of the various legal channels of acquirement open to someone in his position" (Sen in Eicher and Staatz 1990).

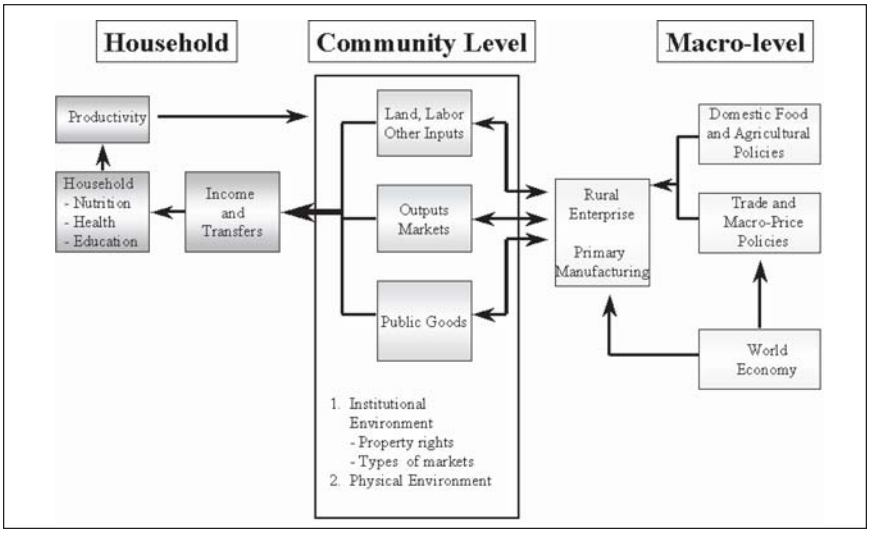
This could be interpreted, of course, to mean that an individual's entitlement (e.g., for food) is critically dependent on his initial endowments (of goods and resources including human capital) and those made available

through the provision of public and quasipublic goods. For the latter, targeted food distribution and price subsidy programs, and public health programs are important concerns.

This further brings to the fore the respective roles played by the various units of government in pursuing food security, and other objectives. For, understandably, if the ultimate goal is to ensure availability and affordability/accessibility of food to households, different policies and programs interact in a manner that is portrayed in Figure 2. At the national level, macro price and other macro policies create the national economic environment under which community or subnational level programs could then be carried out. It is also under this same environment that local/subnational market institutions operate. This, in turn, affects the entitlement of households at the local level. Directly linked with individual households, local government units and local market institutions play a significant role in enhancing households' food security. However, much of their success depends on the macro environment created at the national level. For example, fiscal policies determine, to a large extent, available funds for local government units. Access to national development funds is also critical. All of these determine the capability of LGUs to provide public and quasipublic goods, thus, also influence household food security.

With the above definition of concepts as backdrop, the chapter hopes to tackle the role of and constraints faced by local government units in achiev-

Figure 2. Interrelationship of factors affecting household food security



ing food security objectives particularly at the household level. The next section first discusses the national food security agenda in order to provide a backdrop of the environment under which local food security programs are pursued. Following the framework suggested in Figure 32, the supply and the demand sides of food security are then discussed in the fourth and fifth sections, respectively.

THE NATIONAL FOOD SECURITY AGENDA

The urgency of a national food security agenda has not been so strongly manifested in government policy statements until the major rice crisis in late 1995 following the widespread destruction of agricultural crops brought about by typhoon Rosing. These are contained in several official documents and presented in various public forums. A policy of self-sufficiency in rice and corn was announced in a multisectoral Food Security Summit organized by the government in March 1996. Recent major policy statements are etched in the Agriculture and Fishery Modernization Act (1997) and the Governors' Food Security Covenant (1999). They are also reflected in a pricing policy biased in favor of rice and corn, amidst a liberalized trading environment. A brief discussion on these policy statements and pricing policy is presented in this section.

Agriculture and Fishery Modernization Act

In 1997, AFMA (RA 8435) was enacted declaring the country's national food security policy to wit: "The state shall promote food security, including sufficiency in our staple food, namely rice and white corn. The production of rice and white corn shall be optimized to meet our local consumption and shall be given adequate support by the State." Some of the important provisions of this law that are relevant to our concern are the following:

> Sec. 90: *The Role of Local Government Units*
> The LGUs shall be responsible for delivering direct agriculture and fisheries extension services.
> The provincial governments shall integrate the operations for the agriculture extension services and shall undertake an annual evaluation of all municipal extension programs.
>
> Sec. 111: *Initial Appropriation*
> The eighth provision of Section 111 states: Six percent (of the P20 billion total budget) shall be allocated for salary supplement of Extension Workers under the LGUs.

On human resource development

Section 71 stipulates the counterpart funding from LGUs for promoting full employment through appropriate education and training programs. As stated: "The LGUs shall, within two years from the effectivity of this Act, provide at least 10 percent of the Maintenance and Other Operating Expenses budget for the operation of the provincial institutes within their area of responsibility."

On rural nonfarm employment and rural industrialization

Section 99 stipulates the participation of LGUs in providing rural nonfarm employment. It states: "The local government units shall bear the costs of promoting and monitoring the basic needs program for which their IRA shall be increased accordingly as recommended by the Secretary of the Department (DA)." Section 101, on the other hand, authorizes local government units to undertake activities that will promote rural industrialization. Specifically, it states: "Local government units are authorized to undertake investment and marketing missions provided that the costs of such missions are borne by the LGUs concerned." It states further: "In making their land use plans, the LGUs, in consultation with the appropriate government agencies concerned, shall identify areas for industrial parks."

Governors' Food Security Covenant

In 1999, the League of Governors expressed their willingness to support the national government's food security program through a covenant (see Annex A) signed during a food security workshop. In that covenant, it was specifically stated:

> Cognizant of its roles and responsibilities in achieving the national targets necessary to achieve food security for the nation, specially for the poor, the participants to the Workshop hereby commit and pledge by undertaking a solemn covenant to achieve self-sufficiency in food production, particularly in rice by the year 2002, corn by the year 2003, and fish by the year 2004, and thereafter, to have a sustainable food surplus and in the process, ensure the upliftment of the standard of living of our farmers and fisherfolks by increasing their income above and beyond the poverty threshold.

Immediately following the signing of the food security covenant, the Office of the President issued Executive Order 86. Signed on March 13, 1999, this 13-section executive order provides for the creation of food security councils at the national and provincial levels. It also provides for the definition of the composition and functions of these food security councils (For more details on funding and other relevant information, refer to Annex B).

Pricing and buffer stock policy

In addition to the above policy pronouncements, the government has installed a pricing policy that showed bias for rice and corn. As noted elsewhere (Cabanilla and Calderon 1998), for example, in the 1990s (just about the time when the country was liberalizing its trade policies), there has been an observed shift in the protection accorded to agriculture relative to manufacturing. More specifically, within agriculture, intensity of protection was focused on three crops—rice, corn, and sugar (Table 3)—a reflection of the bias that has emerged during the current policy regime.

Through the National Food Authority (NFA), the government has also exerted a strong influence in domestic as well as international trade in these commodities. Although private entities are now allowed to engage in foreign trade of rice and corn, permits have to be secured from NFA for this purpose. And, since NFA has the sole responsibility in maintaining a reasonable buffer stock for rice and corn, it continues to play an active part in domestic trading of these commodities.

Table 3. Trends in nominal protection rates (NPR) of major agricultural commodities, 1970–1995 (in percent)[a]

Agricultural commodities	1970–1979	1980–1984	1985–1989	1990–1994	1995
Rice	–4	–13	16	19	65
Corn	24	26	67	76	150
Sugar[b]	5	42	154	81	104
Coconut products					
Copra	–17	–28	-6	0	0
Coconut oil	–4	–4	7	18	10
Dessicated coconut and copra cake and meal	–4	–4	0	0	0
Bananas, pineapple, tobacco, abaca	–4	–4	0	0	0
Pork	6	–9	43	31	44
Chicken	34	46	39	74	84

[a] NPR is the percentage difference between domestic wholesale price and border price converted by the official exchange rate. The border price is an FOB export unit value for exportable products and the world price adjusted by 15 percent as a measure of CIF import unit value for importable products. In the case of pork and chicken, the import unit value of Singapore was used.

[b] Weghted average of NPR on sugar exported to the US (ratio of export unit value to the US to the border) price and NPR on sugar for domestic use (ratio of domestic wholesale price to border price). Border price is the FOB world price of sugar adjusted bby 15 percent to obtain the CIF price.

Source: David 1997

LGUS' FOOD SECURITY PLANS

The planning process

With the enactment of the local government code in 1991, planning and implementation of programs have become important functions of local government units. In addition to the preparation of a Comprehensive Land Use Plan (CLUP), they are also mandated to prepare a yearly Food Security Plan. Even the Agriculture and Fisheries Modernization Act requires that the national modernization plan should evolve from the local level since the personnel whose services are crucial in the preparation and implementation of the plan are no longer under the operational control of the Department of Agriculture.

The preparation of local food security plans begins at the municipal food security council (MFSC). With the mayor as chair and the municipal agricultural officer as vice-chair, the MFSC is tasked to assemble the basic information required for the preparation of the provincial food security plan. The municipal agricultural technicians (ATs) serve as the main work force in generating data, which include the following:

- production-related
  - Provision of national funds for critical human developmentarea planted to food crops and corresponding estimate of output
  - number of livestock and poultry and corresponding estimate of output
  - area of land used as fishponds and corresponding estimate of output (including marine fish)
- consumption-related
  - population
  - estimate of food consumption based on latest per capita consumption in the area
- inventory of physical sesources
  - irrigation facilities
  - farm-to-market roads
  - postharvest facilities
  - other relevant infrastructure facilities

Based on the above data, the following information is generated:

- Food supply and demand balance including estimates of percent sufficiency level for each major food commodity.
- Proposed intervention mechanisms to address specific concerns perceived from the information provided in (1) above. Very often,

this includes raising productivity of land (for crops) through improved water management, better crop technology, farmers' training, and investments in other vital farm infrastructures. For some food commodities, expansion of area currently devoted to their production is proposed whenever this is feasible.

- Budgetary requirement for the proposed intervention. Since in most cases, the municipalities (especially the poor) do not have the financial resources to support the projects proposed, the budget prepared is, at best, an indicative budget. Except for a few projects that are sometimes funded by congressmen using their countryside development funds (CDF), sourcing of funds particularly those from national government agencies (NGA) are worked out at the provincial level.

The next step is for the municipal food security plan to be endorsed by the mayor to the provincial food security council. The council then assembles and approves the municipal food security plans.

Once approved, it is endorsed to the Sangguniang Panlalawigan to legitimize budgetary allocation for the projects proposed in the plan. Finally, the provincial food security council (headed by the governor) endorses this to the National Food Security Council headed by the President of the Philippines. At the provincial level, projects are prioritized for purposes of budgetary allocation. With serious budgetary constraints, only those considered high priority are funded by LGUs. The rest are submitted for consideration by the National Food Security Council.

The food security plan of the study areas

This section discusses the major points in the food security plans of the ten provinces included in this study. For a better appreciation of the circumstances under which the plans have been prepared, a general description of the characteristics (with particular focus on land resource, population, and food products) of each province is first discussed. It is interesting to note that the total excess production of the five major grain-producing provinces more than covers the total deficit of the other five nonmajor grain-producing provinces (as shown in Table 1).

Starting with the latest available census data, note that the major grain-producing provinces are more endowed with natural resources. Table 4 shows that of the 1.7 million hectares of agricultural lands under the jurisdiction of the 10 provinces (based on 1991 census of agriculture), 76 percent belonged to the five major grain producers. Thus, the total area for tempo-

rary (e.g., rice and corn) and perennial (e.g., coffee) crops was much larger among the major grain producers. Likewise, 76 percent of the total irrigated land was found in the major grain producers, with Nueva Ecija and Isabela having the largest share. Around 80 percent of the total area planted to rice and 94 percent planted to corn were found in the major grain-producing provinces. And, close to 60 percent of the total number of permanent crops planted were found in the major grain-producing provinces.

Commercial livestock production, however, appears to be concentrated in the nonmajor grain-producing provinces. Inventory of hogs and chicken (the two most commonly grown animals in commercial scale) is concentrated in the nonmajor grain-producing provinces, with Batangas and Laguna having the largest inventory. This information from the latest census data suggests that among the major grain-producing provinces, the mix of output produced was relatively land-based (or land-extensive) while among the nonmajor grain producers, the system of production was concentrated on land-intensive commodities like commercial hogs and poultry.

Generally, this is consistent with data taken from the food security plans of the study provinces. Table 5 presents a summary of the general characteristics of the 10 provinces in terms of land area, population, and main food commodities produced based on data from the provincial food security plans.

Population density per unit of available agricultural land is much higher among the nonmajor grain-producing provinces. On the average, the number of people supported by a hectare of agricultural land among the major grain-producing provinces is four compared to 14 among the nonmajor grain-producing provinces. It appears that the comparative advantage of the nonmajor grain-producing provinces lies not on land-extensive production systems but rather on intensive systems. These include confined livestock and poultry raising and intensive high-value crop production

Data gathered also suggest that among the nonmajor grain-producing provinces, agriculture could no longer serve as the major source of livelihood. Table 6 shows that only a very small fraction of the labor force remains to be employed in agriculture. With population growing at a relatively high rate, it is expected that, in the long run, food security objectives in the nonmajor grain-producing provinces be more focused on the demand rather than the supply side of the food security equation. Self-sufficiency in many basic food staples would not be feasible among these provinces. It is further expected that the nonmajor grain producers (especially Cavite, Laguna, and Batangas where opportunity cost of land has become relatively high due to rapid urbanization) will continue to specialize in the land-intensive production systems (e.g., livestock and poultry). They will likewise be expected to

Table 4. General characteristics of the agricultural sector, by province, based from 1991 census of agriculture

Characteristics	Major Food Producers						Nonmajor Food Producers						
	Isabela	Nueva Ecija	Camarines Sur	Oriental Mindoro	Bukidnon	Subtotal	Laguna	Pampanga	La Union	Batangas	Cavite	Subtotal	All
Area of Farm by Land Use (has.)													
All Classes	261,684	223,853	285,178	147,698	374,345	1,292,758	85,998	91,241	42,116	132,474	51,528	403,357	1,696,115
Arable Lands													
Planted to temporary crops	228,664	201,974	107,585	57,665	281,814	877,702	30,600	80,360	32,226	67,762	26,368	237,316	1,115,018
Lying idle	2,045	1,427	2,258	2,163	13,425	21,318	435	890	1,031	862	379	3,597	24,915
Planted to Permanent crops	19,368	12,441	171,554	83,686	55,937	342,986	53,037	8,330	5,536	57,691	23,383	147,977	490,963
Under permanent meadows/past.	5,933	1,991	921	2,072	17,104	28,021	143	57	842	2,582	265	3,889	31,910
Covered with forest growth	765	1,048	582	734	2,371	5,500	343	10	1,038	1,573	59	3,023	8,523
All others	4,909	4,972	2,277	1,377	3,693	17,228	1,439	1,593	1,444	2,077	1,074	7,627	24,855
Irrigated Farms (has.)	112,634	150,855	63,596	46,014	56,377	429,476	22,662	67,120	20,913	8,387	13,986	133,068	562,544
Area Planted (has.)													
Palay	228,756	289,636	145,852	79,947	70,453	814,644	37,123	84,959	31,654	32,442	21,144	207,322	1,021,966
Corn	161,381	3,266	33,199	6,011	258,918	462,775	1,205	5,658	1,848	15,668	3,131	27,510	490,285
Number of Productive Trees/Hills													
Banana	3,756,510	653,480	3,788,679	4,771,630	2,005,004	14,975,303	1,593,363	703,995	557,589	2,451,991	1,860,907	7,167,845	22,143,148
Coconut	372,129	136,651	13,338,371	3,909,503	851,891	18,608,545	4,150,319	74,845	50,928	2,915,478	665,714	7,857,284	26,465,829
Coffee	116,303	12,868	971,415	607,090	14,893,824	16,601,500	1,753,845	42,342	17,560	2,049,128	9,682,668	13,545,543	30,147,043
Mango	183,260	126,562	171,882	147,035	104,621	733,360	56,163	65,982	51,541	339,208	58,349	571,243	1,304,603
Livestock and Poultry (no. of head)													
Carabao	117,316	70,016	77,182	35,725	61,097	361,336	11,361	39,101	34,057	24,129	6,887	115,535	476,871
Cattle	52,988	37,168	36,402	33,954	77,245	237,757	14,577	4,773	22,653	92,173	29,604	163,780	401,537
Hogs	186,434	144,355	153,324	60,464	154,162	698,739	227,588	97,098	70,295	335,045	114,777	844,803	1,543,542
Goat	18,712	64,454	19,508	22,552	53,107	178,333	7,823	12,431	41,484	61,636	6,072	129,446	307,779
Chicken	1,471,586	4,302,840	1,559,342	558,536	1,225,749	9,118,053	5,843,402	5,106,701	474,893	8,981,106	1,046,466	21,452,568	30,570,621
Ducks	542,354	1,189,148	223,006	146,278	153,999	2,254,785	768,001	880,091	37,993	54,188	24,532	1,764,805	4,019,590

Table 5. Land area, population and food commodities produced, 10 provinces

Province	Land Area (ha)		Population			Main Food Commodity[1]			
	Total	Agriculture	Number	Growth (percent/year)	Density[2] (per ha)	R	C	V	L
Major Grain Producer	3,666,023 (54)	1,605,377	5,759,265	1.71	4				
Isabela	1,321,700 (29)	388,800	1,208,367	1.35	3	A	A	B	B
Nueva Ecija	550,718 (54)	300,000	1,505,827	2.7	5	A	B	A	B
Camarines Sur	526,682 (54)	285,165	1,432,598	1.87	5	A	B	B	A
Oriental Mindoro	436,545 (36)	158,335	608,616	1.91	4	A	B	B	A
Bukidnon	829,378 (57)	473,077	1,004,057	2.05	2	B	A	B	A
Nonmajor Grain Producer	1,002,637 (53)	528,846	7,585,512	3.2	14				
Laguna	175,973 (49)	86,062	1,658,977	4.51	19	A	B	B	A
Pampanga	218,068 (65)	140,925	1,684,544	2.31	12	A	B	B	A
La Union	149,309 (24)	35,354	628,827	1.72	18	A	B	B	A
Batangas	316,581	188,049	1,741,171	2.75	9	B	B	A	A
Cavite	142,706	78,456	1,871,993	4.7	24	B	B	A	A

Source of data: Provincial Food Security Plans 1999–2000

[1] R = rice, C = corn, V = vegetables, L = livestock and fish
A = major commodity, B = minor food commodity

[2] Density = population/agricultural area

emphasize development of sources of income outside agriculture. There are indications towards this direction, but as will be noted in the next section, emphasis on production of basic staples is still evident.

Objectives and approaches

The food security plans prepared by LGUs are very much in line with what has been called for in the Executive Order No. 86 issued by President Estrada on March 13, 1999. Provinces have formed their respective food security councils (see Annex C for a sample composition of a provincial council on food security). In at least one among the ten provinces, the governor and all the city and municipal mayors signed a food security covenant (Annex D) as a manifestation of their joint efforts to pursue a food security program. Furthermore, to encourage full participation by municipalities, a search for the Best Performing Municipal Food Security Council was initiated in one among the 10 provinces (Annex E).

Table 6. Total labor force and employment in agriculture, 10 provinces

Provinces	Labor Force				
	Total	Agriculture	Others	Percent agri.	Percent nonagri.
Major Food Producers					
Isabela	830,000	521,240	308,760	62.80	37.20
Nueva Ecija	888,438	426,450	461,988	48.00	52.00
Camarines Sur	707,000	396,000	311,000	56.01	43.99
Oriental Mindoro				54.00	46.00
Bukidnon	478,000	329,000	126,000	68.83	26.36
Nonmajor Food Producers					
Laguna (1989)	505,000	43,000	462,000	8.51	91.49
Pampanga	985,736	246,434	739,302	25.00	75.00
La Union					
Batangas (1997)	610,000	181,000	429,000	30.66	69.34
Cavite (1994)	428,000	74,000	354,000	17.29	82.71

Source of data: Provincial Food Security Plans

It is notable, however, that in the food security plans made available, objectives and approaches expressly state their intention to address primarily the supply side of food security. Although increased income and poverty alleviation among farm households is the most frequently mentioned objective in the food security plans (Table 7); approaches proposed were mostly those that address production-related or supply-side problems (Table 8). It is, therefore, implicit in the plans gathered that increasing food production is the major approach used to increasing farm families' incomes. Even in the search for the Best Municipal Food Security Council, the criteria used for evaluation also show some bias for rice (Annex F).

The allocation of budget among the major food commodities contained in the food security plan of each province also indicates the bias for rice. Among the major food producing provinces, more than 70 percent of their budget for food security program, have been earmarked for rice (Table 9). It is interesting to note, however, that in some of the nonmajor grain-producing provinces, a relatively smaller proportion of their total budget have been earmarked for rice. Instead of concentrating on rice, a number of them have shown plans of diversifying output by giving relatively more focus on fisheries and high-value commercial crops (e.g., vegetables, coffee). Cavite and Batangas, for example, have been known for their practice of intercropping

Table 7. Summary of objectives of food security programs, selected provinces

Objectives	Isabela	Nueva	Camarines	Oriental Ecija	Bukidnon Sur	Laguna Mindoro	Pampanga	La Union	Batangas	Cavite	Total
Poverty alleviation	X	X	X	X	X	X	X	X	X	X	10
Increase rice/corn production	X	X	X				X		X	X	6
Increase fish production	X	X	X		X	X			X	X	7
Crop diversification		X									1
Self sufficiency in rice/corn				X	X	X	X	X			5
Increase livestock/ poultry production				X		X					2
Promote/increase vegetable /high-value crop production				X		X			X	X	4
Increase coconut production				X							1
Viable agriculture industry					X						1
Self sufficiency in livestock and other crops					X			X			2
Export livestock and agricultural products					X						1

Table 8. Food security strategies by province, 2000

Strategies	Major Food Producing Provinces					Nonmajor Food Producing Provinces					Total
	Isabela	Nueva Ecija	Camarines Sur	Oriental Mindoro	Bukidnon	Laguna	Pampanga	La Union	Batangas	Cavite	
Technical assistance on appropriate technology	X	X	X	X	x	x	x	x	x	x	10
Capability building (technicians, farmers, fisherfolks	X	X	X	X	x	x	x	x	x	x	10
Information dissemination	X	X	X	X	x	x	x	x	x	x	10
Provide post harvest facilities	X	X	X	X	x	x		x	x		8
Construct/rehabilitate irrigation facilities	X	X	X	X	x	x			x	x	8
Build farm to market roads	X		X	X		x	x	x	x		7
Provide hybrid seeds/HYVs	X	X	X		x	x		x		x	7
Marketing support (market matching, price monitoring,etc.)		X		X	x	x	x			x	6
Cooperatives/group organizing	X			X	x	x	x	x			6
Access to low interest rate loans											
Proper land use/zoning		X		X	x					x	4
Provide farm inputs at low cost	x						x				2
Develop inland aquaculture				X		x					2
Accurate MIS	X								x	2	
Promote livestock breeding						x	x				2
Research					x				x	2	
Farm mechanization			X						x		2
Efficient land use				X							1
Land rehabilitation							x				1
Develop urban agriculture						x					1

Notes HYVs – high-yielding varieties
MIS – management information systemSource: Food Security Plans, various provinces.
Source Food Security Plans, various provinces

Table 9. Percentage share of budget allocation by commodity programs (Pmillion)

Provinces	Commodities							Total
	Rice	Corn	Fruits & Nuts	HVCC	Fisheries	Livestock	Others	
Major Food Producers	71.14	7.08	0.33	3.68	8.67	9.10		100
Isabela	87.14	9.94	–	–	2.93	–	–	100
Nueva Ecija	41.92	–	1.16	–	6.43	50.49	–	100
Camarines Sur	60.93	6.72	–	–	32.35	–		100
Oriental Mindoro	91.32	0.11	0.46	6.38	1.12	0.61	–	100
Bukidnon	74.41	18.16	–	6.51	0.04	0.88	–	100
Nonmajor Food Producing	39.28	3.76	0.26	31.76	14.77	9.39	0.77	100
Laguna	40.78	–		44.98	4.34	7.99	1.92	100
Pampanga	53.33	12.18	4.92	4.78	7.05	17.74	–	100
La Union	63.01	–	–	8.65	9.05	19.30	–	100
Batangas	15.45	8.04	0.32	52.40	22.54	–	1.25	100
Cavite	32.84	–	–	6.05	58.82	2.29	–	100

Notes:
1. Nueva Ejica - 1999 data
2. Nueva Ecija, fruits and nuts includes mango only
3. Laguna, high-value commercial crops includes vegetables, root crops, and black pepper
4. Laguna, others means urban agriculture
5. Batangas, others includes cutflowers, coffee, and coconut based products

and multistorey cropping of perennial and annual high-value crops. Laguna, another rapidly urbanizing province, has indicated in its plan to pursue urban agriculture. This observation is generally consistent with our concept of allocating resources more efficiently. For, as could be seen in Table 10, the profitability of rice in the nonmajor grain-producing provinces is very low relative to the opportunity cost of land.

Budget sources

Funds for specific activities in the food security plan of LGUs normally come from both internal and external sources. Those coming from internal sources are tax collections (e.g., real property tax, business tax, and licenses) and revenues from miscellaneous and capital investments. Sources of external funds, on the other hand, are from internal revenue allotment (IRA) shares and project-specific funds made available by the Department of Agriculture.

Table 10. Comparison of farm income and opportunity cost of land, per hectare, 10 sample provinces

Province	Market Value of Land P/Hectare	Opportunity Cost of Land*		Annual Net Income from Production Per Hectare**
		Time Deposit 11percent /annum	Lending Rate 22percent /annum	
Major Food Producers				
Isabela	500,000	55,000	110,000	
Palay				34,786
Corn				26,868
Nueva Ecija (Palay)	3,000,000	330,000	660,000	22,642
Camarines Sur (Palay)	1,000,000	110,000	220,000	21,484
Oriental Mindoro (Palay)	2,000,000	220,000	440,000	22,228
Bukidnon (Corn)	2,000,000	220,000	440,000	20,650
Nonmajor Food Producers				
Laguna (Palay)	10,000,000	1,100,000	2,200,000	22,228
Pampanga (Palay)	1,000,000	110,000	220,000	22,642
La Union (Palay)	2,000,000	220,000	440,000	29,100
Batangas (Palay)	7,500,000	825,000	1,650,000	22,228
Cavite (Palay)	7,500,000	825,000	1,650,000	22,228

Notes: * Based on interest earnings if land market value were deposited in the bank.
** Based on regional cost and return estimates of Bureau of Agricultural Statistics, irrigated rice.
Net returns above cash and noncash costs, imputed cost (depreciation, rental value of owned land, etc.) are not included, and on two-cropping seasons.

Internal Revenue Allotment

The IRA share of LGUs represents a relatively large proportion of their annual budgetary allocation but, as mandated by law, only 20 percent of their IRA share could be earmarked for development-oriented projects. In Oriental Mindoro, for example, P272 million (or 86 percent) of the P314 million budget of the provincial government in 1999 came from its IRA share. However, the province could only allocate P54 million of this to its economic development fund (EDF). Of this amount, P5.1 million (or roughly 10 percent of the provincial EDF) was allocated to its food security program. The rest was allocated to social services (e.g., health and nutrition) and other economic development projects (e.g., livelihood, infrastructure) and other special programs (e.g., feasibility studies and consultancy services).

The same is true for each of the constituent municipalities—each has their respective IRAs and corresponding EDF. For illustration purposes, the 14 municipalities and one city in Mindoro had a total IRA share of P505 million in 1999 and a corresponding EDF allocation of P101 million (Table 11). This data emphasizes a constraint faced specially by relatively poor agriculture-oriented municipalities, a problem already posed by this writer in an

Table 11. Land area, rice production and IRA share by municipality, province of Mindoro, 1999

Municipality/City	Land Area (hectares)	Rice Production		Internal Revenue Allotment	
		Area harvested (hectares)	Output (mt)	Share (pesos)	(IRA/total land area)
Baco	24,170	4,245.50	12,923.10	19,493,241	807
Bansud	26,000	4,249.50	17,565.67	24,080,574	926
Bongabong	49,820	4,914.00	16,742.68	36,338,392	729
Bulalacao	30,512	1,512.00	5,502.80	20,645,855	677
Calapan City	26,520	15,512.00	60,507.76	160,326,214	6,045
Gloria	23,080	4,166.00	15,431.81	23,123,357	1,002
Mansalay	51,310	5,021.00	19,050.30	27,374,749	534
Naujan	52,800	27,562.00	110,546.01	42,489,110	805
Pinamalayan	27,730	6,043.50	29,143.86	33,387,181	1,204
Pola	13,020	1,228.00	4,954.50	18,693,468	1,436
Puerto Galera	22,350	-	-	17,715,717	793
Roxas	8,710	2,858.00	11,477.55	18,839,593	2,163
San Teodoro	36,910	636.00	1,901.13	18,127,924	491
Socorro	14,940	4,220.00	19,497.16	20,254,721	1,356
Victoria	28,600	7,503.00	29,995.38	24,218,896	847
Total	436,472	89,670.50	355,239.71	505,108,992	1,157

Source: PPDO Mindoro 1999

earlier paper (Cabanilla 1996). Note, for example, that the town of Naujan, with a land area roughly twice that of Calapan, had an IRA share that is only roughly a third of the latter's. The last column of Table 11 shows, in fact, that in all of the municipalities of Mindoro, Calapan had the biggest IRA share per unit of land area. Considering that Calapan is a much more progressive city, the current allocation system will likely perpetuate the gap in economic opportunities between relatively poor and rich municipalities.

While the IRA share is an important source of fund for development projects of LGUs, the current allocation system is systematically biased against the relatively poor agriculture-oriented localities even if they are important food producers as illustrated by the case of Calapan and Naujan. Note that, in this case, Naujan produces twice the rice output of Calapan.

Department of Agriculture

Local government units (LGUs) could access funds from the Department of Agriculture through existing national programs. Irrigation investments, for example, need approval by the National Irrigation Administration but the budget for specific crop production will have to come from DA's programs (e.g., *Gintong Ani* during the Ramos administration and Agrikulturang Makamasa during the Estrada administration). Among these are:

- "Plant-now-pay-later" for rice (a credit program coursed through NFA for the purchase of certified seeds)
- Credit program for high-value crops (e.g., mango, durian, vegetables, etc.)
- Shallow tubewell for rice (a credit program for the acquisition of shallow tubewell pumps payable in five years)
- Postharvest facilities
- Farm-to-market roads (program coursed through the Department of Public Works and Highways, the agency that undertakes construction)
- Livestock dispersal

In addition to the above source of funds for specific projects, the DA also provides incentive allowances to agricultural technicians to ensure that national priority programs are well implemented at the local level. Quite obviously, the amount available for these programs and the ease by which they are accessed exert a strong influence in the food security plans of LGUs. As pointed out by David (2000), bulk of the annual budget of the Department of Agriculture is allocated to rice. Thus, it is not surprising to note that LGUs continue to put high emphasis on rice in their food security plans.

Other sources

In some instances, funds are made available from the countryside development fund of congressmen. However, quite often, the donating congressman exerts some influence on the utilization of such funds. Others have their own additional source of budget regularly. A good example of the latter is La Union, a regular recipient of funds provided for by RA 7171 (otherwise known as the Tobacco Excise Tax). This is a case that needs to be discussed briefly because, aside from the nationwide attention it elicited during the impeachment trial against former President Estrada, it is also a significant source of funds for agricultural development.

Data made available show that from 1994 to 1999, the province of La Union got a total allocation of P690 million pesos which was allocated to specific development activities like cooperatives development; livelihood development; agri-industrial development; and infrastructure projects. It is interesting to note, however, that out of the total allocation, only P261 million was actually released by the national government to the province (Table 12). Note that this is one of the problems faced by LGUs in appropriating funds that legally belong to them. Funds, which could be allocated for developmental purposes, but could not be effectively put to use because these are not released by the national government for no apparent reason.

This discussion closes on sources of budget with a note that the biggest contribution of LGUs (particularly at the municipal level) to the food security budget comes in the form of salary of personnel directly in charge with the food security plan, both in the preparation and implementation stages. Estimates provided by municipal agricultural officers (MAO) interviewed indicate that this amount represents roughly 90 percent of their budget for agriculture. Since the salary of these employees are paid out of the IRA share

Table 12. Allocation and releases of RA 7171 funds (in pesos) to La Union province, 1994–1999

Year	Allocation	Releases	Balance
1994	119,910,690	36,924,000	82,986,690
1995	100,119,553	45,291,690	54,827,863
1996	107,357,311	54,333,461	53,023,850
1997	131,081,446	13,597,245	117,484,201
1998	107,691,290	61,783,000	45,908,290
1999	123,570,110	49,428,000	74,142,110
1994–1999	689,730,400	261,357,396	

Source: PPDO, La Union

of the municipalities where they are assigned, complaints of low compensation are common especially in poor municipalities. There is a perceived big gap between the compensation package of agricultural technicians devolved to poor municipalities, on the one hand, and those in progressive municipalities and those retained in national government agencies, on the other. Even opportunities for career advancement (e.g., training) are claimed to have thinned out for the devolved personnel in the poor municipalities, thus, jeopardizing future extension programs.

OTHER LGU CONCERNS RELATED TO FOOD SECURITY

The foregoing section underscored the fact that provincial food security plans examined in this study addressed primarily the supply side of the food security equation. It is important to note, however, that LGUs are empowered by law to address the minimum basic needs of their constituents, an effort that addresses the demand side of the food security equation. Thus, this section briefly discusses other LGU concerns related to the demand side of food security, most of them contained in the Philippine Social Reform Agenda (SRA).

The country's Social Reform Agenda as embodied in RA 8425 of 1997 spell-out the role of LGUs in addressing the three sets of minimum basic needs of the citizenry. These are:

- survival needs (food and nutrition, health, water and sanitation, clothing);
- security needs (shelter, peace and order, public safety, income and livelihood); and
- enabling needs (basic education and literacy, participation in community development, family, and psychosocial care)

As outlined in the second section of this chapter, these needs are viewed as those that address, generally, the access/demand side of the food security equation. In Sen's view, this defines the extent of LGU's role in influencing household's entitlements. It is in this light that it is useful to briefly discuss in this section the current efforts undertaken by LGUs in this aspect.

In essence, the spirit of RA 8425 is to make local governments the convergence point for national programs related to social reform and poverty alleviation. Based on available documents, the following are noteworthy:[1]

[1] For details, the reader is referred to "Major Policy Directives in the Implementation of the Social Reform Agenda," a publication of the Office of the President's Social Reform Council Secretariat.

- The SRA covers nine flagship programs with corresponding package of commitments, to wit;
  - agricultural development for the farmers and landless rural workers in the lowland and upland ecosystems
  - fisheries and aquatic resources conservation, management and development for the fisherfolk in the coastal ecosystem
  - socialized housing for the urban poor in the urban ecosystem
  - workers welfare and protection for workers especially in the informal sector across ecosystems
  - comprehensive and integrated delivery of social services for women, disadvantaged children, youth and students, elderly, persons with disabilities and disaster victims across ecosystems
  - expansion of credit for all sectors across ecosystems
  - livelihood for all sectors across ecosystems
  - institution-building and effective participation in governance.
- Each flagship program at the national level is led by an agency referred to as Flagship Champion (e.g., DA for agricultural development and DOLE for workers welfare and protection).
- At the local level, counterpart teams are organized to pursue each flagship program. In Mindoro Oriental, for example, clusters of teams are organized whose membership comes from agencies whose areas of interest fall within the flagship program represented by the cluster. To illustrate, the Mindoro Agriculture Cluster, in charge with agricultural development, is made up of the following member agencies:
  - Office of the Provincial Agriculturist (lead convenor)
  - Office of the Provincial Veterinarian
  - Bureau of Agricultural Statistics
  - National Food Authority
  - Philippine Coconut Authority
  - Fiber Development Authority
  - National Seed Quality Control Services
  - Agricultural Training Institute
  - Agricultural Development Center
  - Oriental Mindoro Agricultural Experiment Station
  - Southern Tagalog Integrated Agricultural Research Center
  - Department of Science and Technology
- An effective delivery mechanism for the minimum basic needs approach is outlined in Executive Order No. 443 (Sept. 24, 1997)

which provides for the adoption of a Comprehensive and Integrated Delivery of Social Services (CIDSS). For this purpose, a Provincial Inter-Agency Committee (PIAC) composed of the following members is created:

- Provincial Social Welfare and Development Officer
- Provincial Health Officer; DOH Representative
- DECS Superintendent
- Provincial Local Government Operations Officer
- Provincial Environment and Natural Resources Office
- DTI Representative
- Provincial Planning and Development Coordinator
- Basic Sector Provincial Representatives
- DOLE Provincial Representative
- Provincial Agriculture Officer.

✦ In an effort to monitor the antipoverty alleviation program, some provinces have organized committees for this purpose. In Oriental Mindoro, a provincial coordinating and monitoring committee of the *Lingap Para Sa Mahirap* (the province's antipoverty alleviation program) was formed with membership coming from the following agencies:

- Provincial Planning and Development Office (Chair)
- Provincial Social Welfare and Development Office (Vice-Chair)
- Department of Social Welfare and Development
- Provincial Health Office
- Department of Health
- National Food Authority
- Cooperatives Development Authority
- Provincial Agriculture Office
- Department of Interior and Local Government

It is clear, therefore, that the food security plans examined in this study primarily addressed the supply side of food security. Local governments, nonetheless, exercise a very crucial role in addressing the demand side. The poverty alleviation program that they are mandated to undertake is a comprehensive approach dwelling primarily on the three sets of minimum basic needs namely: survival needs, security needs, and enabling needs. This involves a collective effort among government and nongovernment agencies and private institutions, where the capability of LGUs to harness the participation from these sectors is crucial. Apparently, it is in this area and in the

preparation of comprehensive plans where majority of the LGUs need assistance. Inhouse capability to prepare good quality plans is severely lacking in many LGUs. The capability of local government executives in harnessing efforts of various agencies in pursuing a common goal is equally crucial in this regard.

Communitywide participation is equally crucial and LGUs must learn to harness the human resources available within their respective areas of jurisdiction. For in the long term, it is the participation of citizens that ensures relevance and, success of plans developed at the local level. In developed countries, like the United States (where this writer has the opportunity to observe), citizens' participation in the local planning process is predominant. Continuous involvement of educational institutions (e.g., Purdue University in the State of Indiana) in assisting (e.g., training in leadership and local planning) LGUs is also apparent.[2]

CONCLUSION

As enunciated in Section II above, this paper has adopted the view that food security is not self-sufficiency in rice and corn. Contrary to official policy pronouncements, income generation, either on farm or nonfarm, is what matters more than purely food production which largely addresses the supply side of food security. Because of the inherent characteristics of cereal foods (such as rice and corn), programs that expand supply oftentimes decrease rather than increase farmers' incomes unless the state is willing and financially able to support farm income. As Francesca Bray (1986) argued convincingly, "despite its potential for responding positively to increases in labour inputs, the intensification of rice monoculture is a far less efficacious way of absorbing labour and generating extra income than is economic diversification."

In a highly globalized world economy, food trade is an efficient recourse to addressing the supply side of food security, giving small countries the opportunity to fully exploit their comparative advantage. Thus, it is not surprising that a number of countries that used to export corn (like Thailand) have become corn importers, enabling them to export livestock instead. The role of LGUs in this regard lies in their familiarity with what is best in their respective localities.

Food security has been portrayed in policy pronouncements as a national concern but, clearly, local government units play an important role in

[2] The author is currently documenting this process at Purdue University.

both planning and implementation aspects. They are the main sources of basic data used in formulating the national food security plan. Having a direct link with producers and consumers, they likewise serve as the front-line implementers of the plan. The paper submits, however, that the maintenance of national buffer stock of food should remain with the national government.

This chapter reviews the food security plans prepared by local government units represented by 10 provinces—five of them being major grain producers and five nonmajor grain producers. This categorization is made in an effort to determine if there is any discernible difference in their plans and programs. As noted, this distinction is reflected primarily in the budgetary allocation made by the local government units. The rapidly urbanizing, nonmajor grain-producing provinces had more diversified production plans compared to the major grain-producing provinces, although rice is still relatively important.

The significance of this review is underscored by the need to search for institutional mechanisms that will ultimately redound to higher agricultural efficiency as a response to the increasingly competitive trading environment. For, as mandated by two landmark statutes enacted in the 1990s, LGUs play a prominent role in the pursuit of national development goals. Findings in this review could be a useful guide in future revisions in these laws as well as in the implementation procedures of specific programs related to these laws.

The role of LGUs is best appreciated if one considers the fact that the personnel who provide the link between national planners and the farmers are now under the operational control of the LGUs. The agricultural technicians generate the data used for planning and extend useful technologies to farming households. Successful implementation of the national plan, therefore, rests heavily on the way the responsibilities of these personnel are carried out at the local level. This, in turn, depends on skills acquired through continuous training and the incentives provided them in the course of the performance of their responsibilities.

Planning has now become part of local governments' milieu and this review is an occasion to better understand the nature of their involvement in the development process with particular focus on food security. With meager resources, intervention of government at all tiers must be consistent with the principles of efficiency, equity, and sustainability. For even with the best of intentions, governments often lose sight of the important role that the market plays in the development process. At the local government level, the blurred view of, and the necessary ingredients for achieving development, is worsened by the institutional rigidities that evolved through time.

One possible source of these rigidities is the noncongruence of the mandate of national government agencies and the goals of LGUs. Oftentimes, national government agencies pursue goals that satisfy broad national sociopolitical objectives (such as self-sufficiency in rice and corn) that are not necessarily consistent with the goals of LGUs. This, inevitably, results in a bureaucratic set-up that, in a way, compels LGUs to "toe-the-line." In their attempt to access national budget for food security, local government units prepare plans that resemble national biases for specific commodities. Thus, plans and programs implemented at the local level may not be fully consistent with the demands of the community.

By way of highlighting this, the following points are noted:

- *Bias for rice and corn.* On the supply side, the inherent bias for rice and corn gleaned from the food security plans of the provinces (including the rapidly urbanizing, nonmajor grain producers) is due to the national policy of achieving self-sufficiency in rice and corn. The national budget for rice and corn has traditionally occupied the largest proportion of the total budget for the Department of Agriculture. It is, thus, quite natural for LGUs to prepare plans that will enable them to access this budget even if economic doctrine suggests a different focus of plans. It is in this manner that national fiscal policies affect the performance of local government units in pursing their individual food security objectives.
- *Mismatch in available and needed expertise.* The agricultural technicians devolved to LGUs possess skills acquired prior to devolution and these were geared towards pursuing national development goals. Under the current set-up, these acquired skills oftentimes do not match with those required to pursue local government goals. As pointed out elsewhere (Cabanilla 1996), rice experts ended up working in municipalities whose rice areas are disappearing and livestock experts are assigned in rice-producing towns. Retooling of these technicians to match expertise with local needs is constrained by the lack of financial resources, especially among the relatively poor municipalities.
- *Budgetary problems.* The travails of LGUs related to financial constraints are magnified by the allocation procedure of the internal revenue allotment that appears to be biased against the agriculture-oriented municipalities. Evidence also tends to show that even funds (e.g., tobacco excise tax shares) that are legally due them are difficult to access.

- *Local politics.* Political exigencies oftentimes create an environment where municipal governments do not get sufficient support from the provincial government. This is highly possible in view of the discretionary powers exercised by the provincial food security council, chaired by the governor, in allocating economic development funds and other funds that may be made available through the office of the governor. Thus, in many instances, food security programs at the municipal level do not get funded sufficiently, especially if the mayor belongs to a political party different from that of the governor.

The above points stop short of saying that LGUs must be given greater flexibility in pursuing their food security programs independently but it is hoped that the message is clear. They must be able to pursue programs that are most comparatively advantageous to their economic environment. However, this is not feasible unless they are provided with budgetary resources commensurate to their responsibilities. The long-term solution to this rests in their capability to use the fiscal powers granted to them by RA 7160 but human resource constraints do not allow this at the current time. In the short term, the formula for allocating the IRA must be revised to better accommodate the needs of poor, agricultural-oriented municipalities. Similarly, since extension functions have been devolved to LGUs, determination of programs, and, as local government executives have been clamoring for quite sometime, the corresponding budget should be devolved as well.

Data limitations prevented the clear establishment of whether or not LGUs have effected through their plans an optimal mix of output to be produced, but any serious deviation from what is optimal may be explained by their inability to command sufficient financial resources to support intended programs. This underscores the need to grant LGUs greater fiscal autonomy and better enabling mechanisms to improve their resource generation capability. As commonly pointed out, the fiscal support granted to LGUs is not commensurate to the national government functions devolved to them. The stock of human capital available is also not sufficient to address the burgeoning concerns of LGUs.

Because of financial constraints, opportunities for developing human resources are highly diminished, particularly for agricultural technicians and planning officers. In the case of agricultural technicians, this diminished opportunities for training ultimately leads to poor delivery of extension services and lower agricultural productivity. In the case of planning

officers, their inability to avail of training opportunities renders the plans prepared of questionable quality. Since it is these tenured officers who provide the link between and among political leaders in times of transition (such as after elections) especially on matters pertaining to development programs, it is important that a new cadre of well-trained and confident personnel be developed in local government units. Of particular concern here are experts in land-use planning. Local government units are required to prepare a comprehensive land use plan but because of the absence of capable personnel, very few (if any) make use of state-of-the-art methodology in this exercise.

Of equal concern are people capable of effectively organizing concerted efforts in delivering social services. This is important in carrying out the role of LGUs in addressing the demand side of food security. Interviews with provincial government executives indicate that LGUs have organized interagency committees (IAC) tasked to deliver social services, thus, providing households' minimum basic needs. Poverty alleviation is also one of the major concerns of LGUs. While there are laws that mandate local governments as convergence points for all programs related to poverty alleviation, success in this area largely depends on local governments' internal capability to organize and implement these programs. For lack of time and resources, this study has not provided this theme the depth and breadth it deserves. Focus of analysis was the food security plans of LGUs, which were directed primarily in addressing the supply side of food security. It is hoped, however, that through this report, new windows for research in this area have been opened.

In addition to the general policy implications gleaned from the above, this study proposes the following specific recommendations:

- Greater enabling mechanisms must be extended by the national government to LGUs in addressing their respective development needs. This includes, but not limited to, the following:
  - Provision of national funds for critical human development at the local level. Despite the IRA funds, many poor municipalities do not have sufficient revenues to support training needs of agricultural extension workers, and planning officers whose role is crucial in the wake of the increasing competition for the use of limited land resources.
  - Assistance in looking for investors (both foreign and local) that may be able to provide start-up capital in developing economic activities that are inherently advantageous to the locality.

- Foster stronger partnership between academic institutions and local government units in broad as well as specific areas of cooperation. Cursory evidence suggests that where this partnership is strong, local development is relatively successful. In the United Stares, rural development efforts are anchored on a long-standing relationship between state universities and LGUs.[3] Collaboration could revolve around the following areas:
  - Land-use/economic development planning
  - Community organizing
  - Technology generation/adaptive research
  - Technology transfer
  - Training programs relevant to locality

[3] A report on this by the author is forthcoming.

ANNEX A
FOOD SECURITY COVENANT '99
GOVERNORS' WORKSHOP ON FOOD SECURITY
January 10-12, 1999, Holiday Inn Clark Field Pampanga

RECOGNIZING the vision of his Excellency, President Joseph Ejercito Estrada of attaining sustainable food security and alleviating the poverty of farmers and fisherfolks within a safe, healthy and environment-friendly policy framework, the League of Provinces of the Philippines (LPP), in coordination with the Department of the Interior and Local Government (DILG) and the Department of Agriculture (DA), convened a Governors' Workshop on Food Security in order to formulate the requisite plans, policy reforms, and implementing strategies to achieve the President's vision.

REALIZING the urgency and the priority considerations for attaining the goals and objectives of a food security program, the Governors' Workshop on Food Security, developed a program of action on food security that is specific, measurable, attainable, realizable and timebound.

COGNIZANT of its roles and responsibilities in achieving the national targets necessary to achieve food security for the nation, specially for the poor, the participants to the Workshop hereby commit and pledge by undertaking a solemn covenant on the following:

1. To achieve self-sufficiency in food production, particularly in rice by the year 2002, corn by the year 2003, and fish by the year 2004, and thereafter, to have a sustainable food surplus and in the process, ensure the upliftment of the standard of living of our farmers and fisherfolks by increasing their income above and beyond the poverty threshold.
2. Based on the national production targets to achieve self-sufficiency, and eventually surplus, each province hereby commits to perform and undertake its respective performance quota and targets, and submit its provincial action plan within thirty (30) days from the signing of this Covenant.
3. In performing their role as principal stewards of the Agriculture and Fisheries Moderrnization Programs within their respective jurisdiction, the Governors hereby agree to provide in their annual local development plans specific budgetary appropriation to support and implement the Food Security Program in their respective jurisdiction; assign administrative and field personnel with full-time responsibility for the Food Security Program; and to organize an agricultural engineering unit to complement the extension services.
4. In line with the principle that responsibility must be coupled with corresponding authority and accountability, the National Government, through the DILG, DA, DAR, DTI, DOST, CHED, and other concerned agencies, shall promote policies, programs and projects to enhance local autonomy in the implementation of the Food Security Program. Accordingly, funds for projects necessary to implement the Food Security Program shall be devolved tto the local government units subject to the criteria and guidelines to be agreed upon

between the concerned National Government Agencies and the League of Provinces (LPP), the latter being the integrating and coordinating entity for all the provinces throughout the country.

5. To ensure close coordination, monitoring and evaluation of all the projects lined up for the Food Security Program, the participants to this Workshop hereby strongly recommend and endorse to His Excellency, President Joseph Ejercito Estrada the signing of an Executive Order creating the national and Provincial Food Security Councils tasked to oversee the attainment of the vision, mission, goals, objectives and targets set forth under the Food Security Program. The Municipal and Component City levels' participation shall be integrated as part of the provincial councils. Whenever a highlyurbanized City has a meaningful food production program, a separate Food Security Council shall also be organized for such a city.
6. As a result of this Workshop, certain key concerns were raised to ensure the efficient implementation of Food Security Program. A menu of such concerns shall be submitted for consideration of the National Food Security Council (NFSC) FOR ENDORSEMENT TO THE President within five (5) days from date hereof. It is highly recommended that the NFSC be convened within fifteen (15) days from date hereof and that the policy implications of such concerns be resolved within the next forty-five (45) days after the signing of this Covenant.

WE, THE INSTITUTIONAL PARTICIPANTS AND STAKEHOLDERS OF THIS GOVERNORS' WORKSHOP ON FOOD SECURITY, HEREBY ADOPT THIS COVENANT AND THROUGH OUR AUTHORIZED OFFICERS, AFFIX OUR RESPECTIVE SIGNATURE TO THIS **FOOD SECURITY COVENANT '99** IN THE PRESENCE OF HIS EXCELLENCY, PRESIDENT JOSEPH EJERCITO ESTRADA THIS 12TH DAY OF JANUARY 1999 AT THE CEREMONIAL HALL, MALACANANG PALACE.

Signed: GOV. JOSE D. LINA, JR.
National President, League of Provinces of the Philippines
And President, Union of Local Authorities of the Philippines

Signed: RONALDO V. PUNO
Undersecretary, Department of the Interior and Local Government

Signed: WILLIAM D. DAR
Secretary, Department of Agriculture

Signed: HORACIO MORALES, JR.
Secretary, Department of Agrarian Reform

Signed: JOSE T. PARDO
Secretary, Department of Trade and Industry

ANNEX B
MALACANANG PALACE
Manila
BY THE PRESIDENT OF THE REPUBLIC OF THE PHILIPPINES
EXECUTIVE ORDER NO. 86

PROVIDING FOR THE CREATION OF THE NATIONAL FOOD SECURITY COUNCIL, COUNCILS ON FOOD SECURITY FOR THE PROVINCES, INDEPENDENT COMPONENT CITIES AND HIGHLY URBANIZED CITIES, NATIONAL SECRETARIAT ON FOOD SECURITY AND FOR OTHER PURPOSES

WHEREAS, Article II, Section 9 of the 1987 Constitution provides that the State shall promote a just and dynamic social order that will ensure the prosperity and independence of the nation and free the people from poverty through policies that provide adequate social services, promote ful employment, a rising standrd of living, and an improved quality of life for all;

WHEREAS, Section II of Republic Act No. 8435, otherwise known as the Agriculture and Fisheries Modernization Act of 1997, declares that the State shall enable those who belong to the agriculture and fisheries sectors to participate and share in the fruits of development and growth, and that the State shall ensure the availability, adequacy, accessibility and affordability of food supplies to all at all times;

WHEREAS, by virtue of Republic Act No. 7160, othersixe known as the Local Government Code of 1991, the local government units (LGUs) agree to perform their roles and responsibilities, in coordination with all National Government Agencies (NGAs) concerned and the private sector, as the principal stewards of the Agriculture and Fisheries Modernization Programs within their respective jurisdiction to achieving the national targets necessary to attain food security for the country especially for the poor;

WHEREAS, in the pursuit of the mandates provided by the Constitution and existing laws, the national and local governments have committed to ensure the attainment of sustainable food security and the alleviation of poverty and the shaping of a safe, healthy and environmentally sound society;

WHEREAS, a Food Security Covenant '99 has been adopted unanimously by the participants to the Governors' Workshop on Food Security held from January 10-12, 1999 recommending to the President the creation of a government body that will address selfsufficiency in food production, ensure the improvement of the standard of living of farmers and fisherfolk beyond the poverty threshold, identify adequate funds in support of the Food Security Program, and promote coordination among HGAs, LGUs and the private sector;

NOW, THEREFORE, I, JOSEPH EJERCITO ESTRADA, President of the Republic of the Philippines, by virtue of the powers vested in me by the Constitution and the laws, do hereby order:

Sec. 1. ***Organization of the National Council on Food Security***. The National Council on Food Security, herein referred to as NCFS, is hereby constituted to act as the

overall coordinating body in the formulation of policy guidelines and master plans and programs, as well as in the implementation of projects that ensure the attainment of the national vision, mission, goals, objectives and targets of a workable and sustainable Food Security Program.

Sec. 2. ***Composition of the NCFS*** The NCFS shall be composed of the following:

(a) President of the Republic of the Philippines - Chairman
(b) Secretary of Agriculture - Vice-Chairman
(c) Secretary of Interior and Local Government - Vice-Chairman
(d) President, League of Provinces of the Philippines - Vice-Chairman
(e) Secretary of Agrarian Reform - Member
(f) Secretary of Trade and Industry - Member
(g) Secretary of Budget and Management - Member
(h) Secretary of Science and Technology - Member
(i) Secretary of Health - Member
(j) Secretary of Environment and Natural Resources - Member
(k) Secretary of Public Works and Highways - Member
(l) Chairman of the Commission on Higher Education - Member
(m) Chairman of National Irrigation Administration - Member
(n) Administrator, National Food Authority - Member
(o) Administrator, Cooperative Development Authority - Member
(p) Lead Convenor of National Anti-Poverty Commission - Member
(q) Governor, Authonomous Region in Muslim Mindanao - Member
(r) President, Lequfe of Municipalities of the Philippines - Member
(s) President, League of Cities of the Philippines - Member
(t) President, National Liga ng mga Barangay - Member
(u) Two (2) Representatives, Farmers Sector - Member
(v) Two (2) Representatives, Fisheries Sector - Member
(w) Two (2) Representatives, Business Sector - Member
(x) Two (2) Representatives, Consumer Sector - Member

The Chairman of the Senate and House Committees on Agricultue shall be invited as Ex-Officio Members of the NCFS. The Chairman of the NCFS may designate other additional members as he may deem necessary. The President of the Philippines shall appoint the sectoral representatives upon the joint recommendation of the Secretary of Agriculture, Secretary of Interior and Local Government, Secretary of Trade and Industry, and the President of the League of Provinces of the Philippines.

Sec. 3. ***Duties and Functions of the NCFS***. The NCFS shall perform the following functions:

(a) To review all existing policies, plans, programs and projects of the government regarding food security;
(b) To formulate and recommend national policies, plans, and programs on food security, particularly in the agriculture and fisheries sectors;

(c) To design and adopt a comprehensive National Food Security Plan and Program in consonance with the medium and long-term Agriculture and Fisheries Modernization Plan as provided for in Republic Act No. 8435, after consultations with concerned NGAs, LGUs, nongovernment organizations and local agriculture and fishery councils;
(d) To generate and mobilize resources from domestic and foreign sources for the implementation of the National Food Security Program as well as rationalize the use and equitable distribution of such resources to LGUs;
(e) To formulate the guidelines for the development and implementation of City/Provincial Food Security Action Plans in accordance with the National Food Security Program;
(f) To design and implement a reward system and the appropriate mechanism specifically granting, on an annual basis, the incentive(s) for provinces adjudged as excellent or outstanding implementers of their respective Food Security Action Plan;
(g) To ensure the conduct of regular monitoring, evaluation, and validation of the Programs; and
(h) To call on any government agency or instrumentality as it may deem necessary in the exercise of its functions.

Sec. 4. ***Organization of the Provincial/City Council on Food Security.*** The NCFS shall coordinate the organization in every province/ICC/HUC of a council on Food Security herein referred to as Provincial/City CFS, to ensure the attainment of the vision, mission, goals, objectives, and targets of a workable and sustainable Food Security Action Plan.

Sec. 5. ***Composition of theProvincial/City CFS.*** The Provincial/City CFS shall be composed of the following:
(a) Governor/City Major - Chairman
(b) Provincial/City Agriculturist - Vice-Chairman
(c) Provincial/City Director, DILG - Secreatriat Head
(d) Provincial/City Agrarian Reform Officer, DAR - Member
(e) Provincial/City Manager, NFA - Member
(f) Provincial/City Director, DTI - Member
(g) Provincial/City Director, DOST - Member
(h) Provincial/City Environemnt and Natural Resources Officer Member
(i) Provincial/City Officer, CDA - Member
(j) Provincial/City Manager, PCA - Member
(k) President League of Cities (Provincial Chapter) - Member
(l) President, League of Municipalities (Provincial Chapter) Member
(m) President, Liga ng mga Baranggay (Provincial/City Chapter) Member
(n) Representative, State Colleges and Universities - Member
(o) Representative, Farmers Sector - Member
(p) Representative, Fisheries Sector - Member

(q) Representative, Business Sector - Member
(r) Representative, Consumer Sector - Member

The representatives of the sectors concerned shall be appointed by the Provincial Governor/City Mayor upon the endorsement of the DILG and DA.

Sec. 6. ***Duties and Functions of the Provincial/City CFS.*** The Provincial/City CFS shall perform the following functions:

(a) To oversee the successful implementation of the Provincial/City Food Security Action Plan, in close coordination with concerned NGAs or their respective field offices, component LGUs, and NGOs/POs and private and business sector within their jurisdiction,
(b) To review, formulate, and recommend to the NCFS nationally significant and locally relevant food security policies pursuant to the goals and objectives of the National Food Security Program;
(c) To assist the Local Price Coordinating Council in the monitoring of prices of major food commodities such as rice, corn, fish, vegetables, and other food items, and in finding ways for regulating the prices of prime commodities in the locality within its jurisdiction;
(d) To facilitate access to production and marketing resources and opportunities for the food industry sector through the initiation of agreements with government and private financing institutions,
(e) To ensure the availability and access to production inputs, post-harvest facilities, markets for the local produce, appropriate technology, and technical assistance to farmers and fisherfolk,
(f) To ensure the availability of adequate and affordable food supply in the market by promoting inter-LGU coordination, market linkages and trading of basic commodities,
(g) To monitor and evaluate the implementation of the Provincial/City Food Security Action Plan on a semi-annual basis,
(h) To prepare and submit semi-annual reports of Program implementation to the NCFS through the National Secretariat, and
(i) To perform other functions deemed necessary for the successful implementation of the Food Security Program at the local level.

Sec. 7. ***Provincial/City Food Security Action Plan.*** In accordance with the guidelines promulgated by the NCFS, every province/ICC/JUC, through the Office of the Provincial Governor/City Mayor must develop and implement a Provincial/City Food Security Action Plan which incorporates the respective food security action plan inputs of the component cities and/or LGUs within its jurisdiction taking into account the actual needs and available resources of the province/city in relation to food security and related programs and projects of JGAs concerned in their respective areas.

All Provincial/City Food Security Action Plans shall be submitted to the NCFS through the National Secretariat on the date prescribed by the NCFS.

Sec. 8. ***Funding and Administrative Suport for the Food SecurityPrograms of the Province/City***. All Governors/City Mayors through their respective Sangguniang Panlalawigan/Panlunsod, shall provide specific budgetary appropriation under the local development plan of the province/city, for their Provincial/City Food Security Action Plan, including the setting up an agricultural engineering unit to complement the extension services for the purpose.

As a counterpart support from the National Government, the Department of Agriculture and all concerned NGAs shall allocate funds intended for the Food Security Program in accordance with the criteria and guidelines to be formulated by the NCFS.

Sec. 9. ***Organization of the National Secretariat on Food Security***. The National Secretariat on Food Security, herein referred to as National Secretariat, is hereby organized to coordinate and implement such policies, implementing rules and regulations, as may be promulgated by the NCFS and its constituent Provincial/City CFS. The National Secretariat shall likewise perform the following functions:

(a) To provide administrative support and technical assistance to the NCFS and the Provincial/City CFS, in collaboration with the Department of Agriculture and other NGAs concerned;
(b) To coordinate with all the agencies and organizations/sectors involved in the design of the National Food Security Plan and its implementation;
(c) To develop and implement an advocacy campa ign strategy for the Program;
(d) To validate and review the LGU Action Plans on Food Security;
(e) To monitor and evaluate Program implementation in coordination with DILG/ DA Regional Offices;
(f) To assist the NCFS in the implementation of the reward/incentive system,
(g) To perform other functions that may be assigned by the NCFS. The Secretariat shall be attached to DILG. An Eecutive Director who is appointed by the President shall head the Secretariat. The Executive Director shall be Assisted by two (2) Deputy Executive Directors and an administrative staff. The Department of Agriculture, DILG, and LPP shall provide the technical staff complement for the National Secretariat.

To supplement its manpower resources, each DILG Regional Office shall serve as extension office of the Secretariat in the region. It shall assist the National Secre ariat in the exercise of its functions at the local level, in coordination with DA Regional Office.

It shall coordinate with DILG Provincial/City Office which shall act as the secretariat of the Local CFS for the effective discharge of its functions.

Sec. 10. ***Funding for the National Secretariat.*** For the current year, 1999, the Department of Agriculture shall provide funds for the operations of the National Secretariat in the amount of P20 Million to be taken from the DA Agriculturang Makamasa Program of the Department of Agriculture. Thereafter, the Secretariat shall have its own budget incorporated in the yearly appropriation for DILG.

Sec. 11. ***Interagency Coordination.*** All concerned departments and their attached agencies, LGUs, government-owned and controlled corporations (GOCCs) and other instrumentalities of the government are hereby directed to cooperate and give their full support to the NCFS and the Provincial/City CFS to ensure the effective performance of their functions.

Sec. 12. ***Administrative and Implementing Guidelines.*** The NCFS shall adopt administrative and implementing guidelines as may be necessary to implement this Executive Order.

Sec. 13. ***Effectivity.*** This order shall take effect immediately.

Done in the City of Manila, this 13th day of March, 1999.

Signed: JOSEPH EJERCITO ESTRADA
President

Signed: RONALDO B. ZAMORA
Executive Secretary

ANNEX C
Republic of the Philippines
Province of La Union
City of San Fernando

COVENANT FOR FOOD SECURITY CY 1999

The province of La Union stands firmly committed to the fulfillment of the vision of HIS EXCELLENCY, PRESIDENT JOSEPH EJERCITO ESTRADA of attaining food security and alleviating the poverty of farmers and fisherfolks within a safe, healthy and environment-friendly policy framework.

Realizing the objectives, urgency and priority consideration of the Food Security Program, the Local Chief Executives (LCEs) commit to achieve self-sufficiency and eventually surplus in food production in the province through a concerted effort and political will given the available resources and consistent with their respective plans of action.

Aware of our roles and responsibilities in achieving the provincial targets to attain food security for the province, in general and in our respective city/municipalities in particular, we, the Local Chief Executives (LCEs) hereby commit and pledge by undertaking a solemn Covenant as follows:

1. To focus on the attainment of our respective provincial, city and municipal performance quota and targets on such staple commodities as rice, corn, fish and livestock set for the Year 1999 and beyond;
2. To formulate necessary policy and implementing guidelines for the effective efficient implementation of the food security program in our respective local government units;
3. To mobilize all resources from the government, NGOs and private sector necessary to implement food security plans, programs and projects to achieve desired targets and outputs as scheduled; and
4. To resolve attendant problems, issues and concerns for the successful realization of the food security performance targets and in the process, ensure much improved quality of life of our farmers and fisherfolks by increasing their income above and beyond the poverty threshold.

NOW, THEREFORE, we set our hands unto this Food Security Covenant this 2nd day of March, 1999 at the Provincial Capitol, City of San Fernando, Philippines.

Signed: Justo B. Orros, Jr.
Provincial Governor

Signed: Eugranio C. Eriguel, MD
Mayor, Agoo, La Union

Signed: Hon. Mary Jane C. Ortega
City Mayor, San Fernando

\Signed: Hon. Ramon C. Juloya
Mayor, Aringay, La Union

Signed: Ma. L. Funtanilla
Mayor, Bacnotan, La Union

Signed: Hon. Joaquin C. Ostrea, Jr.
Mayor, Balaoan, La Union

Signed: Hon. Gary M. Vinzon
Mayor, Bangar, La Union

Signed: Hon. Tumbaga
Mayor, Bagulin, La Union

Signed: Hon. Eulogio Clarence
Martin R. de Guzman III
Mayor, Bauang, La Union

Signed: Hon. Jessie A. Panta
Mayor, Burgos, La Union

Signed: Hon. Aurora Crispino
Mayor, Caba, La Union

Signed: Hon. Jeoffrey N. Tongson
Mayor, Luna, La Union

Signed: Hon. Reynaldo J. Flores
Mayor, Naguilian, La Union

Signed: Hon. Orlando B. Balloguing
Mayor, Pugo, La Union

Signed: Hon. Josephine V. Flores
Mayor, Rosario, La Union

Signed: Hon. Arturo P. Valorit
Mayor, San Juan, La Union

Signed: Hon. Alfredo P. Alew
Mayor, San Gabriel, La Union

Signed: Hon. Floresto C. Salvangua
Mayor, Santol, La Union

Signed: Hon. Zenaida C. Estonactoc
Mayor, Santo Tomas, La Union

Signed: Hon. Visitacion M. Pingan
Mayor, Sudipen, La Union

Signed: Hon. Violeta G. Verceles
Mayor, Tubao, La Union

ANNEX D
Republic of the Philippines
Province of La Union
City of San Fernando

COVENANT FOR FOOD SECURITY CY 1999

Consistent with the Vision of His Excellency, President Joseph Ejercito Estrada of attaining sustainable food security and alleviating the poverty of farmers and fisherfolks within a safe, healthy and environmentally-friendly policy framework, the Provincial Food Security Council of La Union under the leadership of the Honorable Governor Justo O. Orros, Jr. convened a council's Provincial Food Security Covenant fundamentally to forge working plans and programs, policy directions and implementating strategies toward achieving the President's vision.

Considering the exigency and imperativeness of achieving the goals and objectives of a sustainable food security program, the Provincial Food Security Council formulated a workable and sound program of action on food security characterized as feasible measurable, attainable, pro-poor and pro-progress.

Aware of their respective roles towards the attainment of the Provincial Food Security Council's commitment to attain food security in the province especially for the marginalized farmers and fisherfolks, the members of the Food Security Council hereby commit and pledge by being a party to a solemn covenant within the hereunder stated objectives:

a) To place special priority on the realization of the food security goals on the province in each member agency's program agenda
b) To formulate necessary policy and implementing guidelines for the effective implementation of the food security program on the agency level
c) To coordinate and link with all concerned national government local government units, nongovernment organizations, private sector and others concerned for the efficient and effective planning and implementation of the Provincial Food Security Program
d) To set aside, subject to availability, member age ncy resources for the Council to carry out its avowed goals and objectives
e) To assume such other obligations necessary to implement the Provincial Food Security Program in the attainment of its mandates.

NOW, THEREFORE, we set our hands unto this Covenant this 8th day of February, 1999 at the Provincial Capitol, City of San Fernando.

Signed: ALL PROVINCIAL FOOD SECURITY COUNCIL MEMBERS

ANNEX E
SEARCH FOR THE BEST PERFORMING CITY/MUNICIPAL
FOOD SECURITY COUNCIL
PROVINCE OF LA UNION

I. MERITS AND JUSTIFICATIONS

It is the vision of his excellency, President Joseph Ejercito Estrada to attain and sustain food security and alleviate the poverty of farmers and fisherfolks within a safe, healthy and environment-friendly policy framework.

Food Security refers to the policy objective, plan and strategy of meeting the food requirements of the present and future generations of Filipinos in substantial quantity, ensuring the availability and affordability of food to all at all times either through local production or importation or both.

Cognizant of its roles and responsibilities in achieving the national targets necessary to achieve food security for the nation especially the poor, the participants to the Governor's Workshop on Strategic Partnership Planning at Holiday Inn Cark Field, Pampanga on January 11 – 12, 1999 crafted and presented to President Estrada a Food Security Covenant. The Governors commit and pledge to perform the role of stewards of agriculture and fisheries modernization where they have to directly deliver such services to their respective constituents. Hence, under the MOA, they have agreed to plan, operationally integrate, implement and monitor all agricultural and fisheries development programs.

To ensure close monitoring and evaluation of all food security programs and projects in the province of La Union, the Provincial Governor through an Executive Order created the Provincial Search committee to assist the Provincial Food Security Council monitor and to oversee the attainment of the vision, mission, goals and objectives and Targets set forth under the Food Security Program.

Part of the evaluation on the implementation of the program is the Search of the Best Performing City/Municipal Food Security Council to be conducted by the Provincial Search Committee.

Winners shall be proclaimed during the 150th Anniversary Foundation of the Province of La Union on March 2, 1999.

II. PROJECT OBJECTIVES

The objectives of the Awards are as follows:

A. GENERAL: To ensure the participation of all municipalities/city of the province in the efficient implementation of the Food Security Program.

B. SPECIFIC

- To coordinate, monitor and evaluate performance of municipality/city on the Food Security Program;
- To establish a functional City/Municipal Food Security Counc il;
- To support and be effective partners of the National government in Agricultural and Fisheries Modernization

III. COVERAGE

The awards cover the performance of the nineteen (19) municipalities and the component city of the province on the implementation of the Food Security Prgram for the period January to December 1999.

IV. SEARCH COMMITTEE: COMPOSITION AND FUNCTIONS

A technical working Group shall be created by an Executive Order of the Provincial Governor to take the lead in the search.

A. COMPOSITION

Chairman: Mr. Henry P. Orejudos

Members: Representatives from the Office of the Provincial Agriculturist; Office of the Provincial Planning and Development Coordinator; Office of the Provincial Veterinarian; Office of the Provincial Engineer; and Office of the Provincial Cooperative Officer.

The Department of the Interior and Local Government, La Union Provincial Office shall provide secretariat services to the Committee.

B. FUNCTIONS:

1. Initiate and coordinate necessary activities for the successful implementation of the awards;
2. Set guidelines/criteria for the selection of the best performing city/municipality of the province;
3. Identify the best performer within the province;
4. Propose funding/prizes from the Provincial Government;
5. May secure funding/counterpart prizes from the private sector and May plan and implement appropriate awarding ceremonies

V. POLICIES AND GUIDELINES

General Policies and Guidelines

1. There shall be four (4) winners for the search namely:
   - Best Performing City/Muncipality
   - 1st Runner-up
   - 2nd Runner-up
   - 3rd Runner-up
2. The prizes shall be in the form of projects, to be identified by the winner, equivalent to the amount appropriated.
3. Each of the nonwinning 16 LGUs shall receive consolation prizes.
4. Mandatory assessment shall be conducted by the Assessment Team through:
   - Ocular inspection
   - Documentary analysis (of local ordinance, progress reports, pictorials/ video presentation)

5. The assessment shall be based on six major categories
   - Institutional Capability
   - Financial Capability
   - Infrastructure Support System
   - External Support System
   - Productivity Performance
   - Reporting System
6. Participating LGUs shall be required to submit monthly status report and other documents relevant to the Food Security Program. These reports will form part of the assessment score.

VI. ASSESSMENT AND SELECTION PROCEDURES

The Technical Working Group shall be the principal assessment team to evaluate the performance of each participating LGGU in the implementation of the Food Security Program

The assessment Team shall accomplish Food Security Program Form 01 for each LGU. Points score up to tenth decimal point but not exceeding the maximum allowable score for each of the variables indicated in the form.

Results of the initial assessment (FSP Form 01) shall be consolidated by the team using FSP Form 02.

The Technical Working Group shall then prepare the nomination for the four (4) winners, supported by the original copies of FSP Form 01 and 02 to be forwarded to the Provincial Food Security Council for the Approval.

ANNEX F
SEARCH FOR THE BEST PERFORMING CITY/MUNICIPAL
FOOD SECURITY COUNCIL FORM 01
PROVINCE OF LA UNION

CRITERIA	Point Score	
	Maximum	Actual
PRODUCTION PERFORMANCE	25	
1. Rice	7	
2. Corn	4	
3. Fish	4	
4. Livestock and Poultry	4	
5. Vegetables	3	
6. Other Crops	3	
INSTITUTIONAL CAPABILITY	20	
1. Presence of Food Security Action Plan	2	
2. Presence of Food Security Program Appropriation	4	
3. Official Administrative and field personnel for the program	2	
4. Functional City/Municipal Food Security Council	3	
5. Viable farmers/fishermen organization	2	
6. Onsite research and training facilities	3	
7. Functional local price coordinating council	2	
8. Viable cooperatives	2	
INFRASTRUCTURE SUPPORT SYSTEM	20	
1. Farm to market roads/access roads/bridges	2	
2. Stock and storage facilities	2	
3. Smallscale irrigation system projects	4	
4. Communal irrigation systems	3	
5. Agrifishery produce collection and buying stations	3	
6. Grains production enhancement facilities (e.g., no. of mpp/drying pavements, mechanical dryers, farm level grain center, barangay marketing centers)	5	

Continued

CRITERIA	Point Score	
	Maximum	**Actual**
EXTERNAL SUPPORT SYSTEM	15	
1. NGOs/POs/Civil Society complementing the program	2	
2. Mechanism allowing beneficiary participation in the program	2	
3. Adequate IEC campaigns on new technology	1	
4. Presence of incentives to encourage retention of agrigraduates in the sector	2	
5. Inclusion of food security concerns in the school curriculum	2	
6. Effective law enforcement	2	
7. Promotion of poultry and livestock production	2	
FINANCIAL CAPABILITY	10	
1. Employment opportunities/ income-generating activities	7	
2. Credit and marketing assistance	3	
REPORTING SYSTEM	10	
1. Timeliness	3	
2. Quality of Report	3	
3. Documentation	4	
GRAND TOTAL	100	

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Chapter IV

Cooperativism in Agriculture: The Case of Top Four Cooperatives in Region IV, Philippines

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INTRODUCTION

Cooperatives development is a long standing program of the Philippine government. With agriculture being predominantly a small-scale system of operation in the country, the role of cooperatives as institutions to promote agricultural development could not be overemphasized. With cooperatives, scale economies are achieved through resource pooling. Operations not normally undertaken by individual farmers are made possible through cooperatives.[1] Among these are mechanization, postproduction operation and bulk marketing operations—all of which redound to higher operational efficiency and better competitiveness.

The effort to promote cooperativism is enshrined in the 1987 Philippine Constitution. It is likewise mandated by several statutes that dwell on rural and agricultural development. However, results have been mixed at best. Of the 46,000 cooperatives registered with the Cooperatives Development Authority (CDA) in 1999, only a few are considered active and with successful operation.

The main objective of this chapter is to highlight the success stories of four case cooperatives in Region IV. In reviewing these four cases, it is

[1] For an earlier comprehensive discussion of the theory and advantages of cooperatives, see Rubotka (1946).

hoped that new insights in promoting cooperativism could be gleaned and innovative approaches be instituted. Section II of the chapter briefly reviews the legal basis of cooperative development. Section III describes the status of cooperatives movement in the Philippines and Section IV presents the cases of four cooperatives namely: LIMCOMA Multipurpose Cooperative in Lipa City; Cavite Farmers Feed Milling and Marketing Cooperative (CAFFMACO) in Silang Cavite; Soro-Soro Ibaba Development Cooperative (SIDC) in Batangas City; and Padre Garcia Multipurpose Cooperative in Padre Garcia, Batangas. Personal visits to the cooperatives, discussions with officials, and review of documents provided the basic information for the case studies.

POLICY AND LEGAL ENVIRONMENT

The 1987 Constitution provides the legal basis for cooperative development in the Philippines. Article XII Section 15 of said Constitution mandates Congress to enact laws that will use cooperatives as instruments of social justice and economic development. It serves as the legal landmark for promoting cooperatives as a means to achieve national, social, and economic ends. This part of the chapter reviews the key statutes that have been instrumental in the cooperative development in the Philippines. Also, take note of important provisions that introduced fundamental changes in the approach to cooperatives development.

Pursuant to the intent of the 1987 Constitution concerning cooperative development, the Cooperative Development Code (RA 6938) was enacted in 1990.[2] The law defines, among others, the concept and principles of cooperatives; membership; administration; responsibilities, rights and privileges of cooperatives; insolvency and dissolution; capital, property and funds; allocation and distribution of net surplus; and special provisions related to agrarian reform cooperatives, public service cooperatives, cooperative banks, credit cooperatives, and cooperative insurance societies.

Article II of the Code declares as a policy of the State the recognition of the principle of subsidiarity. Under this principle, the cooperative sector will initiate and regulate within its own ranks the promotion and organization, training and research, audit and support services relating to cooperatives with government assistance only when necessary.

Republic Act 6939 (also enacted in 1990) provided for the creation of Cooperative Development Authority under the Office of the President.[3]

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[2] Republic Act 6938, An Act to Ordain Cooperative Code of the Philippines, March 10, 1990, Philippines.
[3] Republic Act 6939, An Act Creating the Cooperative Development Authority, March 10, 1990, Philippines.

Primary functions of the CDA as defined in Section III of RA 6939 are: develop and conduct management training programs upon request of cooperative; support the voluntary organization and consequential development of activities that promote cooperative movement; and provide assistance towards upgrading managerial and technical expertise upon request of cooperative concerned. The CDA can also request state colleges and universities to provide technical assistance and guidance to cooperatives in the communities where they operate.

Three important reforms in the approach to cooperatives development have been introduced in the above legislations:

- The minimum number of persons who may organize a cooperative has been reduced to 15 (from 250 under RA 821 of 1972 otherwise known as the ACCFA Law; and 50 under PD 175).[4,5] While this may have minimized the constraints to cooperative development, it may have led to the proliferation of nonviable cooperatives.
- Cooperatives registration has become the monopoly of one agency—the Cooperatives Development Authority. Prior to Martial Law, agricultural cooperatives were registered with ACCFA, and nonagricultural cooperatives were registered with the Cooperative Administration Office (RA 2023).[6] During the Martial Law Period until 1986, electric cooperatives were registered with the National Electrification Administration (PD 269), and transport cooperatives were registered with the Office of the Transport Commission (EO 898) while all other types of cooperatives were registered with the Bureau of Cooperatives Development (PD 175).[7,8]
- Government has put itself more in a supportive (meaning passive) rather than an active role in cooperative development. This is apparent in the functions of the CDA as defined in RA 6939. It is also gleaned from the budgetary support for CDA, which only

[4] Republic Act 821, An Act to Establish an Agricultural Credit and Cooperative Financing System to Assist Small Farmers in Securing Liberal Credit and to Promote the Effective Groupings of Farmers into Cooperative Associations to Enable Them to Market Efficiently their Agricultural Commodities and to Place Agriculture on a Basis of Economic Equality with Other Industries, and for Other Purposes, August 14, 1952, Philippines.
[5] Presidential Decree Number 175, Strengthening the Cooperative Movement, April 14, 1973, Philippines.
[6] Republic Act 2023, The Nonagricultural Cooperative Act, 1957, Philippines.
[7] Presidential Decree Number 269, Creating the National Electric Administration as a Corporation Prescribing its Powers and Activities Appropriating the Necessary Funds thereof and Declaring a National Policy Objective for the Total Electrification of the Philippines on an Area Coverage Basis, the Organization Promotion and Development of Electric Cooperatives to Attain the said Objectives Prescribing Terms and Condition for their Operation, the Repeal of R.A. No. 6038 and for Other Purposes, August 3, 1973.
[8] Executive Order Number 898, Reorganizing the Committee on Transport Cooperatives under Memo Order No. 395 into Office of Transport Cooperatives, May 28, 1983.

gets annual congressional appropriations for personnel, maintenance and operating expense, and some capital outlay. This budget is paled by the budget of earlier entities mandated to promote cooperatives. Under RA 821, the ACCFA was granted congressional appropriation of P100 million to carry out its mandate. Under PD 175 (1973), the same cooperative agency was allowed to mobilize BGF and BSF from the cooperative sector to partly finance the program and developments of cooperatives in the Philippines. The precarious financial position of CDA certainly contributes to less active participation of the agency in the promotion and development aspects of cooperatives in the Philippines today.

Cooperatives in other legislations

While RA 6938 and 6939 changed the government's approach to cooperative development from an active to a passive mode, the significance given to cooperatives in the development process has not diminished as could be seen in several government legislation discussed below.

Cooperatives in land reform

The passage of RA 6657 (1987), otherwise known as the Comprehensive Agrarian Reform Program (CARP) Law, re-emphasized the role of cooperatives in the implementation of the comprehensive agrarian reform program.[9] It was declared policy of the State under the law to recognize the right of farmers, farm workers and land owners, as well as cooperatives and other independent farmers' organizations to participate in the planning, organization, and management of the program, and shall provide support to agriculture through appropriate technology and research, and adequate financial, production, marketing, and other support services.

Chapter II Section 8 of the CARP Law provides for the direction of worker beneficiaries to form workers' cooperative or association in cases where it is economically infeasible to individually distribute the multinational companies landholdings to workers-beneficiaries as a way in which to deal with the corporation or business association or any other proper party for the purpose of entering into a lease or growers agreement and for all other legitimate purposes.

The Land Bank of the Philippines (LBP), created under RA 3844 to finance the acquisition of land in the Agrarian Reform Program, uses co-

[9] Republic Act 6657, Comprehensive Agrarian Reform Program, July 26, 1987, Philippines.

operatives as viable conduits in its credit delivery system to the beneficiaries of land reform, rural folks, and fisher folks.[10]

Cooperatives in local government administration

RA 7160 (otherwise known as the Local Government Code of 1991) provided for the creation of optional positions of cooperative officers at the provincial and city government units.[11] These officers shall be primarily responsible for ensuring that in formulating projects and programs for LGUs the principles, methods, promotion and development of cooperatives are taken into consideration; and, they shall assist LGUs in the organization of cooperatives.

The Code has specific provisions for marginal fishermen and copra producers. It grants cooperatives of marginal fishermen the preferential right to erect corrals, oysters, mussels, or other aquatic beds or bangus fry areas within definite zones of municipal waters; gather or catch bangus fry, prawn fry, or kawag-kawag (fry of other species); and fish in municipal waters by nets, traps, or other fishing gear free of any charge, fee or rental or any other imposition. It, likewise, grants that the development and improvement of local distribution channel of copra should be through cooperatives.

Cooperatives in small farmers empowerment

The Magna Carta of Small Farmers (RA 7607 of 1992) re-echoes the government's emphasis on cooperatives for promoting farmers' welfare.[12] Chapter II Section 5 states that the government shall encourage the formation of marketing cooperatives among farmers in order to enable members to purchase inputs at lower cost and obtain fair price for their products.

Other provisions of this law outline the role of cooperatives in infrastructure development (Chapter IV Section 13)[12] promotion of livelihood projects (Chapter VIII Sections 23 and 24); Agricultural technology transfer (Chapter IX Sections 29 and 32); and fertilizer distribution (Chapter IV Section 17). The law also mandates the Department of Agriculture, through the Agricultural Credit Policy Council (ACPC) and other concerned agencies to give subsidies for education and training of small farmers on credit awareness, loan acquisition, and loan repayment and shall conduct information drive that will promote the establishment of strong and viable farmers' organizations.

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[10] Republic Act 3844, Land Reform Code, August 8, 1963, Philippines.
[11] Republic Act 7160, Local Government Code of 1991, January 1, 1992, Philippines.
[12] Republic Act 7607, An Act Providing A Magna Carta of Small Farmers, June 10, 1992, Philippines.

Cooperatives in agriculture and fisheries modernization

Republic Act 8435, otherwise known as Agriculture and Fisheries Modernization Act (AFMA) of 1997, encourages horizontal and vertical integration in agriculture, thus, recognizing the important role of cooperatives.[13] This recognition is manifested in the allocation of about 28 percent of the initial P20 billion appropriations for the AFMA for cooperatives in general. This is intended, among others, for postharvest facilities, the implementation of the Farmer-Fisherfolk Marketing Assistance System, and support of market vendors' cooperatives. .

STATUS OF COOPERATIVES IN THE PHILIPPINES

Article 23 of RA 6938 classifies cooperatives and requires them to register with the Cooperatives Development Authority under the following categories: Credit; Consumer; Producer; Marketing; Service; and Multipurpose cooperative. Credit cooperative is a thrift and loan-granting cooperative for productive and provident purposes. Consumer cooperative engages in procurement and distribution of goods to member and nonmembers. Producer cooperative consolidates individuals engaged in production activities, whether agricultural or industrial. Service cooperative is the one engaged in providing services such as medical and dental care, hospitalization, transportation, insurance, housing, labor, utilities, and communication, among others. Multipurpose cooperative, which can be agricultural (MPA) or nonagricultural (MPN), combines two or more activities of different types of cooperatives.

This section describes the status of cooperatives in the Philippines using 1999 data from CDA. The preferred method using trend analysis is not possible because of data inconsistency. Note, for example, that data available for 1996, 1999 and 2000 refer to registered cooperatives while those for 1993–1995 and 1997–1998 refer only to cooperatives submitting required reports to CDA (Table 1). Thus, analysis is focused on comparative statistics by type of cooperative and location. Points of interest include number, membership and some financial indicators.

As of July 1999, the total number of registered cooperatives was 46,020 with Regions XI, III and IV having the most number and CARAGA and Region X having the least (Table 2). The leading type of registered cooperative is Agricultural Multipurpose c omprising more than 50 percent of the total number of registered cooperatives. Total membership is likewise highest among MPAs although average size is largest among credit cooperatives

[13] Republic Act 8435, Agriculture and Fisheries Modernization Act, December 22, 1997, Philippines

Table 1. Number of cooperatives by types, Philippines, 1993-2000

TYPES OF COOPERATIVE	YEAR							
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
MPA	4,175	3,114	2,022	25,582	1,703	2,390	25,431	32,086
MPN	1,443	1,525	1,473	9,701	2,000	2,405	14,609	16,386
CREDIT	251	256	259	2,475	419	686	2,809	3,756
SERVICE	126	95	98	882	175	163	960	1,340
MARKETING	49	57	51	508	82	44	546	729
PRODUCER	64	116	69	597	114	48	751	991
CONSUMER	72	130	68	727	186	134	914	1,164
COOP BANKS	6	1	5	45	4	-	-	53
OTHERS (federations, unions and laboratories)	68	70	43	516	28	-	-	639
TOTAL	6,254	5,364	4,088	41,033	4,711	5,870	46,020	57,144

Source of data: Cooperatives Development Authority Annual Reports, 1993-2000.
Note: There are some problems with the data. It appears that data for years 1993, 1994, 1995, 1997 and 1998 were for cooperatives submitting financial report because the 1998 data when verified were cooperatives submitting financial report. Data for 1996, 1999 and 2000 appeared total number of registered cooperatives.

(Table 3). Understandably, MPA membership is highest in agriculturally oriented regions with Regions I, III, IV and VI having 96,000; 83,000; 79,000; and 95,000 members, respectively, in 1999. Total MPA membership is highest in NCR and Region II.

By location, the most well-endowed cooperatives are found in NCR with an average size of asset of P19.51 million (Table 4); average paid-up capital of P7.58 million (Table 5); and average volume of business of P18.35 (Table 6) is highest. By type, credit cooperatives are the most endowed. This type has the highest asset size of P20.98 million (Table 4); average paid-up capital of P8.25 million (Table 5); and average volume of business of P18.01 million (Table 6).

Measured in terms of net surplus, the most profitable cooperatives are found in NCR. On the other hand, MPN (net surplus of P487.81 million) and credit cooperatives (net surplus of P454.37 million) are the most profitable (Table 7).

THE CASE COOPERATIVES

The four case cooperatives are a picture of success. In terms of total assets, they occupy the first four positions among the top 30 cooperatives in Region IV (Table 8). Their stability is manifested by their sustained growth over

Table 2. Number of registered cooperatives by type and region, Philippines, as of July 1999

COOPERATIVE	REGION															
	1	2	3	4	5	6	7	8	9	10	11	12	CAR	CARAGA	NCR	ALL
MPA	2,718	1,769	2,883	2,528	1,802	2,610	889	1,611	1,321	1,130	2,207	1,865	1,006	1,049	43	25,431
MPN	693	458	1,647	1,743	881	726	901	460	1,031	525	2,170	512	450	440	1,972	14,609
CREDIT	132	140	254	266	179	186	128	124	50	99	256	70	129	81	715	2,809
SERVICE	31	23	140	95	85	30	59	56	22	50	82	38	27	26	196	960
MARKETING	29	9	45	42	22	38	11	61	39	30	127	35	11	34	13	546
PRODUCER	6	19	84	61	61	40	34	127	32	41	126	11	13	48	48	751
CONSUMER	29	8	41	75	29	38	57	85	26	35	189	19	51	44	188	914
COOP BANKS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	3,638	2,426	5,094	4,810	3,059	3,668	2,079	2,524	2,521	1,910	5,157	2,550	1,687	1,722	3,175	46,020

Source of data: Cooperatives Development Authority
Note: No reported data from cooperative banks, and other types of cooperatives.

Table 3. Total and Average Size of membership of cooperatives by type and region, Philippines, as of 1999

	REGION															
COOPERATIVE TOTAL	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**CAR**	**CARAGA**	**NCR**	**ALL**
MPA	96,254	64,145	83,112	79,862	58,706	95,562	30,462	44,982	43,885	38,508	75,419	58,384	36,118	32,468	1,173	839,040
MPN	29,964	18,837	51,754	35,651	35,226	29,107	33,292	18,552	41,972	29,640	84,864	17,619	14,428	15,668	80,717	568,997
CREDIT	6,737	5,782	6,600	11,743	18,189	7,314	3,064	4,523	10,497	4,281	6,798	2,442	4,603	7,652	23,472	125,903
SERVICE	1,513	1,114	8,710	4,726	5,828	1,111	3,947	1,974	665	1,836	3,918	1,425	647	1,582	6,637	1,526
MARKETING	605	228	1,550	2,692	3,295	933	111	1,806	968	841	2,667	1,086	438	1,027	218	12,922
PRODUCER	105	532	3,896	1,466	2,027	1,216	629	3,349	741	1,104	3,143	228	256	2,193	948	20,721
CONSUMER	2,051	722	1,456	2,860	1,907	2,272	2,079	2,169	1,980	647	6,330	394	3,564	4,279	7,117	39,551
TOTAL	137,229	91,360	157,078	139,000	125,178	137,515	73,584	77,355	100,708	76,857	183,139	81,578	60,054	64,869	120,282	1,648,660
AVERAGE																
MPA	35	36	29	32	33	37	34	28	33	34	34	31	36	31	27	33
MPN	43	41	31	20	40	40	37	40	41	56	39	34	32	36	41	39
CREDIT	51	41	26	44	102	39	24	36	210	43	27	35	36	94	33	45
SERVICE	49	48	62	50	69	37	67	35	30	37	48	38	24	61	34	43
MARKETING	21	25	34	64	150	25	10	30	25	28	21	31	40	30	17	24
PRODUCER	18	28	46	24	33	30	19	26	23	27	25	21	20	46	20	28
CONSUMER	71	90	36	38	66	60	36	26	76	18	33	21	70	97	38	43
COOP BANKS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHERS (federations, unions and laboratories)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ALL	11	38	31	29	41	37	35	31	40	40	36	32	36	38	38	36

*Average size of membership of cooperative = total size of membership/number of registered cooperatives.

Table 4. Total and average asset of cooperatives by type and region, Philippines, as of 1999, in million pesos

	REGION															
COOPERATIVE	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**CAR**	**NCR**	**ALL**
TOTAL																
MPA	350.75	462.46	55.68	174.93	33.52	486.94	-	78.37	127.01	-	1,456.45	465.65	146.42	506.08	50.09	4,394.35
MPN	176.61	133.70	99.93	576.72	117.11	347.93	-	159.28	134.59	-	644.28	123.35	95.30	248.33	3,525.38	6,382.50
CREDIT	532.83	75.07	86.21	315.41	24.83	171.38	-	10.73	24.00	-	132.50	36.35	26.55	574.05	3,151.63	5,161.53
SERVICE	2.18	0.02	2.97	22.20	40.25	14.20	-	0.40	7.05	-	169.85	152.82	22.09	186.10	112.37	732.48
MARKETING	0.21	-	-	7.52	-	147.01	-	4.36	0.25	-	3.15	5.89	1.66	0.30	0.94	171.29
PRODUCER	-	-	-	2.79	0.12	0.03	-	0.89	0.27	-	5.93	5.56	0.33	-	6.00	21.92
CONSUMER	2.70	0.29	-	2.74	1.14	0.93	-	0.99	0.24	-	9.16	1.20	0.33	30.23	79.27	129.22
TOTAL	1,065.28	671.52	244.80	1,102.32	216.97	1,168.42	-	255.01	293.41	-	2,421.30	790.81	292.67	1,545.09	6,925.69	16,993.28
AVERAGE																
MPA	5.85	15.42	7.95	2.43	5.59	7.85	-	5.60	6.35	-	26.48	6.29	13.68	7.71	8.35	9.51
MPN	-	13.37	9.99	3.31	-	6.33	-	6.37	4.81	-	9.20	3.43	10.35	5.61	17.90	9.88
CREDIT	-	10.72	12.32	9.01	4.14	8.57	-	3.58	4.00	-	6.63	5.19	44.16	6.64	26.71	20.98
SERVICE	-	-	2.97	1.48	-	3.55	-	-	7.05	-	42.46	30.56	37.22	7.36	5.91	12.85
MARKETING	-	-	-	2.51	-	49.00	-	4.36	-	-	3.15	-	-	0.05	-	17.13
PRODUCER	-	-	-	0.40	-	-	-	-	-	-	5.93	-	-	0.01	3.00	1.83
CONSUMER	-	-	-	0.34	1.14	-	-	-	-	-	4.58	-	15.12	0.01	6.10	4.97
ALL	5.85	14.29	9.79	3.51	16.69	8.11	-	5.93	5.33	-	15.83	6.28	19.08	6.81	19.51	11.65

Note: Data are based on cooperatives submitting financial report to CDA; no data from Regions 7 and 10, cooperative banks and other type of cooperatives.

*Average size of total asset = total asset / number of cooperatives submitting financial report
Source of data: Cooperatives Development Authority

Table 5. Total and average paid-up capital of cooperatives by type and region, Philippines, as of 1999, in million pesos

	REGION															
COOPERATIVE	1	2	3	4	5	6	7	8	9	10	11	12	13	CAR	NCR	ALL
TOTAL																
MPA	114.27	95.31	10.52	167.86	5.97	128.14	-	25.19	28.08	-	98.11	75.92	17.15	248.26	26.21	1040.99
MPN	88.58	46.67	33.75	280.21	44.24	141.62	-	64.93	39.45	-	219.21	46.38	30.01	134.66	1477.20	2646.89
CREDIT	222.55	29.41	31.27	145.92	13.16	67.59	-	5.66	13.72	-	65.97	14.94	13.36	305.16	1100.13	2028.84
SERVICE	0.96	-	0.26	17.35	5.12	7.10	-	0.40	0.02	-	39.34	12.45	1.71	27.69	57.36	169.74
MARKETING	0.01	-	-	5.07	-	11.47	-	0.17	0.01	-	0.95	0.71	0.57	0.22	0.05	19.23
PRODUCER	-	-	-	1.88	0.01	0.01	-	0.18	0.26	-	1.64	0.68	0.19	-	3.21	8.06
CONSUMER	1.80	0.25	-	1.07	0.34	0.38	-	0.31	0.13	-	3.46	0.33	0.05	17.69	28.34	54.16
TOTAL	428.16	171.65	75.79	619.35	68.83	356.32	-	96.84	81.67	-	428.66	151.41	63.05	733.67	2692.50	5967.90
AVERAGE																
MPA	1.90	3.18	1.50	2.33	0.99	2.07	-	1.80	1.40	-	1.78	1.03	6.71	0.90	4.37	2.25
MPN	-	4.67	3.37	1.61	-	2.57	-	2.60	1.41	-	3.13	1.29	5.61	1.77	7.50	4.10
CREDIT	-	4.20	4.47	4.17	2.19	3.38	-	1.89	2.29	-	3.30	2.13	23.47	3.34	9.32	8.25
SERVICE	-	-	0.26	1.16	0.06	1.77	-	-	0.02	-	9.83	2.49	5.54	0.57	3.02	2.98
MARKETING	-	-	-	1.69	-	3.82	-	0.17	-	-	0.95	0.36	-	-	-	1.92
PRODUCER	-	-	-	0.27	-	-	-	-	-	-	1.64	0.34	-	-	1.60	0.67
CONSUMER	-	0.03	-	0.13	0.34	-	-	-	-	-	1.73	-	8.85	-	2.18	2.08
ALL	1.90	3.65	3.03	1.97	5.29	2.47	-	2.25	1.48	-	2.80	1.20	0.43	1.47	7.58	4.09

*Average paid-up capital per cooperative = total paid-up capital/number of cooperatives submitting financial report
Source of data: Cooperatives Development Authority
Note: Data are based on cooperatives submitting financial report to CDA; no data from Regions 7 and 10, cooperative banks and other type of cooperatives.

Table 6. Total and average volume of business of cooperatives by type and region, Philippines, as of 1999, in million pesos

	REGION															
COOPERATIVE	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**CAR**	**NCR**	**ALL**
TOTAL																
MPA	689.43	245.15	36.41	9.57	15.50	1,317.86	-	38.29	114.45	-	688.52	517.34	88.55	328.74	14.75	4,104.55
MPN	-	149.78	1.10	262.93	35.98	312.76	-	79.36	82.00	-	611.34	111.74	180.22	324.60	2,832.21	4,984.00
CREDIT	-	77.72	14.83	106.73	4.26	158.80	-	3.30	5.52	-	134.43	18.41	22.49	404.80	3,478.61	4,429.89
SERVICE	-	-	-	10.14	5.56	10.26	-	-	-	-	51.84	108.02	10.55	92.27	54.05	342.68
MARKETING	-	-	-	4.31	-	93.90	-	0.34	-	-	0.84	12.80	-	-	-	112.19
PRODUCER	-	-	-	0.59	-	-	-	-	-	-	0.20	-	-	-	3.40	4.19
CONSUMER	-	-	-	5.73	0.20	-	-	-	-	-	5.24	-	-	77.31	131.59	220.07
TOTAL	689.43	472.65	52.34	400.01	61.50	1,893.57	-	121.27	201.96	-	1,492.40	768.31	301.81	1,227.71	6,514.61	14,197.56
AVERAGE																
MPA	11.49	8.17	5.20	-	2.58	21.26	-	2.73	5.72	-	12.52	6.99	8.88	4.66	2.46	8.88
MPN	-	14.98	-	1.51	-	5.69	-	3.17	2.93	-	8.73	3.10	13.53	10.60	14.38	7.72
CREDIT	-	11.10	2.12	3.05	0.71	7.94	-	1.10	0.92	-	6.72	2.63	31.14	5.62	29.48	18.01
SERVICE	-	-	-	0.68	-	2.56	-	-	-	-	12.96	21.60	18.45	3.52	2.84	6.01
MARKETING	-	-	-	1.44	-	31.30	-	0.34	-	-	0.84	6.40	-	-	-	11.22
PRODUCER	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	1.70	0.35
CONSUMER	-	-	-	0.72	0.20	-	-	-	-	-	2.62	-	38.65	-	10.12	8.46
ALL	11.49	10.06	2.09	1.27	4.73	13.15	-	2.82	3.67	-	9.75	6.10	15.16	7.02	18.35	9.73

*Average volume of business per cooperative = total volume of business / number of cooperatives submitting financial report
Source of data: Cooperatives Development Authority
Note: Data are based on cooperatives submitting financial report to CDA; no data from Regions 7 and 10, cooperative banks and other type of cooperatives.

Table 7. Total and average net surplus of cooperatives by type and region, Philippines, as of 1999, in million pesos

	REGION															
COOPERATIVE	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**CAR**	**NCR**	**ALL**
TOTAL																
MPA	64.73	16.09	2.38	7.40	1.49	31.61	-	2.66	5.52	-	51.51	16.33	5.05	32.43	6.43	243.62
MPN	12.04	10.20	15.83	48.14	7.84	35.70	-	11.72	15.03	-	43.39	10.98	13.29	24.23	239.43	487.81
CREDIT	32.60	4.81	4.04	18.64	1.93	20.91	-	1.22	4.42	-	14.34	3.23	3.62	57.80	286.81	454.37
SERVICE	0.24	-	0.18	1.43	-0.04	0.78	-	-	0.02	-	3.00	6.88	1.50	3.14	6.22	23.34
MARKETING	-	-	-	0.91	-	0.16	-	0.05	0.10	-	0.51	0.13	0.16	0.04	0.05	2.11
PRODUCER	-	-	-	(0.05)	-	-	-	0.88	0.047	-	0.03	0.04	0.22	-	0.42	1.59
CONSUMER	0.20	0.08	-	1.05	0.02	0.48	-	0.23	0.09	-	1.00	0.03	0.07	3.16	10.99	17.40
TOTAL	109.81	31.19	22.43	77.52	11.23	89.64	-	16.75	25.22	-	113.78	37.62	23.91	120.79	550.34	1230.23
AVERAGE																
MPA	1.08	0.01	-	-	-	0.01	-	-	-	-	0.02	0.01	0.88	-	1.07	0.01
MPN	-	0.02	0.01	0.03	0.01	0.05	-	0.03	0.01	-	0.02	0.02	1.01	0.78	1.22	0.03
CREDIT	-	0.03	0.02	0.07	0.01	0.11	-	0.01	0.09	-	0.06	0.05	4.45	0.90	2.43	0.16
SERVICE	-	-	-	0.02	-	0.03	-	-	-	-	0.04	0.18	0.63	0.50	0.11	0.02
MARKETING	-	-	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-
PRODUCER	-	-	-	(0.00)	-	-	-	0.01	-	-	-	-	-	-	0.21	-
CONSUMER	-	0.01	-	0.01	-	0.01	-	-	-	-	0.01	-	1.58	-	0.85	0.02
ALL	1.08	0.66	0.90	0.25	0.86	0.62	-	0.39	0.46	-	0.74	0.30	0.07	0.56	0.17	0.03

*Average net surplus per cooperative = total net surplus/number of cooperatives submitting financial report
Source of data: Cooperatives Development Authority
Note: Data are based on cooperatives submitting financial report to CDA; no data from Regions 7 and 10, cooperative banks and other type of cooperatives.

Table 8. List of top 30 multipurpose agricultural cooperatives according to total assets based on submitted annual reports in 1998, Region IV

RANK	Name of Cooperative	Province	Total Asset
1	Limcoma Multipurpose Cooperative	Batangas	340,683,843
2	Soro Soro Ibaba Development Cooperative	Batangas	160,605,038
3	Padre Garcia Multipurpose Cooperative	Batangas	105,102,033
4	Cavite Farmers Feedmilling And Marketing Cooperative	Cavite	89,662,706
5	Soro Soro Credit Cooperative	Batangas	26,356,014
6	Cooperative Bank Of Cavite	Cavite	26,023,915
7	Emmanuel Multipurpose Cooperative	Batangas	20,641,834
8	Lopez Vendors Development Cooperative	Quezon	20,039,177
9	Lipofea Multipurpose Cooperative	Cavite	19,025,526
10	Pinagtungulan Multipurpose Cooperative	Batangas	15,130,882
11	Agro-industrial Cooperative Of Mataas Na Kahoy (Aicom)	Batangas	13,116,797
12	Sariaya Community Credit Cooperative	Quezon	12,929,520
13	Mount Carmel Development Cooperative	Quezon	12,073,969
14	Malayang Nagkakaisang Magsasaka At Mangingisda Multipurpose Cooperative	Or. Mindoro	11,512,353
15	Gemasco	Cavite	11,413,814
16	Gma Vendors Development Cooperative	Cavite	11,074,184
17	Labac Multipurpose Cooperative	Batangas	11,005,650
18	Progressive Entreprenuers On Agribusiness and Related Livelihood Service	Quezon	10,831,303
19	Bago (Ibaan) Multipurpose Cooperative	Batangas	10,306,454
20	Total Agricultural Assitance and Development Mpc	Batangas	10,081,866
21	Barangay Scholars Multipurpose Cooperative	Cavite	8,579,280
22	Batangas City Government Employees Kb For Credit	Batangas	8,666,427
23	Pangkasama Multipurpose Cooperative	Aurora	8,029,623
24	Batangas Integrated Sugar Planters Cooperative Mktg. Assn.	Batangas	7,947,926
25	Our Lady Of Peace Credit Cooperative	Rizal	7,800,442
26	Marinduque Diocesan Development Cooperative	Marinduque	7,335,732
27	St. Francis Credit Cooperative Inc.	Quezon	4,639,475
28	Banal Na Krus Kooperatiba Sa Pagpapaunlad	Quezon	6,432,497
29	Sibbap Multipurpose Cooperative	Batangas	5,999,111
30	Maryknoll Academy Kb For Credit	Quezon	5,833,928

more than three decades of operation covering periods of both national economic downturns and upturns. Their success is founded on the keen recognition by the organizers of the need to collectively address common concerns. Initial government support was nil but the spirit of self-help and concern for members' benefits were high.

This section presents the highlights of each case study. Among others, it discusses the cooperatives' beginning, business operations, financial viability, members' benefits, and contribution to community welfare.

LIMCOMA multipurpose cooperative

LIMCOMA was formally organized in 1970 by 77 small and large poultry and livestock producers from Lipa City and San Jose, Batangas, many of whom were members of the military from the nearby Fernando Air Base. Its establishment was triggered by the need to shift to poultry and livestock production due to devastation of the citrus industry in this area in the 1960s. The incorporators thought of organizing a cooperative to produce their own feeds then supplied by large commercial feed millers operating in Metro Manila.

Feed milling, the main business initially, started with a capital of P57,000. Feed mixing was done using spade on concrete floors of the improvised rented warehouse. When capital was short, the original members of the Board of Directors (BOD) raised funds by increasing their share capital and lending out personal funds to the cooperative. The BOD did not receive compensation to minimize the cost of operation.

Membership grew from 77 in 1970 to 4,671 in 2001 representing an annual increase of 153 for 30 years. In the early 1970s, feed mixing shifted from manual to mechanical operation. The loan obtained from the Development Bank of the Philippines (DBP) and Cooperative Development Loan Fund (CDLF) paved the way for the initial expansion of milling capacity.

By 1985, a quality control laboratory was set up to ensure the quality of feed materials and finished products. Further improvement of the mill facility was done in 1994 through the acquisition of computerized feed mill facility. By then, feed milling operation was fully mechanized and automated capable of producing high quality feeds with precise mixture of ingredients. Plant capacity at present is 11,000 bags per day with product lines consisting of 34 different livestock rations: 15 for hogs; 15 for chicken; nine for tilapia; six for cattle; and one each for duck, quail, and fighting cock.

Support facilities to feed milling operation are a silo (3,600 metric tons capacity), a quality control laboratory capable of analyzing feed ingredients in two minutes, an experimental farm for testing feed rations, warehouses, and trucking services for the delivery of feeds.

Financial and other indicators

Sales and businesses

As of year 2000, LIMCOMA had gross sales (primarily feeds) of P1.1 billion. Other businesses that contributed to sales were paiwi system, breeding and experimental farming, meat processing, veterinary drugs production and services, animal diagnostic laboratory services, credit system, rural banking,

food store operation, and distilled water bottling. Areas of operation in 2001 covered five provinces in Southern Tagalog and Central Luzon Regions. It has seven branches in Batangas, three in Quezon province, two in Laguna, and one in Bulacan. It has 13 sales outlets in Batangas, and one each in Quezon Province and Mindoro.

Balance sheet
LIMCOMA has shown consistent growth in financial terms. For the period 1995 to 2001, assets had increased from P251.7 million to P519.1 million—doubling in six years. Networth (members equity) was P221.3 million in 2000. Considering the initial paid-up capital of P57,000 in 1970, networth had grown on the average by about P7.4 million annually in 30 years. Total liabilities of the cooperative had a value of P297.0 million in 2000, a little above networth of P221.3 million. This shows that the networth alone can meet about 65 percent of all obligations (short and long term) of the cooperative.

Net surplus
LIMCOMA has consistently demonstrated positive net surplus from operation (net profits) at least in the last six years of operation (1995–2000) from P8.8 million to P15.4 million. Net surplus in 2000 was P15.4 million—the amount available for patronage refund, interest on capital, investment and development, and reserves.

Profitability
As shown by profitability ratios in 2000, profit ratio was 0.01 to 1; return-on-assets, 0.03 to 1; and return-on-equity, 0.07 to 1. In short, the cooperative is making profit from operation and members are getting a return of seven percent on equity they put in the cooperative.

Liquidity
LIMCOMA is liquid as indicated by current and quick ratios. Current ratio had been 1.07:1 or better in 1995–2000 (except in 1999, which was 0.5 to 1). Given the rule of thumb of 1:1 as acceptable ratio, LIMCOMA appears very liquid. It has the capacity to meet the most urgent financial commitments.

Solvency
LIMCOMA is solvent or financially stable. Long term ratios or debt ratios was 0.57 to 1 in 2000 indicating the ability of the cooperative to meet long

term obligations. Debt ratio was lowest in 1998 and 1999 (less than 0.5 to 1) for the period 1995–2001.

Asset utilization

LIMCOMA utilizes its assets and inventory well. Inventory turnover fluctuated between 9.5 to 1 (2000) to 17.99 to 1 (1996) for 1995–2000. This means that inventory turnover was more than once a month in its best year (1996), and about once a month in hard times. Turnover of assets was between 2.03 to 1 (2000) to 3.27 to 1 (1996). This means that the cooperative was able to use the assets to 2 to 3 times per year for the period 1995 to 2000.

Benefits to members and community

On top of the patronage refund and interest on capital, members of LIMCOMA receive veterinary assistance and services, death aid benefit, educational grant for children, transportation allowance in attending meetings and assemblies, free medical and dental consultations, credit and banking services, market outlet for products, among others.

Through LIMCOMA's Community Service Committee organized in August 25, 2000, the cooperative provides donations to schools, churches, and NGOs seeking financial assistance. LIMCOMA also supports the livelihood program of the City of Lipa. It is an active contributor to the Training and Education Fund for cooperatives, channeling its contributions through the Cooperative Union of Batangas (CUB), Cooperative Union of Southern Tagalog (CUST) and Cooperative Union of the Philippines (CUP).

Endnote

Evidence of LIMCOMA's success are 14 awards it received for the period 1983-2000 to wit: Most Outstanding Marketing Cooperative by the Bureau of Cooperatives Development, Testimonial Recognition by the Bureau of Cooperative Development (BCOD) and Cooperative Union of the Philippines, Most Outstanding Marketing Cooperatives of Agriculture, Plaque of Appreciation and Recognition by Cooperative Union of Batangas, Plaque of Appreciation from the Office of the City Mayor of Lipa, Plaque of Appreciation from Guarantee Fund for Small and Medium Enterprise, Most Outstanding Cooperative of the Philippines by CUP-RCU-NF, Plaque of Appreciation during Lipa City Foundation Day, Cooperative Top Grosser Award, Plaque of Appreciation from Western Philippine Colleges, Ulirang Cooperative, Pang-Limang Pinakamahusay na Cooperatiba, and Best in Capital Build-Up by Gawad Pitak.

Behind the success of LIMCOMA are the pioneers, officers, employees, and members who steered the cooperative into what it is now. In particular, the founding president, Engr. Claro Malleta, who served in this capacity for 15 years, was highly instrumental in providing resources and direction during the cooperative's crucial time of development.

The officers (all successful businessmen in livestock and poultry) were also keys to the success of LIMCOMA. Pursuit of their individual interest jibed well with the operation of the cooperative. Except for the loan from DBP and CDLF in the 1970s, government assistance to LIMCOMA was nil. Future plans that include selling of products throughout the country, expanding savings mobilization, expanding research and development, and improving production system under the International Standard (ISO 9000), all emanate from the internal management of the organization.

Cavite Farmers Feedmilling and Marketing Cooperative (CAFFMACO)

CAFFMACO is a success story of small farmers' cooperative business. Formally established in Silang, Cavite on October 26, 1976 as a precooperative, it started with only 44 members and grew to more than 1,200 today. On record, it had an initial capital of P137,030 in 1997 Today, it is one of the high profile cooperatives with multimillion peso worth of assets.

It was conceived in mid–1970s when leaders of animal raisers and church-related development agencies in Cavite met to share information on activities of their respective groups. They decided to work together in pursuing cooperative development projects through the "Farmer Scholar" approach that involved training of individuals in various disciplines, such as swine and poultry production, rice production, and nutrition. Following an intensive training-seminar, Farmers Scholars shared their learning and experiences with fellow members of their barangays, thus, causing a multiplier effect of the training at the barangay level.

The first concern shared by members is the increase in production of swine and poultry in Cavite with the corresponding need for a feed mill. Commercially mixed feeds supplied by millers in Metro Manila were not readily available to small farmers in the locality. Quality feeds available were not always satisfactory. Farmers had to use additional feed supplements.

A number of institutions were instrumental in the initial stages of the cooperative's existence. These include: International Institute of Rural Reconstruction (IIRR); the Cavite Interagency Institute Conference (CIAC); the Philippine Rural Life Center (PRLC); the Bureau of Animal Industry (BAI) of the Ministry of Agriculture; and the Cavite Hog Raisers' Association. The PRLC rented out to the cooperative its feed milling facility in

Pala-Pala, Dasmarinas, Cavite for a fee of P1.00 per bag. The IIRR assisted CAFFMACO in securing funds from the German Freedom from Hunger Campaign (GFFHC) to construct a new feed milling plant in Barangay San Vicente, Silang, Cavite. The plant commenced operation on May 22, 1982.

To date, it has a feed milling capacity of 847,000 bags—100 times more than when it started in 1977. Its product lines are rations for swine, cattle, broiler, layer, cock, horse, quail, tilapia, duck, rabbit, turkey, dog, cat and sheep. Other business activities include trucking, grocery store, veterinary services, livestock dispersal, and canteen operation.

Financial indicators

Balance sheet

As of 2000, CAFFMACO had total assets of P127.9 million, (70 percent current assets and 30 percent property, plant and equipment). For the period 1980–2000, total assets grew from P448,700 to P127.9 million or an average annual increase of P6.4 million for 20 years.

Members' equity was P51.9 million in 2000, an increase over 1999 figures of P30.7 million. The initial authorized capital of P40 million had been fully paid and subscribed by the year 2000. For the period 1980–2000, equity grew from P95,498 to P51.9 million or an annual increase of P2.6 million for 20 years.

Total liabilities were P976.0 million (2000), a decline from 1999 liabilities of P101.8 million.

Net surplus

Net surplus from operation, the difference between sales and expenses, was P6.8 million (20000) down by about P3 million from 1999 level of P9.8 million. It is worth noting that the cooperative-run piggery and poultry farms did not yield positive net surplus, at least for the years 1999 and 2000. Also worth noting is that CAFFMACO has reached million-level net surplus in 1985 and has consistently increased it until 2000, reaching the highest mark of P9.8 million in 1999.

Profitability

CAFFMACO has been operating on positive profit for the period 1980–2000. The return-on-investment (ROI) was 5 percent for 2000. For the recent years, ROI was observed highest in 1994 at 28 percent. Based on net-profit-ratio (NPR) in year 2000, the profitability index was 1.6 percent. It also means that the cooperative was making a net profit of 1.6 percent for every peso sale.

Liquidity

CAFFMACO is in liquid financial position. Current ratio for 1999 and 2000, at least, was 1.30. This implies that current obligation could be met by current asset by more that 30 percent.

Solvency

CAFFMACO is stable and solvent as indicated by debt ratios. The ratio for 2000 was 0.2, implying that the cooperative could easily pay its long-term obligation; it only required 20 percent of the equity to pay the long-term liability in 2000.

Benefits to members and community

Patronage dividends, rebates, training and educational support, start-up capital for hog project, and free veterinary services are available to all members of CAFFMACO. About 35 percent of the P6.8 million net surplus in 2000 went to members as patronage dividend. In the same year, P12.6 million representing feed purchase rebates (at P10/bag of feed purchased), was paid to members.

Members also enjoy the benefits of the education and training program of the cooperative. In 2000, CAFFMACO spent or allotted P312,216 for cooperative education and training fund. Children of qualified members, officers, and employees are provided educational support of not more than P15,000 per semester under the Educational Support Program of the cooperative. Members who are employees enjoy the member and employees education program. In 1997, for example, the cooperative budgeted P629,000 for training of employees.

Its community services include outreach-donation program to calamity areas, sports, health, and nutrition programs. In partnership with government and volunteer groups, it also sponsors free medical and dental examinations and feeding programs to malnourished children and education on proper selection and preparation of nutritious foods to parents.

Through its Education and Training Committee, CAFFMACO has established linkage with primary cooperatives and federations in and out of Cavite; offers free use of boardrooms for seminars, conferences and meetings sponsored by Cooperative Union of Cavite (CUC) and Federation of Cavite Cooperatives (FCC). It is actively involved in Silang Municipal Cooperative Development Council. Some officers of CAFFMACO are actively involved in the promotion of cooperatives in Cavite, Southern Tagalog Region, and the Philippines in general as officers of CUC, CUST and CUP.

Endnote

CAFFMACO has received numerous awards and citations such as Ulirang Kooperatiba Award by the CUP (1998), Most Outstanding Primary Cooperative-Marketing Category (1995) by Cooperative Congress, Most Outstanding Award of Recognition (1991) by Cooperative Congress, Certificate of Recognition (1993) by Kilusang Kabuhayan at Kaunlaran, and Commendation from DA–NAFC and Commission on Higher Education.

Behind its success is the concerted effort of the pioneers, members, officers, and the management staff. The dedication and spirit of volunteerism of the incorporators (to the extent of using their own money, if necessary) was crucial during the organizational stages of the cooperative. Recognition is also due to institutions like IIRR, PCU, PRLC, CIAC, and GFFHC which initially provided assistance in the form of training, expertise sharing, and financing.

The continuous education and training program also played an important role in the success of the cooperative. Education and training promotes transparency in the affairs of the cooperative. Members were informed about their rights and obligations and taught how to improve their own projects. Members are informed and encouraged to participate in the activities of the cooperative through the quarterly CAFFMACO Newsletter.

The dedication of employees and, most importantly, the managers' high level of competence are keys to the current success of CAFFMACO. The managers' concern for the cooperative seems to be fueled by them being active members themselves. They were, for several years, recognized as the most outstanding members on the basis of their cooperative patronage. The dedication of the Board of Directors is also noteworthy. This is manifested in their well-attended board meetings, which, on the average, are held more than the required one meeting per month.

Soro-soro Ibaba Development Cooperative (SIDC)

SIDC was organized in 1969 primarily as a means of increasing income of farmers who were then solely engaged in crop farming. It has been envisioned as the prime mover of development in the community by providing quality products and services. It operates by the principles of service over profit, pro-God, pro-People, and pro-Nature but strives to be competitive with private business organizations. The man acknowledged to be the father of SIDC is Mr. Victoriano Barte.

The cooperative started out as the Soro-soro Ibaba Association engaged in trading of basic consumer items, feeds, and veterinary supplies. It

was later registered as Samahang Nayon in 1972 and then as Soro-soro Ibaba Cooperative in 1978. In 1990, it was registered as a development cooperative with CDA.

Growth of the cooperative was phenomenal. Membership increased from 59 in 1969 to 2,098 in 2001—representing an annual rate of growth of 64 members for 32 years. Assets and volume of business had increased correspondingly over the years. To date, the cooperative has expanded business to other villages of Batangas City and other towns of Batangas province.

Product lines expanded as well. From a simple trading operation in 1969, SIDC has expanded its business to contract-growing, feed milling, credit services, meat stall operations, hog selling pen operation, rolling meat shop, aqua-culture business, rentals of facilities, savings mobilization, artificial insemination services, pig farming, experimental farm operations, television services, and housing program. However, the major line of business is feed milling which started in 1987. The mill capacity is 4,000 bags of feeds per day, enough to meet the requirements of its members.

Financial indicators

Balance sheet

Assets, liabilities, and networth of SIDC had consistently grown in the period 1996–2000. Assets grew from P80.4 million in 1996 to P265.7 million in 2000, or an average annual rate growth of 35 percent during the period. For the same period, liabilities also increased from P1.3 million (1996) to P162.7 million (2000), or an average annual growth of 54 percent. Members' equity showed a steady pattern of increase from P22.2 million in 1996 to P74.6 million in 2000, or an average annual rate of increase of 36 percent for the period.

Sales and net surplus

During the period 1996 to 2000, gross sales consistently rose from P443.6 million to P922.1 million. With cost of sales averaging 91.4 percent of the gross sales, the cooperative consistently had a net surplus. Over the same period, the cooperative registered the lowest net surplus of P20.9 million in 1996 and a peak surplus of P54.0 million in 1999.

Profitability

SIDC has been doing business profitably as the following indicators would show. Profit margin was at least 4.3 percent (2000) for 1996–2000 with the highest profit margin at 8.1 percent in 1999. Return-on-assets (ROA) during the period 1996–2000 ranged between 12.8 percent (2000) and 27 per-

cent (1998 and 1999). Using return-on-equity as a measure of profitability, the figures were high, at least 45 percent in 1996–2000 with the highest figure in 1998 at 113.1 percent.

Liquidity

SIDC is very liquid. Current ratio was more than 1.0 for 1996–2000 implying the capacity to meet its current obligations with its current assets. Using quick ratios as a measure, SIDC is likewise liquid with a ratio of 0.5 in 1996–2000. Quick ratio was 0.6 in 2000.

Asset utilization

SIDC had a good utilization of assets. Inventory turnover was at least once a month for 1996–2000 except in 2000, which was 10.0 or less than once a month on the average. Asset turnover was at least three times a year for the 1996–2000 period with the high rate of turnover of 5.5 in 2000.

Stability

SIDC's financial position is stable. In the long run, it can meet its long term liabilities with its networth as shown by the debt ratio of 0.61 (2000). The consistent rise in debt ratios from 0.4 (1996) to 0.6 (2000) indicates that solvency of SIDC is getting stronger through time.

Benefits to members and community

Members are entitled to the usual patronage dividend, which is normally about 35 percent of the net surplus. With a consistent record of having large net surplus, members of the cooperative have been enjoying large benefits from dividends.

Credit is available to members in many forms. Members could avail of capital for livestock and poultry production under the paiwi system. Under this system, the member provides the housing and support facilities for growing the animals; the rest are loaned out by the cooperative including the stock, feeds, veterinary supplies and services, and marketing services. Profits are equally shared by the cooperative and the member. Aside from the paiwi system, a separate credit program for hog fattening and breeding is available to members. Members also get a 30–day credit line for consumer goods at the cooperative minismart.

Other projects for members include: joint venture option for tilapia production named "Tilapia Mo, Tilapia Ko;" rolling meat market shop; free seminars on marketing; livestock artificial insemination; and various training programs available to all members.

As part of its social obligation, the cooperative provides its members free medical check-up (including the nearest relatives); scholarship for children of indigent members; "study now, pay later" program; mortuary aid; job placements services; library services; and information services through its newsletter called SIDCKAT. Members also enjoy cable TV service at a minimal rate of P175 per month available to members through its SIDC-SMATV, which operates 21 TV channels.

At the community level, SIDC supports various community programs. Under its Barangay Development Fund, it allocated P1.0 million in 2000 to support the projects of nearby barangays. SIDC supports pollution control program in the community through seminars on biogas production, organic fertilizer production, and plan to install waste and water treatment plants in Batangas City.

Endnote

In recognition of its exemplary performance, SIDC has earned various awards and citations such as Most Outstanding Small Farmers Organization of the Philippines (1989) by the Department of Agriculture, Gawad Pitak (Best in Profitability) in 1993, 1994, 1995 and 1997 by President F.V. Ramos, Gawad Pitak (Best Coop Citizen) in 1996, Gawad Pitak (Most Outstanding Cooperative) in 1996 and 1997, Gawad Pitak (Best of Hall of Fame) in 1998, Kabuhayan Awards in 1998, People Development Award in 1998, Most Outstanding Agricultural Multi-purpose Cooperative, and Class "A" Cooperative Category by Land Bank of the Philippines.

Credit to the achievements of SIDC goes to the pioneers as exemplified by Mr. Victoriano Barte who devoted time, energy, and resources to steer SIDC to what it is now. Credit also goes to all the people who compose the cooperative: the general membership, BOD and other elected officials, and employees. Based on an interview with Mr. Angelito Bagui (Chairman of the BOD in 2000), the spirit of cooperativism runs high among the general membership and officers.

Padre Garcia Multipurpose Cooperative (PGMC)

Organized in 1981, PGMC had the following objectives: (a) encourage thrift and savings mobilization among members for capital formations; (b) create funds to grant loans for productive and providential purposes to its members; (c) provide goods and services and other requirements of the members; (d) engage in photocopy, rental and rice retailing services; (e) promote the cooperative as a way of life for improving the social economic well-being of the people; (f) do any related activity for the members' self-government,

improve social and/or economic well-being under a truly just, democratic society; (g) work with the cooperative movement, nongovernment, government organizational entities in the promotion and development of cooperative and in carrying out government policies; and (h) undertake other activities for the effective and efficient implementation of the provisions of the Cooperative Code of the Philippines.

It started as a grain dealers association in a rented space in the public market of Padre Garcia, Batangas. Sixty pioneer grain dealers first organized it as a precooperative called the Padre Garcia Grain Retailers Association. In 1984, membership was opened to all qualified residents of the town and the Association (then, with 138 members) was registered as a full-fledged cooperative with Bureau of Cooperative Development. In 1990, the cooperative was registered with Cooperative Development Authority as Padre Garcia Multipurpose Cooperative.

There are three categories of members at the PGMC: regular, associate and senior members. Regular members are those who satisfy all the requirements for membership They are entitled to vote and be voted upon during election of the cooperative, and enjoy all the rights and privileges as a member. Associate members are minors (17 years and younger) and citizens of Padre Garcia who reside abroad. They cannot exercise the right to vote nor borrow from the cooperative, but can receive dividend on capital invested with the cooperative. Senior members, on the other hand, are those who are 60 years or older, could vote but do not enjoy the benefits of group insurance.

Membership had grown from the original incorporators of 60 in 1981 to 1,599 in 2000. With the increase in membership, paid-up capital correspondingly increased.[14] From the initial paid-up capital of P25,000 in 1981 to P25.2 million in 2000, PGMC had demonstrated capacity to mobilize capital on the average P1.26 million per year for 20 years.

Aside from share capital, PGMC generates loanable funds from deposits and maintains credit facility with other financial institutions. It offers 5 percent (tax free) interest rate for savings deposit and 9 percent (six months) for time deposit. It has a rediscounting facility with Land Bank of the Philippines of P10 million, loan facility from Department of Trade and Industry TST-SELA of P3.0 million (1998), credit line from United Coconut Planters Bank Foundation of P5.25 million.

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[14] PGMC requires members an initial share contribution of P5,000. For capital build-up, daily deposit contribution equal to 50 percent of dividend and patronage refund and 5 percent of loan granted is required of members. Members are also enjoined to contribute 2 percent of monthly income for share capital build up.

Recent data on loans granted indicate that in 2000, PGMC had total loan releases of P25.6 million granted to 736 members, or an average amount of P34,849 per borrower. In 1996–2000, loan releases fluctuated between a low P24.7 million (1996) granted to 642 borrowers and a high of P36.2 million (1997) granted to 770 borrowers.

Financial indicators

Total assets

As of 2000, PGMC had total assets of P54.3 million. Assets continuously rose from P31.3 million in 1996 to P54.3 million in 2000.

Equity

Members equity for the period 1996–2000 showed a consistent upward build-up from P17.5 million (1996) to P25.2 million (2000). This shows the ability of PGMC to attract members and raise capital at the same time.

Liabilities

Total liabilities of the cooperative also increased for the period 1996–2000. Liabilities in 1996 of P12.9 million were more than twice the amount in 2000 of P26.3 million.

Gross income

Gross income during the period of study rose from P5.0 million in 1996 to a high of P8.1 million in 1999 and to P7.8 million in 2000.

Net surplus

PGMC realized net surplus from operation although fluctuating from P2.2 million (1996) to P3.8 million (1997) to P2.8 million (2000). The fluctuation in net surplus was partly due to the fluctuation in gross income. The figures, however, indicate that PGMC is operating the business successfully.

Dividend on capital

Dividend to capital investment has been consistently declared by PGMC. The amount of dividend to capital declared was P1.6 million (1996) to P2.6 million (1997) to P1.9 million (2000). Dividend declared in 2000 was 70 percent of the net surplus.

Patronage refund

PGMC returned to members part of the net surplus as dividend for patronizing the cooperative. Patronage dividend declaration ranged from P673,321

(1996) to P1.1 million (1997). Patronage refund in 2000 was P839,785, equal to 30 percent of the net surplus and 14 percent of the total interest income.

Liquidity

As indicated by current ratios, PGMC is very liquid financially. Current ratio was 2.18 (1996) to 1.86 (1999) to 1.89 (2000) indicating that there was about P2.00 available current asset to meet every P1.00 current liability for the period 1996–2000.

Solvency

Using total asset to total liabilities ratio as a measure of solvency, the indicators showed that PGMC is financially stable. All of its total liabilities can be met by total assets in the ratio of 1 to 2, at least for the period 1996–2000. This means that only one-half of the total assets is sufficient to settle all the obligations.

Endnote

With modest beginnings in 1981 initiated by 60 pioneers, initial capital of P25,000, and operating only in a rented space in the public market, PGMC has, by 2000, grown into an institution with P54.3 million assets, P25.2 million equity capital, and 1,599 members. It now owns and does business in a beautiful one-story building on 787 m2 lot in the heart of Poblacion, Padre Garcia, Batangas.

High rate of patronage and a strong spirit of cooperativism among members and even nonmembers of the community are evident. Members no longer borrow from usurious money lenders (e.g., 5/6 system). Even nonmembers are now regular depositors with the cooperative.

Credit to the success of the cooperative goes to the pioneers who endured the pains of steering the cooperative to what it is now. Special recognition is accorded by members to Mr. Dionisio Manalo, the acknowledged father of the PGMC. It is also important to note that four of the pioneer-incorporators are still in the Board of Directors as of 2000. Credit also goes to the employees for faithfully doing their jobs; to the Board of Directors and officers for formulating sound policies and programs; and to the members for the important patronage of the cooperative.

SYNTHESIS AND CONCLUSION

The performance and accomplishments of the four case cooperatives show stability and sustainability. A snapshot of their financial performance in 2000 is shown in Table 9. A summary of awards and benefits to members and com-

Table 9. Summary of financial indicators and lines of business, case cooperatives in Region IV, Philippines, as of 2000

	COOPERATIVE			
CRITERIA	LIMCOMA	CAFFMACO	SIDC	PGMC
Year in business (years)	30	23	31	19
Membership (number)	4671	1207	2098	1599
Assets (P M)	519.09	127.86	265.67	54.31
Equities (P M)	221.34	51.86	74.64	2.80
Profitability Ratio				
Profit Ratio	.01:1		.04.3:1	
Return on Asset	.03:1		.12.8:1	
Return on Equity	.07:1		.44.0:1	
Liquidity Ratio				
Current Ratio	1.07:1	1.30:1	1.1:1	1.89:1
Quick Ratio	0.53:1		0.6:1	
Solvency Ratio				
Debt Ratio	0.57:1	0.20:1	0.61:1	
Net Surplus (P M)	15.394	6.807	33.91	2.799
Volume of Sales (P)	1.1B	410.81M	922.07M	25.65M
Number of Employees	272	100	118	
Total Number of Business	10	8	16	
Major Line of Business	Feedmilling	Feedmilling	Feedmilling	Lending
Other Line of Business	paiwi system; breeding & experimental farming; veterinary drug prod'n/services; animal diagnostic lab services; credit services; rural banking; meat processing; food store operation; and distilled water bottling.	poultry production; hog fattening; consumer store operation; veterinary & technical service extension; and canteen operation.	contract growing; expanded credit line; Minimart operation; meat stall operation; hog selling pen; rolling meat shop; aqua culture; rental of facilities; savings mobilization program; artificial insemination services; pig farming; experimental farm operation; meat shop operation; sattellite master ATV services; and coop pabahay.	

munity are shown in Table 10. LIMCOMA has more than 31 years of experience; CAFFMACO, more than 25 years; SIDC, 32 years; and PGMC, about 23 years. Three of them: LIMCOMA, CAFFMACO, and SIDC engaged primarily in feed milling but eventually expanded business in related enterprises to improve farmers' income from poultry and livestock production and market-

Table 10. Summary of benefits and awards received, case cooperatives

A. Benefits Received by Members

LIMCOMA: quality feeds; veterinary assistance and services; death aid; educational grant for children; free medical/dental consultation; banking services; market for the products; interest on capital; and patronage refund.

CAFFMACO: patronage refund; rebates on feeds purchase; dividend on capital; training & educational support; and start up capital.

SIDC: patronage refund; interest on capital; capital for livestock & poultry production;credit for purchases of consumer goods, hog fattening, breeding and construction of pig pen; housing loan; marketing services; high quality piglets; discount rate for cable TV operation; free training & seminar; free medical check-up; scholarship for children;educational loan for children; mortuary aid; job placement services; library services; and newsletter services.

PGMC: dividend; patronage refund; available credit services; and savings facilities.

B. Benefits Received by Community

LIMCOMA: grants/donation to school, churches, NGO seeking financial assistance; and support to livelihood program of Lipa City.

CAFFMACO: donation to calamity areas, sports, health and nutrition program; and sponsor free medical/dental examination, feeding program to malnourished children, and education on proper preparation of nutritious food to parents.

SIDC: allocate P1M for Barangay Dev,t. Fund; and reaches out poor families in community and other places during Christmas

PGMC: low interest credit facility; and savings facility

C. Awards Received

LIMCOMA: Most Outstanding Marketing Cooperative by the Bureau of Cooperatives Development, Testimonial Recognition by BCOD and Cooperative Union of the Philippines, Most Outstanding Marketing Cooperatives of Agriculture, Plaque of Appreciation and Recognition by Cooperative Union of Batangas, Plaque of Appreciation from the Office of the City Mayor of Lipa, Plaque of Appreciation from Guarantee Fund for Small and Medium Enterprise, Most Outstanding Cooperative of the Philippines by CUP-RCU-NF, Plaque of Appreciation during Lipa City Foundation Day, Cooperative Top Grosser Award, Plaque of Appreciation from Western Philippine Colleges, Ulirang Cooperative, Pang-Limang Pinakamahusay na Cooperatiba, and Best in Capital Build-Up by Gawad Pitak.

CAFFMACO: Ulirang Kooperatiba Award by the Cooperative Union of the Philippines (1998), Most Outstanding Primary Cooperative-Marketing Category (1995) by Cooperative Congress, Most Outstanding Award of Recognition (1991) by Cooperative Congress, Certificate of Recognition (1993) by KKK, and Commendation from DA-NAFC and CHED.

SIDC: Outstanding Small Farmers Organization of the Philippines (1989) by the Department of Agriculture, Gawad Pitak (Best in Profitability) in 1993, 1994, 1995 and 1997 by Pres. F.V. Ramos, Gawad Pitak (Best Coop Citizen) in 1996, Gawad Pitak (Most Outstanding Cooperative) in 1996 and 1997, Gawad Pitak (Best of Hall of Fame) in 1998, Kabuhayan Awards in 1998, People Development Award in 1998, Most Outstanding Agricultural Multipurpose Cooperative, and Class “A” Cooperative Category by Land Bank of the Philippines.

ing. Consumer goods and services are also provided to members. Only PGMC specializes in credit delivery.

All four now have multimillion assets, with business transactions comparable to many medium scale business enterprises. In 2000, volume of sales of LIMCOMA was P1.1 billion; SIDC, almost a billion (P0.92 billion); and CAFFMACO, P0.41 billion. They are consistently profitable, liquid, solvent, and regularly declare patronage and share capital dividends.

The continued successful operation of the four cooperatives directly benefited their members and the communities where they operate. This fueled economic sustainability of their operation as it elicited continued patronage by members and even nonmembers who regularly do business with the cooperatives.

A number of common factors explain success. The cooperatives were conceived, initiated nurtured, and managed by local talents. They were supported primarily with the use of local resources and organization was founded in accordance with the felt need for such cooperatives.

An important policy implication from this study is that it is crucial to mobilize the initiatives of local talents and resources for agricultural cooperative development to succeed. These serve as the sources of cooperative strength and stability. The role of government is to undertake public investments in information dissemination, capability building, and provide initial capital that may be needed on a temporary basis.

It is important that the stakes of the members in the cooperatives is built-up through infusion of equity capital. External capital, including the one that may come from the government whenever harnessed, should be on catalytic and on interim terms to build-up the values of self-reliance and governance.

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CHAPTER V

Food Security, Agricultural Efficiency and Regional Integration

Amelia L. Bello

The world will soon have over seven billion people to feed. About a third of these people live in the Asia-Pacific region, making the task of assuring food security to these people both large and complex. Efforts must be taken to achieve the goal of making food available at prices that households can afford if the region wants to be food secure (the Food and Agriculture Organization [FAO] definition of food security).[1] Future demand for food will be driven by population growth and rising incomes. Exacerbating the food security problem is the issue of malnutrition. By year 2010, FAO estimates that Asia will account for about half of the world's malnourished population. Thus, the need to include the nutrition dimension to the food security problem.

OBJECTIVES OF THE PAPER

This chapter aims to describe the food security situation for Asia-Pacific Economic Cooperation (APEC) member-economies using a crude estimate

[1] The World Bank similarly defines food security as the availability and affordability of food to all the citizens in a country, with the essential elements being the availability of food and the ability to acquire it (World Development Report 1986). The Rome Declaration on World Food Security and Plan of Action says food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Efforts to achieve food security at the different levels will thus be different from each other, i.e., there are macro and micro dimensions to the food security problem.

of national food requirements for three types of grains and to compare and contrast their agricultural performances as a consequence of their domestic policies. It also seeks to analyze how regional cooperation can serve to meet the challenge of food security in the wake of a liberalized trade environment.

SIGNIFICANCE OF THE PAPER

Food security is a problem of both developing and developed countries. Although in many cases food production has outpaced population growth, complementary measures to ensure access to food and meet the conditions for adequate nutrition are still necessary. Thus, in the medium term, food security is not a problem of food production but one of access to food. In the long term, however, there are uncertainties surrounding food production such as the extent and effect of climatic changes, the possible scarcity of fresh water, soil fertility and soil erosion, contributions and risks of biotechnology and genetic engineering, as well as changing lifestyles which lead to shifts in food habits (Kracht and Schulz 1999).

With the rise of a global economic order, the availability and affordability of food become common concerns. Thus, exploring ways and means to promote cooperation along these issues becomes a requisite. A declining terms of trade and the ensuing export pessimism on one hand, and increasing gains from specialization and trade on the other, can be addressed in a more comprehensive and rational fashion through regional cooperation. A study on how the twin problems of agricultural efficiency and food security can be addressed is therefore in order.

METHODOLOGY AND DATA SOURCES

Methodology

Following Johnston and Mellor (1961), this chapter employs Ohkawa's equation in estimating growth in national demand for food in a particular country to wit:[2]

$$d = p + ng$$

where p and g are the rates of growth of population and per capita income, respectively, and n is the income elasticity of demand for agricultural products. Compared to other current approaches, the Ohkawa equation is, admittedly, a crude estimation procedure. For instance, the IFPRI's (Interna-

[2] The original equation was $d = p + gn + pgn$. Ohkawa dropped the last term in the final version of his paper because he argued that the last term was of small importance.

tional Food Policy Research Institute) International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) model is more comprehensive (Rosegrant et al. 2001). However, the simplicity and less demanding data requirements of the Ohkawa model makes it a convenient method for our purpose.

Data sources

Three commodities—rice, wheat, and maize—are the focus of the analysis. These are among the top seven food exports and imports within APEC for the period 1996–1998. The main reference used to track the top traded commodities was the 1998 FAO Trade Yearbook and the FAOSTAT Database 1990–1998. Flowers and other horticulture products are not included in the FAO Trade Yearbook, hence, their absence in the list. Data for China include those for Taiwan Province and, in some cases, Hong Kong. Thus, while Taiwan is a member-economy of APEC, in many cases, data from Taiwan is subsumed under that of China. The most traded commodities are shown in Tables 1 and 2.

Projected rates of growth of population were taken from the World Bank's 2000 World Development Indicators; projected gross domestic product growth rates, from the 2001 APEC Economic Outlook/website and Rosegrant et al. (2001). The APEC website contains a compilation of projected gross domestic product growth rates as submitted by the member-economies' economic planning bodies. GDP growth rate disparities are noticeable with growth rates highest in Southeast and north East Asia.

Income demand elasticities were from Rosegrant et al. (2001) and Hossain and Sombilla (1999). The classification of economies used by Rosegrant et al. in their IFPRI/IMPACT model was followed where the former Soviet Union was included under the Developed Countries heading because of their same income demand elasticities. The income elasticities of demand assumed that there will be a gradual shift in the demand structure from the main staples to high-value products. The factors responsible for this include expected increases in per capita incomes arising from economic growth, rapid urbanization, and the continued commercialization of agricultural production. The income elasticity demand parameters are the average of the aggregate income elasticities for each country, given the income level and distribution of population between urban and rural areas.

Data on GDP projections were taken from individual country reports. Table 3 shows a summary of the basic data used in our analysis.

Table 1. Top seven most common traded food commodities of the APEC member-economies

Imports	Ave. Value (in US$000)	Exports	Ave. Value (in US$000)
Dairy Products (17)	290,807	Fish + Fishery Products (19)	1,249,092
Fish + Fishery Products (15)	2,146,306	Dairy Products (8)	500,795
Wheat + Flour (14)	434,241	Coffee (7)	358,796
Maize (11)	569,656	Wheat + Flour (5)	2,231,730
Bovine Meat (11)	624,538	Maize (5)	1.363,789
Soybeans (8)	626,111	Oil of Palm (5)	1,085,715
Rice (7)	220,768	Poultry Meat (5)	821,127
Wine + Vermouth (7)	422,253		

Note: Numbers in parenthesis indicate the number of economies trading the commodity.
Source: FAOSTAT Database 1990–1998 and FAO Trade Yearbook 1998

Table 2. Top seven food commodities of the APEC member-economies ranked by value

Imports	Ave. Value (in US$000)	Exports	Ave. Value (in US$000)
Fish + Fishery Products	2,146,306	Wheat + Flour	2,231,730
Pig Meat	740,255	Maize	1,363,789
Soybeans	626,111	Fish + Fishery Products	1,249,092
Bovine Meat	624,538	Bovine Meat	1,118,255
Maize	569,656	Oil of Palm	1,085,715
Poultry Meat	543,244	Rice	900,643
Wheat + Flour	434,241	Poultry Meat	821,127

Source: FAOSTAT Database 1990–1998 and FAO Trade Yearbook 1998

RESULTS

The top seven most common traded food commodities of the APEC member-economies in terms of number of trading economies and in terms of value are presented in Tables 1 and 2 respectively.

The most common imports, each with at least 10 economies importing the commodity are dairy products and eggs; fish and fishery products; wheat, flour and wheat equivalents; maize; and bovine meat. Soybeans, rice, and wine are the next most common imported food items. Meanwhile, fish and fishery products was the most common export commodity, with 19 economies exporting it. The only exception to this was Brunei Darussalam which solely exports poultry meat. The other most common exported food items are dairy products and eggs; coffee; wheat, flour and wheat equivalents; maize; oil of palm; and poultry meat.

Table 3. Basic data used for estimating Ohkawa's equation

APEC Member-Economies	Population Growth (1998-2015)	Income Demand Elasticies			GDP Growth Rate	Period	GDP per Capita Growth Rate
		Maize	Rice	Wheat			
Developed Countries							
Australia	0.8	–0.15	0.22	0.11	2.5	1997–2020	1.7
Canada	0.6	–0.15	0.22	0.11	3.2	2002–2007	2.6
Japan	–0.1	–0.15	0.22	0.11	1.5	2004–2006	1.6
New Zealand	0.5	–0.15	0.22	0.11	1.6	2003–2007	1.1
Russian Federation*	–0.4	–0.15	0.22	0.11	4.3	2003–2004	4.7
United States	0.7	–0.15	0.22	0.11	3.1	2002–2012	2.4
Latin America							
Chile	1.1	–0.02	0.19	0.03	4.5	2002–2003	3.4
Mexico	1.4	–0.02	0.19	0.03	3.6	1997–2020	2.2
Peru	1.5	–0.02	0.19	0.03	4.8	2003–2005	3.3
Southeast Asia							
Brunei	2.06	0.04	0.01	0.28	4.1	2002–2006	2.0
Indonesia	1.2	–0.3	0.14	0.2	5.9	2002–2005	4.7
Malaysia	1.6	–0.4	–0.2	0.3	7.5	2001–2005	5.9
Philippines	2.3	–0.25	0.1	0.2	6.6	2003–2006	4.3
Thailand	0.9	–0.3	0.0	0.2	3.5	2003–2004	2.6
Vietnam	1.2	0.04	0.01	0.28	7.5	2003–2005	6.3
North East Asia and the Pacific							
China	0.7	–0.35	0.04	0.2	7.0	2002–2005	6.3
Hong Kong	1.0	–0.26	–0.2	0.13	3.0	2002–2006	2.0
Korea	0.6	–0.26	–0.2	0.13	5.0	2003–2004	4.4
Papua New Guinea	1.8	–0.26	–0.2	0.13	2.3	2003–2007	0.5
Singapore	1.0	–0.26	–0.2	0.13	6.0	up to–2010	5.0
Taiwan	0.5	–0.26	–0.2	0.13	5.4	2003–2004	4.9

* Included in this classification only because of similarities in income demand elasticites.

Based on value alone (i.e., without considering the number of trading economies), the top seven food imports and exports again include fish and fishery products, soybeans, bovine meat, maize, and wheat, flour and wheat equivalents for imports; and wheat, flour and wheat equivalents, maize, fish and fishery products, oil of palm, rice and poultry meat for exports.

Change in food requirements

Bearing in mind the qualifications mentioned in the methodology, Table 4 presents the results using Ohkawa's equation. Specifically, the third main column of Table 55 shows the projected growth rate in food demand for rice, wheat, and maize given the various assumptions about population growth rates, income demand elasticities, and per capita growth rates for

Table 4. Projected annual rates of growth in food requirements, production growth rates and demand-supply gaps, 2010

APEC Member-economies	Growth Rate 1998 — 2010 (percent/year) Production*			Consumption			Supply — Demand Gap		
	Rice	Wheat	Maize	Rice	Wheat	Maize	Rice	Wheat	Maize
Developed Countries									
Australia	3.1	1.1	2.41	1.17	0.99	0.55	1.93	0.11	1.87
Canada	0.0	0.3	0.8	1.17	0.89	0.21	–1.17	–0.59	0.59
Japan	–0.7	–0.6	–2.19	0.25	0.08	–0.34	–0.95	–0.68	–1.85
New Zealand	0.0	0.76	1.03	0.74	0.62	0.34	–0.74	0.14	0.70
Russian Federation**	1.6	1.1	0.68	0.63	0.12	–1.11	0.97	0.98	1.79
United States	0.3	1.0	1.06	1.23	0.96	0.34	–0.93	0.04	0.72
Latin America									
Chile	2.5	2.92	2.76	1.75	1.20	1.03	0.75	1.72	1.73
Mexico	2.6	0.5	1.25	1.82	1.47	1.36	0.78	–0.97	–0.11
Peru	0.9	2.92	2.76	2.13	1.60	1.43	–1.23	1.32	1.33
Southeast Asia									
Brunei	0.0	0.0	0.0	2.08	2.63	2.14	–2.08	–2.63	–2.14
Indonesia	1.3	0.0	0.61	1.86	2.14	–0.21	–0.56	–2.14	0.82
Malaysia	0.4	0.0	4.59	0.42	3.37	–0.76	–0.02	–3.37	5.35
Philippines	2.8	0.0	2.81	2.73	3.16	1.23	0.07	–3.16	1.59
Thailand	0.8	0.94	2.81	0.90	1.42	0.12	–0.10	–0.48	2.69
Vietnam	1.2	0.0	2.81	1.26	2.96	1.45	–0.06	–2.96	1.36
North East Asia and the Pacific									
China	0.1	0.3	1.02	0.95	1.96	–1.51	–0.85	–1.66	2.53
Hong Kong	0.0	0.0	0.0	0.60	1.26	0.48	–0.60	–1.26	–0.48
Korea	–0.1	–2.3	0.33	–0.28	1.17	–0.54	0.18	–3.47	0.87
Papua New Guinea	0.95	0.0	2.81	1.70	1.87	1.67	–0.75	–1.87	1.14
Singapore	0.0	0.0	0.0	n.a.	1.65	–0.30	n.a.	–1.65	0.30
Taiwan	n.a.	n.a.	n.a.	–0.48	1.14	–0.77	n.a.	–1.14	0.77

* These were derived from the FAOSTAT Agriculture Data 2003, and Development Trends in Agriculture: International comparisons, 7th Edition of the Bureau of Agricultural Statistics, Department of Agriculture (Philippines).
** Included in this classification only because of similarities in income demand elasticites.

each of the APEC member-economies. The zeros indicate no production while n.a. stands for no available data. Figures for China include those for Hong Kong and Taiwan. The supply-demand gap column shows whether or not projected production of rice, maize, and wheat grows faster (positive) or slower (negative) than consumption.

Table 5 translates the projected rates into quantities (i.e., '000 metric tons). Here, figures in Table 4 (for consumption) and the projected production growth rates were applied to the base 1998 production and consumption data to derive the estimates for the 2010 levels. The supply–demand gap column shows whether a member-economy is projected to expe-

Table 5. Projected production and consumption levels, 2010

APEC Member-economies	Projected Quantities (000 MT) in 2010						Supply — Demand Gap		
	Production			Consumption					
	Rice	Wheat	Maize	Rice	Wheat	Maize	Rice	Wheat	Maize
Developed Countries									
Australia	1,306	24,899	349	185.96	1,514	90	1,120	23,385	259
Canada	0	26,028	9,812	378.32	3,097	99	-378	22,931	9,713
Japan	7,775	535	0.17	11,716	5,518	1,338	-3,941	-4,983	-1,338
New Zealand	0	329.65	198	8,763	283	2.49	-8,764	47	195
Russian Federation*	319	41,093	887	757	19,591	36	-439	21,501	852
United States	6,309	74,816	279,413	3,240	27,220	3,987	3,069	47,595	275,426
Latin America									
Chile	136	2,271	1,256	178	1,908	244	-42	363	1,012
Mexico	400	3,507	21,223	727	4,152	14,390	-327	-645	6,833
Peru	1,251	198	1,242	1,471	1,698	387	-220	-1,501	855
Southeast Asia									
Brunei	0	0	0	43	17	7	-43	-17	-7
Indonesia	36,341	0	10,914	39,434	4,266	6,924	-3,093	-4,266	3,989
Malaysia	1,377	0	77	2,003	949	86	-626	-949	-9
Philippines	9,500	0	5,112	9,644	3,724	545	-144	-3,725	4,567
Thailand	16,940	0.83	6,174	9,610	688	426	7,330	-688	5,748
Vietnam	22,902	0	2,156	14,868	728	638	8,034	-728	1,517
North East Asia and the Pacific									
China	138,613	119,216	149,501	129,552	122,176	19,043	9,061	-2,960	130,458
Hong Kong	0	0	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Korea	5,170	4	83	4,489	2,602	709	681	-2,598	-625
Papua New Guinea	0.67	0	8	291	145	12	-290	-145	-4
Singapore	0	0	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Taiwan	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total							**10,988**	**92,620**	**439,441**

* Included in this classification only because of similarities in income demand elasticites.

rience a surplus (+) or a deficit (–) production of rice, wheat, and maize in 2010.

It will be noted that for all these commodities, APEC as a whole is expected to post surplus production by 2010.As expected, there will be economies exhibiting either surpluses or deficits in 2010. Note, however, that consumption figures are unavailable for Singapore while the figures for China include those for Hong Kong and Taiwan. If 21 member-economies are considered as one big group, however, the APEC member-economies will be self-sufficient in the three commodities. In the case of maize, the region will post a surplus of 439 million metric tons on account of the huge surpluses to be posted by the United States and China. For wheat, the surplus countries will be the United States, Australia, Canada, and the Rus-

sian Federation. A surplus of 93 million metric tons is projected. In the case of rice, a more modest surplus of 11 million metric tons will be posted due to the surplus production of China, Vietnam, Thailand, and, to some extent, by the United States and Australia. The above estimates point to a potential role for trade to promote food security in the APEC member-economies. Enhanced intra-APEC member- economy trade will enable the APEC member-economies to provide for the food needs of the group. This point will be elaborated further in section on Country Policies and, also, in section on Patterns in Trade Specialization.

Historical agricultural output and productivity

Table 6 provides a breakdown of the historical growth rates of agricultural food production, for various periods and for a number of agricultural produce, for selected ASEAN member-economies. Improved agricultural production has directly contributed in creating an environment for ensuring food security among these five economies (FAO 1998). An increase in calorie intake has likewise been noted, bulk of which came from improved domestic production. Indonesia achieved sufficiency levels in rice and increased its nonrice agricultural exports as well. Rice production grew 3.29 percent annually for the period 1980–1992 and noncereal foods, which still occupy an important place in the Indonesian diet, substantially increased. Sugar output improved by 4.82 percent while vegetable oils grew

Table 6. Growth rates of agricultural production in selected ASEAN countries, 1980–1992 (in percent)

	Indonesia	Malaysia	Philippines	Thailand	Vietnam
Cereal, total	3.45	0.83	2.58	0.66	4.67
Maize	4.70	12.14	3.55	0.89	5.66
Rice	3.29	0.72	2.17	0.65	4.63
Pulses	–0.58	n.a.	0.56	1.23	3.52
Roots/Tubers	2.00	0.89	0.35	1.20	–0.94
Cassava	2.13	1.62	n.a.	1.28	–1.67
Oilcrops, total	7.34	7.74	0.55	7.54	8.74
Vegetables	6.21	2.69	n.a.	n.a.	n.a.
Sugar	4.82	5.14	–2.08	8.69	4.46
Meat, total	8.05	8.94	3.57	4.80	5.59
Cow milk	12.82	2.44	0.69	19.58	3.26
Hen eggs	6.11	8.31	2.23	9.85	5.68

na – not available
Source: FAO 1998

7.34 percent. Growth in animal products, milk, meat, and eggs was likewise satisfactory.

Malaysia more than compensated for the increase in its food and animal products imports by an improved export performance of nonfood agricultural products. During the period 1980–1992, maize production improved by 12.14 percent while meat output grew 8.94 percent. In Thailand, rice exports slackened but exports of other agricultural commodities increased. Cow milk production grew 19.58 percent and hen eggs by 9.85 percent. Vietnam became a rice exporter and was able to create an exportable surplus in fish and fish products, cocoa, vegetable oils, fruits, and vegetables. Sadly, food imports of the Philippines increased at the same time that its exportable surplus in its traditional agricultural exports declined. For Indonesia, the Philippines, Thailand, and Vietnam, the significant growth in domestic agricultural production was also accompanied with a drop in population growth. Accordingly, per capita agricultural production increased. Changes in cropping patterns have also been noted. Soybean production in Thailand increased in response to increased demand for cattle feed. In all five countries, demand for wheat increased with growing urbanization. However, the production of pulses, which is an important source of protein for the poor, has declined.

Aside from the improvement in calorie intake, there has also been remarkable changes in the composition of the sources of calorie. A progressively larger share of calories is now being accounted for by animal sources compared to vegetable sources. Within the vegetable sources, a shift from cereal to noncereal sources and within the foodgrains, from starchy roots and tubers to superior cereals (i.e., rice and wheat) is also evident. The shift in this direction was more or less common to all five economies, but at varying paces (FAO 1998).

Accompanying improved domestic production, the economies also achieved intertemporal stability in food availability, with the extent of stability being measured in terms of interyear variations in food availability. This is important because from the viewpoint of poor families, interseasonal stability is more important than interyear stability. Bimonthly trends in the prevalence of underweight children support the strong seasonality effect (FAO 1998).

Asian population and food requirements—the case of rice

Rice remains to be the most important food crop with human consumption accounting for 85 percent of total rice production (Hossain and

Sombilla 1999). International trade in the commodity has grown to more than 16 million tons in 1993 from about seven million tons three decades earlier. However, rice trade remains limited—only about four percent of world rice production is transacted in the international market. This is due to the fact that rice in Asia is grown in small family farms and primarily for consumption. Within APEC, Thailand, the USA, and Vietnam are the major rice exporters.

Population dynamics and changing consumption habits will affect the significance of rice in the APEC countries in the near future. This has been demonstrated by the industrialized economies (e.g., Japan, South Korea, Taiwan) and, to a certain degree, the rapidly industrializing economies (Thailand, Malaysia). However, these five economies account for less than 10 percent of total grain consumption in the region. Indonesia, Vietnam, and the Philippines account for the bulk of total consumption and dominate consumption growth as well.

Recent figures in rice production growth raise concern about the region's ability to meet the demand for rice (Table 7). In 1985-1994, rice production growth was 1.6 percent per annum, half of what was recorded a decade earlier (2.9 percent). It is notable that in recent years, increases in rice production have been close to the population growth in Asia as a whole, although in some countries, population growth was higher. The reasons for this are (a) yield growth rates have approached yield ceilings, particularly for the irrigated areas which have been the major source of growth in rice production; and (b) natural resource constraints, that is, closing of the

Table 7. Growth rates in growth of population and rice production, major rice growing APEC economies

	Rice Harvested Area, 1994 (mil ha)	Population Growth (in percent pa)		Growth in Rice Production (in percent pa)	
		1975-85	1985-94	1975-85	1985-94
China	30.4	1.4	1.4	3.2	0.4
Indonesia	10.7	2.1	1.7	5.5	1.9
Vietnam	6.5	2.2	2.2	3.6	4.0
Thailand	8.5	2.1	1.4	3.0	-1.0
Japan	2.2	0.8	0.4	-1.0	-1.6
Philippines	3.4	2.4	2.1	3.5	1.3
Korea	1.2	1.5	1.0	1.8	-1.7
Asia	1.2	1.9	1.8	3.2	1.6

Source: Hossain and Sombilla 1999

frontier in cultivable land, exacerbated by the pressure to release land planted to rice in favor of vegetables, fruits, and other crops, as their market becomes stronger and bigger with economic growth. In the case of China, the rice harvested area fell from 37 million hectares in 1976 to 32 million hectares in 1992. For the Philippines, it declined from 3.7 million hectares to 3.2 million hectares for the same period. A third cause is the problem of sustaining farmers' interest in rice cultivation as the economy progresses. The growth of the nonfarming sector has pushed nonfarm wage rates promoting migration of labor from rural areas to cities and increased agricultural wages. Since traditional rice farming is highly labor-intensive, the increase in wage rates has pushed up the cost of rice production, reduced profits and farmers' incomes. Japan, Taiwan, and South Korea have experienced a continuous decline in their farming populations with the aging of workers and depopulation in remote areas.

The Philippine case—rice

The Philippines, in the three decades of the 1960s–1990s, made notable progress in rice production. From 4.1 million tons in 1965, the level of production increased to 10.5 million tons in 1994 or 1.3 tons per hectare to 2.9 tons per hectare. This growth was attributable to the gradual replacement of traditional low-yielding cultivars with high-yielding ones, supported by an expansion of irrigation and increased consumption of chemical fertilizers. However, since the mid–1980s, growth has slowed down following the decline in public investment for the expansion and maintenance of irrigation infrastructure and the limited scope of further expansion of areas under modern varieties. Since 1982, rice yield increased by only 1.7 percent per year, eroding the gains posted earlier (Hossain and Sombilla 1999).

Hossain and Sombilla projected the quantity of rice which the Philippines must produce to be self-sufficient until 2020. An upward pressure on per capita rice consumption is expected due to a number of reasons: population increase; improvement of living conditions which will enable more people to meet their grain needs; and, the substitution of rice for corn as human food. Table 8 shows that the Philippines may need to produce about 16.3 million tons of unmilled rice by 2010 in order to remain self-sufficient. If the current area under rice cultivation is maintained, rice yield has to increase to 5.1 tons per hectare. If population will grow by 1.3 percent per annum till 2020, rice production must grow at the same rate to at least maintain per capita consumption at the present level.

Table 8. Projected population and Philippine demand for rice, 2000-2020

Year	Projected Population (mil)	Per Capita Rice Consumption Annual Rate of Growth (in percent)	Required Production to Meet Demand (mil tons)
2000	77.3	2.2	12.82
2005	85.6	2.1	14.59
2010	93.8	1.8	16.31
2015	101.4	1.6	17.28
2020	108.4	1.3	17.86

Source: Hossain and Sombilla 1999

COUNTRY POLICIES

From the late 1970s to the early 1980s, the Southeast Asian nations (except Thailand) had been dependent on food imports. But in the mid–1980s, most of the countries became self-sufficient and some even exported food surpluses. In addition to policies designed to boost production, price policy and market intervention policies were implemented to stabilize prices and ensure a stable food supply, particularly in rice. In this section, a brief discussion of country policies related to food security is presented. The discussion is focused on the five Southeast Asian economies—Indonesia, Thailand, Malaysia, the Philippines, and China. Main source of information on the country policies was the FAO (1998) publication on poverty alleviation and food security.

Indonesia

Until the 1970s, the Indonesian economy was dominated by petroleum and rubber. The economy faced boom and bust situations mainly due to fluctuations in petroleum prices and partly due to macroeconomic policies. The results were increased current account deficit; curtailed expenditures on infrastructure; and, high inflation rate. The situation changed in the mid–1980s with greater attention to agriculture, diversification of industrial and foreign trade patterns, greater monetary discipline, and more market-friendly policies.

The Indonesian government subsidized inputs (e.g., fertilizers, seeds, insecticides, and pesticides) and set floor paddy prices through its marketing arm—*BULOG* (a national logistics agency). Through the village level cooperatives or *KUD*s, stocks were acquired and stored to be used as buffer stock to meet shortages as well as for open market operations to regulate prices. The wedge between domestic and border prices for rice in the 1980s was 19 percent and 9 percent in the 1990s, mainly due to the government's

price support program. The decline in the rate of protection of rice prices in the 1990s, however, indicates an emphasis on international competitiveness and increased effort in ensuring the poor's better access to food (Anderson and Pangestu 1995).

Malaysia

Malaysia sustained high rates of growth in the 1970s with a brief period of stagnation in the mid–1980s. It has been an open economy since the mid–1970s with exports accounting for a very large proportion of gross domestic product. The economy's pattern of growth is similar to other developing countries in the region, but its pace was more rapid, accompanied by a fast rate of economic transformation. For example, agriculture's share in total output fell from 22 percent to 14 percent in less than a decade with a corresponding rise in the share of manufacturing and services. There was a marked shift in exports from traditional primary products to industrial products.

Malaysia, unlike Indonesia, did not favor a cheap food policy to help the poor. Instead, it aimed at improving yields and supporting rice prices. Jenkins and Kwok-kong Lai (1991) estimated that the effective protection rate for paddy in the late 1980s was 26 percent. The rate was much higher in the early 1980s but, interestingly, self-sufficiency has not been a major concern. Rice imports averaged 30–40 percent of domestic consumption.

Thailand

Thailand had the fastest growth among the Southeast economies in the 1990s, with output growing at over eight percent per year. Industry had a major share in the rapid economic growth, with its contributions to national income and exports outstripping that of the primary sector, especially rice. Its economic development is characterized by low government interference except in the rice and sugar sectors. Rapid growth in the economy has not resulted in significant occupational diversification.

Although Thailand has traditionally been a rice exporter, the government's concern has also been to protect the urban consumers against excessive increases in rice prices due to rice exports. A Rice Reserve Commission was set up in 1960 to establish buffer stocks through open market purchases. A consumption subsidy in the range of 10 percent was also offered in the 1960s. This rose to 25–30 percent in the 1970s with the rise in the international prices of rice. The reserve requirements for exporters were also raised. In the late 1970s, the government even distributed rice at controlled prices. The scheme was later abandoned as the rich cornered

and resold the bulk of the cheap rice in the open market. Operations of the Rice Reserve Commission ceased in 1990 as the world price of rice fell and the number of competing rice exporters rose (Siamwalla and Setboonsarng 1991).

Previously, Thailand imposed a tax on rice exports. This was done partly to raise government revenues but, more so, to lower the domestic price of rice. In the process, the tax lowered the producer price and the real incomes of rice farmers who had a surplus to sell. Recent studies have shown, however, that Thailand's rice export tax worsened the incomes of the urban poor. The tax lowered the income-earning prospects of unskilled workers and to a sufficient extent as to more than offset the benefit they receive directly in terms of lower food prices (Anderson 2000).

At present, the Thai government is guaranteeing high prices for paddy pledged under a state rice price intervention program. In the 2001–2002 season, the government plans to spend up to 10 billion baht in buying 8.7 million tons of various types of paddy. The maximum price for fragrant paddy is 7,000 baht a ton compared to the 5,000 baht farmers have received recently. Year 2001 was a record setting year for Thai rice exports, with shipments amounting to 7.4 million tons. The Thai government faces two challenges this year—shoring up rice prices and whittling down its own rice stocks. A trade cooperating group with Vietnam, Indonesia, China, Pakistan, and Burma was announced, but exact details are still unknown. The Thai government insists the group will work to benefit the farmers and not distort world rice trade (Keeratipipatpong 2001).

China

Food security is a vital issue for the Chinese government. It feeds one-fifth of the world's population but possesses only one-fifteenth of the world's arable land. The shift from a socialist to a market-oriented economy made price and market reforms necessary key components for recent reforms. In the late 1970s, price and market reforms were aimed at raising farm-level prices and gradually liberalizing the market. Some of these reforms include the negotiated procurement of surplus production of grains, oils, and most other commodities; introduction of above quota bonuses for cotton, tobacco, and other cash crops; and, flexibility in marketing of the surplus production of all agricultural products privately.

A second stage of price and market reforms was announced in 1985 aimed at limiting the scope of government price and market interventions and allowing for a freer market operation (although some form of government interventions occurred periodically to stabilize prices). An important

agricultural marketing policy was instituted in 1994–1995. The provincial governor's "Rice Bag" responsibility system was designed to strengthen food security and grain markets by making the local officials and governments responsible for balancing grain supply and demand. The policy contributed to increased output, more stable grain production, and a reduction in short-run price fluctuations.

China is once again initiating a new grain marketing and reserve system. The overall goals of the reform are to improve the efficiency of grain marketing system; and, to reduce the central government's burden in financing grain circulation and reserve system. It has liberalized most agricultural inputs market but, in 1995 and early 1996, fertilizer imports were licensed and managed by government appointed trade agents. Its active participation in world trade forums is a strong signal that China is now committed to the principles of globalization and freer trade.

Philippines

In the beginning of the 1970s, the Philippines was one of the richest economies in Southeast Asia. The economy started to slide after that and in 1980–1990, it registered a 1.0 percent average growth in gross domestic product. The major reasons for the economic decline was faulty economic policies (current account imbalances, high inflation rates, ballooning external debt) and political instability.

The agriculture sector accounts for some 20 percent of GDP and over 40 percent of employment. However, Philippine agriculture performance has been unimpressive and there are indications that the country is losing its competitive advantage in the sector. As argued elsewhere (David 1999), the country's revealed comparative advantage has declined over the years (Table 9). Nevertheless, a number of policy reforms to improve agriculture performance are noteworthy. Beginning in 1986, export taxes, government monopoly over international trade in coconut oil, corn, soybeans, and the marketing of sugar were removed. The agricultural bureaucracy was also streamlined with the transfer of most agriculture-related line agencies to the Department of Agriculture.

The penalty to agricultural exports in the 1980s resulting from overvalued exchange rate was likewise minimized by the currency depreciation in the late 1990s. Furthermore, compliance with World Trade Organization agreements have led to the relaxation of nontariff barriers. However, protection rates (through trade controls) for rice, corn, and sugar remained high in the 1990s. This is in contrast to the situation in the 1970s and 1980s when these commodities were conferred very low protection rates (Table 10).

Table 9. Trends in revealed comparative advantage in agriculture and selected major agricultural exports, 1960–1995

Year	Agriculture	Coconut	Sugar	Banana	Canned Pineapple
1960	3.0	-	-	-	-
1965	2.7	131.8	15.3	-	-
1970	2.6	145.0	21.4	-	-
1975	3.8	211.2	22.0	29.3	-
1980	2.9	224.1	12.1	30.4	82.2
1985	2.4	212.3	7.6	31.2	91.6
1990	1.6	212.4	3.8	23.4	70.2
1995	1.1	153.5	2.0	14.1	41.5

Note: The numbers in the cells are ratios of the share of a commodity group in a country's exports to the commodity group's share of world exports.
Source: David 1999

Table 10. Trends in nominal protection rates of major agricultural commodities, 1970–1998 (in percent)

Commodity	1970–1979	1980–1984	1985–1989	1990–1994	1995	1996	1997	1998
Rice	–4	–13	16	19	63	91	82	34
Corn	24	26	67	76	104	54	96	72
Sugar	5	42	154	81	91	93	66	99
Copra	–17	–28	–6	0	0	0	0	0
Coconut Oil	–4	–4	7	18	10	5	0	0
Desiccated Coconut	–4	–4	0	0	0	0	0	0
Bananas								
Pineapple								
Tobacco								
Abaca	–4	–4	0	0	0	0	0	0
Pork	6	–9	43	31	44	na	na	na
Chicken	34	46	39	74	84	na	na	na

Source: David 1999

The ASEAN member policies—a summary

The experiences of the five economies briefly discussed above point to common themes but different policy approaches. As earlier mentioned, improving domestic production and beefing up of supplies through imports were used to ensure food supply. Input subsidies to keep cost low and output price controls to keep food prices at reasonable levels, especially for urban consumers, were implemented. A definite move away from administrative or government intervention for targeting food supplies to the poor can also be noted (except in special circumstances). The stabilization

of rice prices was also a priority for these economies. The world price of rice fluctuated widely during the 1970s and 1980s, with the coefficient of variation reaching 39 percent. In contrast, the coefficient of variation was 19 percent in Indonesia, 25 percent in the Philippines, and 13 percent in Thailand for the same period.

Since poverty is concentrated in the rural areas where agriculture is the main preoccupation, agricultural development was given high priority in the effort to reduce poverty incidence. Self-sufficiency in food was an important objective of the development strategy for some countries except Malaysia where production of high-value-adding commodities is a priority (e.g., rubber and oil palm). In Thailand, a more concerted approach was made to encourage nonfarm activities in the rural areas. In Indonesia and the Philippines, the emphasis continued to be on improving productivity in cereals production to achieve self-sufficiency. Table 11 shows a summary of the key agriculture and food policies in selected ASEAN countries.

In one form or another, the selected economies have organized public distribution of foodgrains. Thailand made arrangements for subsidizing foodgrains for those who wished to take advantage of the offer. In Malaysia, an administered price regime was introduced with highly subsidized rice distribution, the subsidy element amounted to some 40 percent. The Philippines has targeted subsidized food in selected areas through special development assistance programs. Chinese policy kept food price artificially low by replacing free market operation with state compulsory agricultural procurement, planned production, and food rationing.

Patterns in trade specialization

Two recent studies provide useful information on the comparative advantage and competitiveness of some APEC member-countries in key and highly tradable commodities. Yanagida and Tian (1995) provide two indices—

Table 11. Summary of key agriculture and food policies, selected ASEAN countries

Indonesia	Malaysia	Thailand	China	Philippines
• Government rice marketing and buffer stocking • Floor paddy pricing • Rice self-sufficiency policy	• Rice price support • High-value-adding commodity production • Rice self-reliance, not self-sufficiency	• Government buffer stocking • Rice price support • Nonfarm rural diversification	• Continuing market reforms • Freer trade policies beginning in the 1990s	• Self-sufficiency in rice and corn • High protection rates for sugar, rice, and corn • Government monopoly in rice international trade

revealed comparative advantage (RCA) and revealed competitive advantage (RC)— for 42 economies in the Pacific Basin and Asia, covering such principal crops as wheat, rice, coffee, cocoa, tea, spices, vegetable oils, and natural rubber. An RCA index with value greater than one would imply that a country possesses comparative advantage or specialization of trade in that commodity. On the other hand, a positive RC indicates that the country has a competitive edge in producing and trading the commodity. Their results are summarized in Table 12. In the case of wheat trade, Australia exemplifies clear advantage, having both RCA and RC figures greater than one. China and Vietnam both have competitive advantage in tea and spices while China is competitive in rice and Vietnam, in coffee and natural rubber.

Anderson (2000) derived what he calls trade specialization index for 18 APEC countries. The index, which ranges from (+1) to (–1), is defined as exports minus imports of food and agricultural products as a ratio of export plus imports of those goods by the same country. A country has a stronger agricultural comparative advantage (or disadvantage) the closer its index is to +1 (or –1). Using this criterion, note in Table 13 that New Zealand, Australia, and Chile possess strong comparative advantage. Those

Table 12. RCA and RC indices for APEC member-economies

Commodity	Countries with RCA > 1	Countries with RC> 1
Wheat	Australia	Australia
Rice	China, Thailand, Vietnam	China, Thailand, Japan, Australia
Coffee	Indonesia, Philippines, Singapore, Papua New Guinea	Indonesia, Philippines, Singapore, Thailand, Vietnam, Papua New Guinea
Cocoa	Indonesia, Malaysia, Singapore, Papua New Guinea	Indonesia, Malaysia, Papua New Guinea
Tea	China, Indonesia, Singapore, Papua New Guinea, Brunei	China, Korea, Indonesia, Singapore, Vietnam, Papua New Guinea, Brunei
Spices	China, Indonesia, Malaysia, Singapore, Vietnam, Brunei	China, Indonesia, Malaysia, Singapore, Vietnam, Brunei
Vegetable Oils	Indonesia, Malaysia, Philippines, Singapore, Papua New Guinea	Indonesia, Malaysia, Philippines, Singapore, Vietnam,Papua New Guinea, Japan
Natural Rubber	Indonesia, Malaysia, Singapore, Thailand, Vietnam, Papua New Guinea	Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, Papua New Guinea, Brunei

Source: Yanagida and Tian 1995

Table 13. Food and agricultural trade specialization index and grain self-sufficiency, various APEC economies, 1995

APEC Member-economies	Specialization Index	Grain Self-sufficiency (in percent, 1995)
New Zealand	0.75	85
Australia	0.73	401
Chile	0.52	71
Thailand	0.37	65
Peru	0.28	48
Malaysia	0.22	36
United States	0.21	151
Canada	0.19	170
Indonesia	0.1	n.a.
Vietnam	0.08	100
Philippines	0.04	95
China + Hong Kong	–0.01	100
Mexico	–0.09	n.a.
Singapore	–0.24	n.a.
Chinese Taipei	–0.37	22
Korea	–0.67	25
Russia	–0.73	n.a.
Japan	–0.92	30

Source: Anderson 2000

at the bottom, on the other hand, include Japan, Russia, Taiwan, and Singapore. Grain self-sufficiency, shown in the last column, varies widely among the APEC economies. Australia, Canada, and the US are well above 100 percent self-sufficiency in grains.

SOLVING THE FOOD SECURITY PROBLEM AND AREAS FOR COOPERATION

Given the varying RCA, RC, and trade specialization index, as noted above, there is obviously a big room for complementation, hence, cooperation among APEC countries in achieving food security. This section outlines strategies for promoting individual country's food security and possible areas of cooperation. The suggested strategies follow from the definition of food security and its key elements of availability, stability, and access. They may be interpreted as policies that purely promote domestic food security but there is room for cooperative action in some, like in the areas of promoting technological change and expanding markets.

Enhancing food supplies

Enhancing food supplies can be done via encouraging technological change, increasing the efficiency of irrigation, and improving natural resource management.

Encouraging technological change

The Green Revolution of the 1960s and the 1970s has played a great role in meeting the food needs of most of the poor countries in Asia and the Pacific. However, the increasing pressure on land to meet future food needs requires a new technological frontier. To date, biotechnology offers the best alternative for this purpose. Its potential must be exploited to the fullest.

Unfortunately, much of the biotechnology programs being undertaken are unfocused. Work must be diverted to the crops and animals of importance to the country or region and to the biotic and abiotic stresses these commodities face. The commodities with high food and nonfood values in local settings, but of little significance to the capital-intensive markets of the industrialized countries (often referred to as "orphan" commodities) should receive due attention from local biotechnologists. Commodities such as coconut, oil of palm, and buffaloes are almost monopoly commodities of the region and responsibility for their biotechnological improvement falls primarily to the countries of this region.

In this regard, each country could establish a national biotechnology committee comprising of government agencies, universities and scientific academies, mass media, industry, and financial institutions. A reasonable budget must be allocated for basic biotechnology research and policies formulated should promote public-private sector involvement.

Increasing the efficiency of irrigation

Irrigation has contributed much to the production hikes seen in the last decades. However, urban and industrial users have been increasingly competing with agriculture in the use of water. Therefore, there is a need for all sectors to improve the efficiency of their water use. Improving incentives in water uses (such as establishing water markets, clarifying water rights, and pricing water to reflect its true value) are possible policy measures (Ayres and McCalla 1996).

Improving natural resource management

Better natural resources management together with projects that aim to intensify agricultural production is another avenue to enhance food sup-

plies. A community-based approach to resource allocation, enforcement, and maintenance can be incorporated in the new agricultural development projects. Ayres and McCalla (1996) cite the social forestry projects underway in Asia as an example. Another notable project is the major watershed rehabilitation project in the loess plains in China which include the terracing of slope lands, the planting of orchards and grasslands, and the building of sediment control dams. As a result, farmers have doubled their crop yield and at the same time reduced soil erosion.

Improving access to food

Providing education and health services; strengthening and expanding markets and agribusinesses; investing in infrastructure; and, fostering broad participation are some of the ways to improve the people's access to food.

Education and health services

Even though it has long been accepted that education and health services are linked with poverty reduction, it still worth mentioning that better educated and healthier people make for a more productive population. Providing education and health services to women is especially vital since women have a major role to play in growing crops and in reducing hunger in their families.

Strengthening and expanding markets

Growth triangles, a uniquely Asian strategy, aim to increase economic cooperation among participating economies in an economic subregion. They are the result of multilateral incentives to stimulate economic growth by intensifying trade, investments, and tourism in and around common border areas. The past years have seen the creation of a number of such growth triangles:

- Singapore–Johore, Malaysia–Riau, and Indonesia (SIJORI) Triangle;
- Hong Kong, Guangdong, and Taiwan or the South China Triangle (also called the Pearl River Delta Triangle);
- Northern Sumatra, Northern Peninsular Malaysia, and the southern provinces of Thailand called the Indonesia–Malaysia–Thailand Triangle; and
- The Brunei Darussalam–Indonesia–Malaysia–Philippines–East ASEAN Growth Area (BIMP–EAGA).

The BIMP–EAGA Growth Area is the youngest of these growth triangles, covering a population of about 45 million people and with a central goal of increasing trade, investment, and tourism through cross-border cooperation. Growth in the subregion is envisioned to be fueled by local as well as overseas investment sources. The four participating governments are coordinating their efforts to enhance the implementation of economic policies and the development of needed infrastructure. The BIMP–EAGA is likewise envisioned as a loosely organized association so as to create broad avenues for private sector participation. Efforts to promote economic cooperation in the BIMP–EAGA can be characterized as market-driven and anchored on the private sector as the principal player in economic cooperation. Under the original agreement creating the BIMP–EAGA, 13 areas of cooperation were identified including expanding air linkages, sea transportation and shipping services, fisheries, agroindustry, human resource development, and environmental protection and management.

As an offshoot, new airline routes have been opened linking such areas as Kota Kinabalu and Davao, Brunei to Sarawak, to name two. In the shipping sector, regular shipping services linking Zamboanga with Bitung in North Sulawesi are operational. Expanding transportation linkages under the BIMP–EAGA is not only limited to connecting destinations within the area. Since its creation, there have been increasing interest in flights that would connect EAGA with other cities in the Asia–Pacific area, such as Darwin in Australia.

Infrastructure investments

Adequate communication, storage facilities, not to mention roads and power supply are needed to help farmers obtain the information they need, store crops, and move them to market. Some 15 percent of production is lost between the farm gates and consumers due to poor roads and storage facilities, reducing farmers' incomes and raising urban consumers' food costs (Ayres and McCalla 1996).

Encouraging broad participation

The broad participation of local stakeholders is a necessary input in development projects (e.g., income-generating projects, sanitation projects). These projects are more likely to reflect the affected communities' priorities and are, therefore, more likely to be sustainable.

Improving food utilization

Integrating household food security and nutrition policy into rural development operations will assist in reducing hunger and malnutrition. Plans are underway to establish an Asia–Pacific Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) which can act as a food information and early warning system and provide directions for undertaking preventive and control measures, especially when wide disparities in food availability occur. The focus of FIVIMS will be people who are at risk or food insecure. By linking relevant databases being maintained by international agencies and other institutions, the international community will be able to better monitor food security trends at a global level and facilitate the mobilization of resources for all countries, paying particular attention to countries facing an inadequate and deteriorating food security and nutrition situation.

The ASEAN framework for regional cooperation

The Declaration of ASEAN Concord established the basic framework for regional cooperation including cooperation in the field of basic commodities, particularly food and energy. Aside from increasing their cooperation in production, member countries will provide mutual assistance by giving priority to supplying the needs of member countries in times of emergency; and, purchasing the exportable surpluses from member countries.

To implement the Declaration, the ASEAN economic ministers, in 1976, adopted the principle of the first refusal in times of special circumstances (i.e., in times of shortage or glut) for food, especially rice. A Committee on Food, Agriculture and Forestry was asked to study the feasibility of establishing bufferstocks and bufferstock arrangements which resulted in the establishment of a regionally coordinated system of food security reserve. An ASEAN Food Security Reserve Board was established whose duties included managing a regional emergency rice reserve; the periodic evaluation of the ASEAN food situation; and providing information of food security policy development in the member countries. A regional emergency rice reserve of 50,000 tons was initially set. This was later increased to 53,000 tons when Brunei became a member. At present, the earmarked quantity of ASEAN emergency rice reserve stock is 87,000 tons broken down as follows (Table 14):

Table 14. ASEAN emergency rice reserve stock

Country	Reserved Stock (mt)
Brunei Darussalam	3,000
Cambodia	3,000
Indonesia	12,000
Laos	3,000
Malaysia	6,000
Myanmar	14,000
Philippines	12,000
Singapore	5,000
Thailand	15,000
Vietnam	14,000
Total	**87,000**

An emergency refers to states or conditions in which an ASEAN member country, after suffering extreme and unexpected natural or manmade calamity, is unable to cope with such state through its national reserve and is unable to procure the needed supply through normal trade. Procedures for releasing rice from the Emergency Reserve were likewise formulated and include the member country directly notifying other ASEAN member countries of the emergency and the amount of rice required. The prices, terms, and conditions of payment shall be subject to direct negotiations between the countries concerned. The office of the reserve board secretariat is in Thailand.

In addition to the above rice emergency reserve stock, the ASEAN in 1997 agreed to pursue further cooperation by promoting ASEAN food, agricultural, and forestry products in the international markets. A common quality standard on specific commodities was agreed upon especially for products that would be recognized internationally. A strategic plan to consolidate existing and new initiatives in order to enhance the competitiveness of agricultural and forestry products is being drafted with 2003 as the intermediate target date and 2020 as the long-term target date. In 1998, in Thailand, it was decided that the Strategic Plan on ASEAN Cooperation in Food, Agriculture and Forestry should cover the overall cooperation in the three major sectors but with greater emphasis on strengthening food security arrangements in the region; enhancing the international competitiveness of food, agriculture, and forest products; and, strengthening ASEAN position in international fora.

Last August 2003, East Asian agriculture ministers agreed to carry out a pilot project—the East Asian Emergency Rice Reserve. A steady supply of

rice is key to regional food security, according to the joint press statement. Each member-economy will keep a surplus stock while more economically advanced members, such as Singapore, could provide financial assistance to those in need. The management team to carry out the pilot project would be established early 2004.

Areas for possible cooperative action among APEC member-economies

The APEC is home to one third of the world's poor. The APEC has put food security in its agenda but there has yet to be a set of comprehensive policies or programs regarding joint or cooperative actions to ensure food security. The APEC Business Advisory Council (ABAC) has proposed an APEC Food System, which would efficiently link together food producers, processors, and consumers. The system will harness the resources of the region wherever these agents are located in order to meet the food requirements of its peoples and maximize the contribution of the food sector to the welfare and prosperity of all economies, whether food exporting or food importing, developing or developed. The primary objectives of the APEC Food System are to ensure the long-term availability of food at affordable prices to all consumers and that the food sector contribute to sustainable growth and development in the region. Bearing the above in mind, cooperative action in the following areas is important: dissemination of technological advances; institutional development; and promotion of trade in food products—the order of which in no way reflects their rank of importance. Regional cooperation should be carried out simultaneously in all three fronts because they are intertwined with one another.

Regional cooperation in biotechnology

There is great potential for regional cooperation among the APEC member-economies in the area of biotechnology. At present, the benefits of food-related technology are confined to a small number of economies resulting in uneven benefits throughout the region. However, it must be stressed that work in the area must be diverted to the crops and animals of importance to the member-economies and to the biotic and abiotic stresses these commodities face. The so-called "orphan" commodities should receive due attention from local biotechnologists. These would include coconut, oil of palm, and buffaloes which are almost monopoly commodities of the region. Advances in biotechnology and technology-based methods of farm/crop management and food processing will improve food sector productivity, product quality and safety, and minimize the harmful effects of

food production on the environment. Regional cooperation in the area of harmonizing food-related regulations (as they relate to technology); the dissemination of these technologies in a manner consistent with market principles and intellectual property rights; and, the distribution of information on the most environmentally sound food production and processing techniques is greatly needed.

The ABAC is also suggesting the creation of alliances between "domestic champions" (i.e., entities capable of understanding and articulating technological advances) in each economy and "intellectual property owners" in other economies, with the aim of identifying and applying best practices in technology transfer. Private sector organizations and research organizations in each economy can be used to identify domestic agents and other suitable participants.

New technologies are not evenly spread across the APEC region. The new technologies are confined to the few and often richer economies. This is so because the poorer economies spend a much smaller portion of their agricultural value-added on public agricultural research and, hence, end up importing and adapting technologies developed abroad. The other reason is because the private sector depends on sound property rights law being enacted and enforced before it is willing to invest in producing or transferring many of the new technologies (Anderson 2000).

Scope for regional cooperation exists in distributing information on more efficient and environmentally sound farm and food practices; disseminating ways to enact and enforce legislation to better protect intellectual property rights, the environment, and consumers so as to attract more private investment in technology transfer; and, aiding governments in their support of those investments in farm technologies that are undersupplied by the private sector.

Regional cooperation in trade

Regional cooperation among the APEC member-economies in the matter with respect to markets is another area to look into. The food sector of many APEC economies is much less integrated with international markets because of major obstacles to international food trade and investment. This has led to lower product prices for farmers and higher food prices for consumers than are necessary; and when prices are subsidized, there is a burden imposed on taxpayers.

An unmistakeable trend in agricultural trade in the area is the shift away from bulk commodities to processed and consumer-ready products, a trend which has made agricultural trade more difficult to analyze. Many of

the products are more perishable and require higher transportation costs per unit. This change has increased interest and shifted focus to concerns about food safety and sanitary/phytosanitary (SPS) issues as well as the trade-off between trade in processed products and direct foreign investment in the food processing sector.

Promoting trade facilitation measures will reduce the cost of trade in food products (such as a program of technical assistance to upgrade SPS procedures and the harmonization/equivalency of food regulation and control systems) will enable the agriculture sector to play multifunctional roles in each economy and to achieve food security. Already, Thailand and Indonesia, as well as Vietnam and China, have formed a trade cooperating group in rice although the exact objectives of the group are still not clear.

The growth and composition of agricultural trade among the APEC member-economies is the result of rapid economic growth and evolving policy reforms. Economic vigor comes from trade-oriented policies; and not protectionist policies that close off a country from the global economy. Thus, harmonizing a broad range of policies, including macroeconomic policies, as markets become more integrated through freer trade becomes more essential. These include policies regarding quality standards, phytosanitary regulations, as well as policies designed to stabilize prices. For instance, Canada is the third-ranking market for US agricultural goods while the US is the most important market for Canadian agricultural products. The removal of Canadian rail subsidies made nearby US markets more attractive to Canadian wheat producers. Facilitating trade via harmonizing customs procedures and exchanging regulatory information on food safety standards will lower the cost of trading food products.

Thus, as trade is promoted, there is also a need to make sure that the nontariff barriers to trade are not erected. For some countries, issues concerning food safety—help in harmonizing SPS procedures and food regulation and control systems—are nonnegotiable and necessary. Similarly, support in building the institutional framework to support the liberalized trade must be forthcoming.

CONCLUSION

Before trade in agriculture can be promoted as a strategy to achieve regional food security among the APEC member-economies, a food security framework must first be crafted. A key ingredient to achieving food security is the formulation of a food security policy framework that is collaborative and multidisciplinary in character. Food security assessments could be made part of the region's policy framework. Thus, there is a need for a

clearer definition of food security for APEC member-economies as a whole. For instance, does food security mean self-sufficiency in rice? Or should Malaysia's policy of not targeting self-sufficiency be the example? A food policy of de-emphasizing self-sufficiency in rice must take into consideration the establishment of an appropriate and efficient price and supply stabilization strategy. One possible approach is a multilateral buffer stock arrangement in rice supply in the region together with the US, which is the only major rice exporter outside monsoon Asia. Without such mechanisms, economies would be reluctant in abandoning rice self-suffiency policies despite the great inefficiency costs. Thus, the multilateral approach to pursuing food security in rice must find its way into the discussion agenda of regional economic groupings like APEC (Habito et al. 1999). A closer study of trade-offs in resource allocation and prioritization within agriculture (e.g., rice vs. corn, coconut vs. horticultural products) is also needed.

Thus, while the empirical results show that the region collectively can achieve food security via trade, and while the specialization and RCA/RC indices point to strong complementarities between trade patterns among the APEC economies, unless they agree on what food security means, there will still be some economies insisting on producing rice to achieve self-sufficiency. In addition, there will be economies hesitant on relying on trade because of two reasons: reliability of access to these imports; and, the economies' capacity to maintain food imports at their desired levels. Food import capacity is affected by prices and other terms by which food may be imported as well as the foreign exchange situation. Countries who depend on food imports to a great extent are more vulnerable to shocks arising in the global food market. So, unless these fears are addressed, there will still be economies who will strive for food self-sufficiency.

Take the case of rice. Rice remains an important food crop for the APEC member-economies. Of the three major food crops, rice is mainly used as food—human consumption accounts for over three-fourths of total rice production and total caloric intake. Thus, further improvement of food security and nutrition will depend primarily on the greater availability of rice and whether it is affordable to more people. Rice, moreover, has become a "political" commodity. Thus, the question of self-sufficiency or self-reliance has become muddled. Political pronouncements have not helped either. Political leaders continue to send mixed signals that fail to provide clear policy directions (Cabanilla 1999). He cites the case of the government-sponsored Food Security Summit in 1996 where officials vowed to support self-sufficiency in rice and corn production. The Anti-Poverty Summit which followed likewise urged self-sufficiency in these two food

crops. In the Philippines, Republic Act 8435, otherwise known as the Agricultural and Fishery Modernization Act (AFMA), focuses on five major concerns including food security. The Department of Agriculture in coordination with other concerned departments or agencies shall formulate medium- and long-term plans addressing food security, poverty alleviation, social equity, and income enhancement concerns based on, but not limited to, the following goals and indicators of development:

- increased income and profit of small farmers and fisherfolk;
- availability of rice and other staple foods at affordable prices;
- reduction of rural poverty and income inequality;
- reduction of the incidence of malnutrition; and
- reduction of rural unemployment and underemployment; and improvement in land tenure of small farmers.

Food security, as defined in the AFMA, refers to "the policy objective, plan, and strategy of meeting the food requirements of the present and future generations of Filipinos in substantial quantity, ensuring the **availability and affordability of food to all, either through local production, or importation, or both** based on the country's existing and potential resources endowment and related production advantages and consistent with the overall national development objectives and policies. However, **sufficiency in rice and white corn should be pursued**."

The above pronouncement has led to certain groups and organizations who have vested interests to argue that genuine self-sufficiency in rice, not importation, is the only way to secure the food security of the country. They point out that problems with regards to the competitiveness of local production vis-à-vis other countries can be resolved through the promotion and adoption of more efficient production and postharvest processes as well as the rationalization of the rice marketing channels.

As earlier mentioned, Hossain and Sombilla (1999) point out that the Philippines need not attain self-sufficiency in rice production to achieve and sustain food security, citing the cases of Singapore, Hong Kong, and Malaysia. But can the Philippines and the other APEC member-economies depend on the world rice market to meet its needs through imports? If regional integration and cooperation means moving toward a common goal using a common strategy, what becomes important is that the **APEC member-economies agree on what food security collectively means to them, what food items are important to each of them and the region in general so that regional integration and cooperation under the auspices of APEC can be promoted.**

Food supply security will be improved through cooperation and interdependence among the APEC member-economies. This interdependent approach would be characterized by APEC economies producing and trading food in such a manner that trade complements domestic production and reserves as a means of assuring supply. APEC member-economies should agree not to restrict food trade through embargoes, export taxes, and other restraints except in extraordinary cases. Thus, at the level of each national economy, the development of an extensive rural infrastructure as well as institutions is an integral component of building an efficient regional food system. The physical infrastructure will link food producers with processors and consumers and will mean more diverse sources of supply and more stable/secure food markets. At the regional level, therefore, the development of funding mechanisms to facilitate and reduce the cost of private sector investment in infrastructure is proposed. The FIVIMS which will link several databases and allow member-economies to monitor food security trends at both regional and global levels can also be expanded to become a network system for immediate access to trade-related information.

In addition to the above concerns, Naya and Iboshi (1994) have noted that the member-economies of APEC are divided on how to achieve the goal of more liberalized trade. A group of member-economies wants to concentrate on legalistic agreements and timetables while another group favors a more evolutionary approach. The split arises from differences in views regarding an Asia-Pacific "community." The first group's approach to Asia-Pacific cooperation is evident in the report of the APEC Eminent Persons Group. The report called for a clear endorsement of free trade and the setting of a target date for reaching that goal. In contrast, the "evolutionary" Asian view of economic cooperation calls for gradual development of regional ties. The ASEAN style can be characterized as "cautious, consensus-driven, low-key and proceeding at the pace dictated by the slowest member." ASEAN, however, has its limits as a model for APEC.

The chapter probably raises a few more questions and issues than it can answer at the moment. The simple exercise with the three commodities (namely, rice, wheat, and maize) already identify economies likely to incur production shortages in the basic staples. The three are among the top commodities being imported in the region. Likewise, the list of top seven most common traded food commodities among the APEC member-economies point to the possibility of food production specialization within the APEC once integration targets are defined and achieved. For instance, the dairy products and eggs group, which is imported by 17 of the member-economies and exported by eight member-economies, is one possibility.

Wine and vermouth and alcohol products group is another. Both Australia and Chile produce this product group, which is among the list of top seven imported commodities. Collaboration on expanding the harvest of fish and other fish products is another venture worth looking into since as much as 19 member-economies export the product while 15 member-economies import it. Wheat, flour and wheat equivalents also remains an important commodity; it is the number one ranked export in terms of average value. However, a more definitive statement on this matter has to wait until a closer examination of trade patterns and direction can be done. Likewise, while the figures point to a potential role for trade to address regional food security concerns, it is important that the APEC member-economies first agree collectively on a food security policy framework and tackle issues such as self-sufficiency and import vulnerability.

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Philippine agriculture, food security, and APEC

Food policy analysts and government policymakers have different views on food security. Those who decide for agriculture in less developed countries equate food security with self-sufficiency and look at food, particularly food grains, as political commodities while food policy analysts put premium on income in gauging food security based on the claim that poverty is the main cause of food *in*security. The latter view accords well with internationally accepted definition of food security that evolved through time in conjunction with the changing world food situation. Along these lines, policy should do for agriculture what is appropriate for the whole economy and not for the sector alone because agriculture is not the end but rather a means to an end.

This volume advocates key reforms in the agriculture sector that are consistent with the emerging global economic environment and argues for a more outward orientation and the eventual diversification of agriculture—the two basic requisites for a country's food security—referred to in this volume as availability of and economic access to food.

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