

Chapter 3: Geography of the Philippines

3.1 - Introduction

The Philippine archipelago forms a cultural and ecological crossroads, where Malays, Chinese, Spaniards, Americans, and others have blended to create a distinctive cultural and racial blend in a diverse environment. The archipelago consists of 7,100 islands and occupies an area that stretches for 1,850 kilometers from about the fifth to the twentieth parallels north latitude. Although having a total land area of slightly greater than 300,000 square kilometers only about 1,000 of its islands are populated. Less than one-half of those with permanent residents are larger than 2.5 square kilometers. Eleven islands make up 94 percent of the Philippine land area. Luzon and Mindanao measuring 105,000 and 95,000 square kilometers, respectively represent nearly two-thirds of that area. They, with the Visayan islands represent the three principal regions of the archipelago.

Topographically, the Philippines has one of the longest coastlines of any nation in the world. The Philippines is part of a western Pacific arc system that is characterized by active volcanoes. Among the most notable peaks are Mount Pinatubo near Angeles City, Mayon near Legaspi, Taal Volcano just south of Manila, and Mount Apo on Mindanao. The entire country is prone to earthquakes. In northern Luzon the Cordillera rises to between 2,500 and 2,750 meters. In Northeastern Luzon is found the Sierra Madre which along with the mountains of Mindanao, harbor some of the last remnants of the archipelago's rich tropical forests and cultural minorities. The rain forests also offer prime habitat for more than 500 species of birds, including the Philippine eagle (or monkey-eating eagle), some 800 species of orchids, and 7,600 species of flowering plants. The Philippines is ranked in the top ten nations for species biodiversity and these have a high level of endemism. Population growth and habitat destruction pose a serious threat to flora and fauna (Table n° 3.1).

Table n° 3.1 – Vital Biodiversity Statistics for the Philippines

Hotspot original extent (sq. km.)	300,800
Hotspot vegetation remaining (sq. km.)	21,000
Area protected (sq. km.)	25,995
Plant species	7,620
Endemic plant species	5,832
Terrestrial vertebrate species	1,114
Endemic terrestrial vertebrate species	555
Threatened species	103
Critically endangered species	23

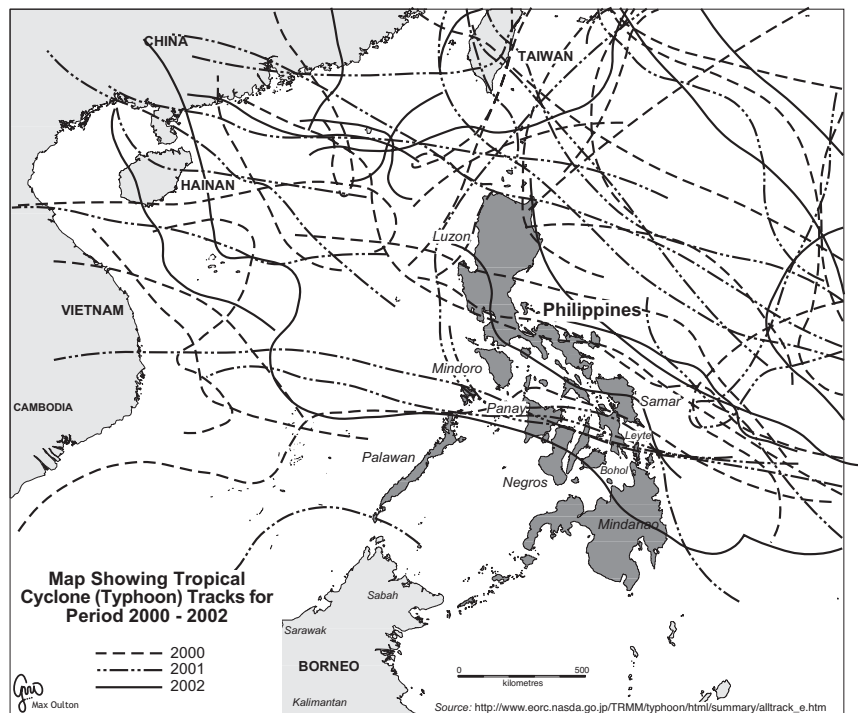
Sources: Conservation International, 2002; Ong *et al.* 2002

The Philippines has a tropical marine climate dominated by rainy and dry seasons. A southwest monsoon brings heavy rains to most of the archipelago from May to October, whereas the northeast or winter monsoon brings cooler and drier air from December to February. Temperatures rarely rise above 37° C. With elevation temperatures can be cool, especially in the mountains of northern Luzon. Seasonal and other longer term perturbations in temperature are minimized in the tropics, however, in the case of the Philippines, there are areal differences in seasonal temperatures. In certain places this is significant enough to affect both the physical and cultural landscape. In the Philippines this variability is derived from latitude, variations in sunshine received owing to cloud cover, continental effects especially in the north and exposure to northeast and southwest monsoonal air masses.

Rainfall is the single most important climatic element in the tropics as it can be highly variable in distribution, intensity and longevity. It is the elements of quantity and seasonality that influence natural plant cover distribution. Similarly, soils have different capacities to transmit moisture through runoff, percolation and leaching and this can have a profound effect on agro-ecosystem

potential as often crop types are chosen to reflect moisture availability.

Figure n° 3.1 – General trend for typhoons passing the Philippines.



Annual rainfall measures as much as 5,000 mm in the mountainous east coast section of the country, and generally between 2000 and 2500 mm in most localities but can be less than 1,000 mm in sheltered coastal areas and some inland valleys. Longer term variability in precipitation across the archipelago occurs with the onset of La Niña and El Niño events. The most problematic are the severe droughts associated with El Niño phases.

Monsoon rains are rarely damaging as they are not accompanied by high winds and seas. However, the Philippines sit astride the typhoon belt and can experience damaging storms in any month of the year. Generally, the most severe storms cross the archipelago from July to October. The eastern and northern half of

the archipelago is most affected with Mindanao generally free from the risk (Figure n° 3.1).

Natural disasters are common in the Philippines and include, as noted, droughts and typhoons. Devastating earthquakes, volcanic eruptions, lahars, and floods can afflict any part of archipelago at any time. Tsunamis are not uncommon and pose a particular risk to a nation with a high proportion of its population located along the littoral. Loss of life in such events can be devastating if little warning is available. Monitoring systems have improved and for certain events such as volcanic eruptions and lahars adequate responses by government have greatly reduced the loss of life.

3.2 - Population growth

The Philippine population continues to grow at a rapid rate, although somewhat reduced from that which had prevailed in the preceding decades. In 2000 the Philippine population was just over 76 million, up from 60 million in 1990. This figure represents an annual growth rate of 2.34 percent, which is a slight increase from 2.32 percent from 1990-1995 but still well short of the 3 percent in the 1960s. At the current growth rate, the Philippine population will increase to an estimated 90.5 million by the year 2010 and could double to 158 million by 2050. Moreover, in 2000 the population was still a youthful one, with 64 percent under the age of thirty. Population density increased from 160 persons per square kilometer in 1980 to 202 in 1990 and 255 in 2000.³ In terms of the arable land area, population density increases substantially. The arable land area was pegged at 52,037 square kilometers in 1980 (population density of 924 persons per square kilometer) and 54,869 (1106 persons per square kilometer) in 1991. The rapid population growth and the size of the younger population has required the Philippines to invest in substantial amounts of social infrastructure.

³ These density figures were based on a land area of the Philippines of 300,000 square kilometers.

3.3 - Migration

There were three significant migration trends that affected population figures in the 1980s and the 1990s. First was a trend of migration from village to city, which put extra stress on urban areas. As of the early 1980s, thirty cities had 100,000 or more residents, up from twenty-one in 1970. Since the 1980s there has been a further explosion of medium-size urban areas. The 2000 census enumerated 97 cities with more than 100,000 people. The National Capital Region's (representing the greater Manila metropolitan area) population was 9,932,560 up from 4,970,006 in 1975. Within the National Capital Region, the city of Manila itself was actually contracting with a negative growth rate of -0.13 percent between 1995 and 2000. However, two other cities within this complex, Taguig and Parañaque, were booming at growth rates of 5.77 and 3.85 percent, respectively.

In many provinces growth of urban provincial capitals has outpaced that of the nation as a whole. For example, Puerto Princesa City in Palawan grew at an annual growth rate of 5.79 percent from 1995 to 2000; Tagbilaran City of Bohol grew at 3.26 percent; Naval in the Eastern Visayas grew at 2.45 percent; Pagadian City in Zamboanga del Sur, Mindanao, grew at 2.97 percent. Therefore across all regions, provincial capitals have become secondary growth poles and form important stepping stones along the path to migration to higher order urban areas and possibly international opportunities.

While the core areas of the more established urban centers (Manila and Cebu) are contracting or are growing much more slowly than in the past, the provinces and cities on their periphery show signs of increasing growth. Mandaue City adjacent to Cebu City grew at a rate of 3.72 percent while the Province of Bulacan near the NCR grew at 4.02 and Province of Cavite at 5.99 percent. Within the Province of Cavite the city of Dasmariñas grew at a rate of 10.75 percent between 1995 and 2000 making it the fastest growing city in the country, followed close behind by Trece Martires City, also of the province of Cavite at a 10.25 percent growth rate.

It is now very clear that beginning in the 1980s, the Mindanao frontier ceased to offer a safety valve for land-hungry

settlers. Even the peaceful provinces of the pre-1980s became dangerous places where Philippine army troops and New People's Army insurgents battled each other and with bandits, 'lost commands', millenarian religious groups, upland tribes, loggers, and Muslims. Population pressures also created an added obstacle to land reform. Demands increased to restructure land tenure so that landlords with large holdings could be eliminated and peasants could become farm owners. Land reform is resisted by landlords. By the 1990s there simply was not enough new land to enable a majority of the rural inhabitants to become landowners and hence pressure on large landholders increased (Jackson 1992). International migration offered better economic opportunities to a number of Filipinos without, however, reaching the point where it would relieve population pressure. For example, the number of Filipinos in the United States reached 1,406,770 according to the 1990 United States census.

In addition to permanent residents, in the late 1980s and 1990s, more than half a million temporary migrants were working abroad but maintained a Philippine residence. These people continue this trend of outward temporary migration to work in the Middle East, Hong Kong, Singapore, and increasingly Europe, Australia and New Zealand as well as the United States. The remittances sent back to the Philippines by migrants have been a substantial source of foreign exchange.⁴

3.4 - Society

Philippine society continues to be relatively homogeneous even though they are dispersed across 1000 inhabited islands. Muslims and upland tribal peoples are the exceptions, but approximately 90 percent of the society is united by a common cultural and religious background. Language forms one point of internal differentiation, but there is regular intermarriage across

⁴ A report in the Singapore Straits Times (November 23, 2002) noted that remittances were expected to reach \$US 8 billion in 2002, a 22.6 percent increase from 2001. A report in the Manila News Daily (November 24, 2002) noted that this total represented nearly 10 percent of the nation's GDP. Considerable economic risk stems from such dependence on foreign capital in times of political, military and economic uncertainty internationally.

linguistic lines. With political centralization, urbanization, and increasing internal migration, linguistic barriers are rapidly eroding. There is also a government emphasis on the national language of Filipino. The widespread use of English has also eroded some local dialects. Still the language spoken in the home is often different than those defined by government or the media and this has resulted in the maintenance of linguistic diversity.

Filipinos are a variety of mixes of Malay, Chinese, Spanish, Negrito, and American. Negritos were some of the earliest inhabitants, followed by Malays, who were responsible for the development of lowland agriculture. With the spread of the Malay population through the archipelago certain growth areas emerged and grew outward. The Cebuanos of the Central Visayas expanded out to Leyte and south to Northern Mindanao and the Ilocanos spread along the west coast of Luzon, while the Tagalogs spread out from southern Luzon. With each group a distinct vernacular developed. The arrival of Islam in the southern Philippines during the fifteenth century resulted in the establishment of sultanates in southwestern Mindanao and the Sulu Archipelago with contact with the rest of the archipelago.

Spain colonized the Philippines in the sixteenth century. This proved to be a homogenizing force and set the scene for the development of a Philippine national identity but not all areas were converted to Catholicism (notably the Muslim areas of the Southern part of archipelago and some upland tribal groups). The Spanish influence was strongest among lowland groups and emanated from Luzon and the Visayas.

3.5 - Agricultural geography

The present agricultural economy of the Philippines is reflective of a complex mix of several cropping systems, numerous land control systems, localized labor systems, and differentiated trade, exchange and consumption systems. Several systems in use today date back to the time of European contact and earlier. The first system and one still used in a highly modified form was caingin or slash and burn shifting agriculture. Crops cultivated in the caingin system included rice, yams, and bananas which were the staples and,

minor crops such as coconut and sugarcane were used as supplements, with gathering in adjoining forests complimenting the diet along with hunting and fishing. There is some dispute over the extent of wet rice cultivation at the time of European contact. Certainly the world famous rice terraces of northern Luzon pre-date European contact and there are references to rice cultivation in the Western and Central Visayas at contact (Alzina 1668; Lopez 1967; Conklin, Lupaih *et al.* 1980). The one crop that is ubiquitous today that was not present at contact was maize (Spencer 1975). The Spanish introduced several new elements into the Philippine cropping system, maize being the most important. Other new crops included sweet potatoes, manioc, agave, pineapple, a number of fruits and varieties of livestock, especially horses and cattle. They also introduced new land controlling systems and social structuring such as the hacienda or large landholding system.

Today five crops form the base for all regional patterns of agriculture in the country: rice, corn, yams, sweet potatoes, and bananas as staple crops, supplemented by coconuts as an enduring cash crop. Rice and bananas are a common combination across the archipelago. Regional specialization results in one or more other crops being added to the rice/banana base and when agglomerated can constitute significant hectares and play an important role in the regional economy.

Climatic conditions are a major determinant of crop production patterns. For example, coconut trees need a constant supply of water and do not do well in areas with a prolonged dry season. Sugarcane, on the other hand, needs moderate rainfall spread out over a long growing period and a dry season for ripening and harvesting. Soil type, topography, government policy, and regional conflict between Christians and Muslims were also determinants in the patterns of agricultural activity.

3.5.1. - Intensification and extensification of landuse

Another inevitable response of agriculture to increasing population pressure is the more extensive and intensive use of land for cultivation. The figures on farm area, average farm size, and

number of hectares and parcels per farm to be discussed in the next chapter illustrate the ongoing processes of agricultural ‘intensification’ and ‘extensification’.⁵ A more explicit and convenient measure (Xenos, 1998:51) can be used to demonstrate this point with better clarity.

The procedure decomposes population density into different components as follows:

$$\frac{\text{population}}{\text{cultivated hectares}} \times \frac{\text{cultivated hectares}}{\text{farm hectares}} \times \frac{\text{farm hectares}}{\text{total hectares}} =$$

$$= \text{population} / \text{total hectares}$$

Let the ratio of population to cultivated hectares represent ‘physiological density’ (Table n° 3.2). The ratio of cultivated hectares to farm hectares represents the ‘intensity’ of use of existing farmlands, while the ratio of farm hectares to total hectares represents the ‘extensiveness’ of the use of available land in the country.

⁵ See Richard Jackson’s paper (1992) for a more comprehensive assessment of change.

Table n° 3.2 – Agricultural components of population density: 1960-1991

Year	$\frac{\text{Population}^a}{\text{Cultivated Ha.}^b}$	$\frac{\text{Cultivated Ha.}^b}{\text{Farm Ha.}^c}$	$\frac{\text{Farm Ha.}^c}{\text{Total Ha.}^d}$	$\frac{\text{Population}^a}{\text{Total Ha.}^d}$
1960	4.854	0.718	0.253	0.881
1971	5.710	0.756	0.276	1.193
1980	6.124	0.808	0.316	1.564
1991	6.386	0.953	0.324	1.974

a. As reported by the National Statistics Office (NSO), 1999 Philippine Yearbook, Table n° 5.1.

b. Land planted to temporary crops and permanent crops. Source: 1991 Census of Agriculture: Philippines, Table A.

c. Total area of all farms reported. Source: 1991 Census of Agriculture: Philippines, Table A.

d. Total land area of the Philippines (30,747,769 hectares), updated as of 15 December 1996. Source: National Mapping and Resource Information Authority (NAMRIA).

Given the limitation of census data, ‘cultivated hectares’ is here defined as the total number of hectares planted to temporary or permanent crops. Total ‘farm hectares’ would include, in addition: farm area lying idle (temporarily fallowed or used as meadows or pastures); permanent meadows and pastures; farm land covered with forest growth; and, all other lands (including homelots). Population figures used in the computation are those reported in the censuses of 1960, 1970, 1980 and 1990.

The ratios reflect the levels and the rates of landuse intensification as well as extensification for the period 1960-1991. It can be seen that the proportion of all land used for agricultural purposes has risen from 25.3 percent in 1960 to 32.4 percent in 1991 (growth of 28 percent). As stated earlier, the extent of land that can be used for cultivation is constrained by several factors, including

topography, geological factors, climate, and even public policy. The proportion of cultivable land in actual cultivation has increased as well, and even more markedly so: from 71.8 percent to 95.3 percent (growth of 23.5 percent). These increases suggest that agricultural expansion in the country from 1960 to 1991 has been dominated by more intensive use of existing farmlands rather than by the opening up of new agricultural lands.

Because ‘intensification’ seems to have nearly reached its limits—barring the use of better technology—one can probably expect ‘extensification’ of agriculture to proceed at a faster pace in the future, unless this too is close to its limits.⁶ Grave concerns over the continuous migration of farmers into the uplands and forest reserves, and recognition that this condition is unsustainable and indicative of a crisis, signify that even here the limits are imminent as well.

3.6 - The dominant grains

In this section we introduce the dominant grains under widespread cultivation throughout the archipelago. The basis for the Charter and the Philippine’s inclusion in the worldwide study was its dependence on grain production and lack of capital reserves or trading relationships that could permit it to import large quantities of grain in the future to feed a growing population. Details on productivity and specific areas of dominance in the production of grains and other important agricultural products such as coconut, bananas and root crops is left for the following chapter.

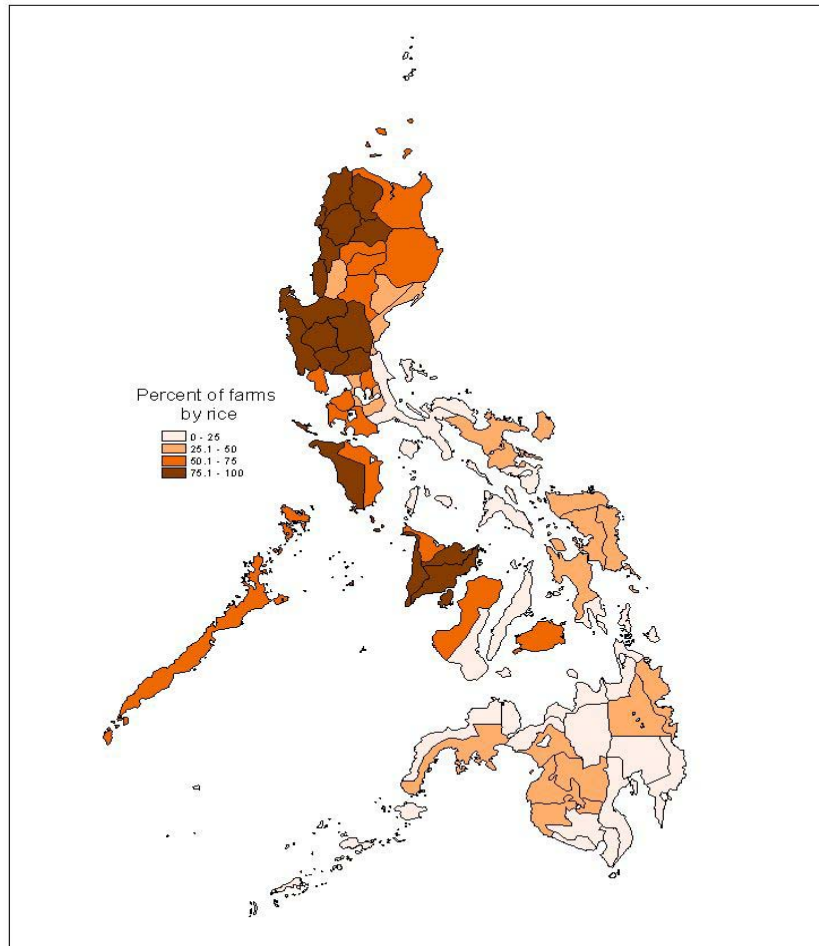
⁶ Richard Jackson (1992:10) commented “there remains no unclassified land [in the Philippines]. Extension of agriculture can now only occur as a result of squatting on lands classified for non-agricultural uses or of the reclassification of land”.

3.6.1 - Rice

Rice is the traditional staple crop of the Philippines and is central to the rural agricultural economy. The crop is grown on over half of all the farms in the country and is grown on more farms than any other single crop. Rice covers nearly half of the cultivated area of the country but is the food staple for about three-fourths of the population, many of which eat rice at least once a day. Even though rice is suited to growing in most areas of the Philippines, from low lying to high elevations and from wet to dry areas, its primary production areas are regionalized (see Figure n° 3.2). The Central Plain of Luzon is the largest regional producer, but Mindanao until the last decade, was the largest surplus producer. Southwestern Luzon, Eastern Panay and the Bicol Peninsula are also important production areas while islands such as Bohol, Leyte and the Cagayan Valley of Luzon form secondary production areas. While corn production is critical in Mindanao rice is also cultivated across the island but no single area is as important as those noted to the north.

In the Philippines there are few areas for rice production that are restricted by environment. Temperature is suitable across the archipelago except in the most elevated portions of the islands and on the upper slopes of the many volcanoes where there is too much cloud cover for effective production. In other areas that might be deemed marginal owing to moisture restrictions (either too much or too little) this is adapted to by planting rice in wet or dry seasons and/or by providing irrigation. Importantly, the full concept of irrigation is important to the wetter areas of the archipelago whereby irrigation is not only the provision of water to cultivated plants but also the removal of excess water after heavy rainfall events.

Figure n° 3.2 – Percent of farm area planted to rice by province, 1991



The application of technologies to improve rice yields in the Philippines has been slow. The exception to this has been the application of green revolution technologies (seed and fertilizer mainly). However, for such technologies to reach their full potential other technologies such as soil and water management must also be applied. In the Philippines the application of the whole suite of technologies has been patchy and thus the Philippines still has one of the lowest national rice yields per unit area under cultivation of any country in Asia. In fact, in the Philippines any gains in national

production in the last three decades have been achieved more by expanding the area under cultivation than through *in situ* increases in production (Bouis 1993). The Philippines began importing rice in the later nineteenth century (Wernstedt and Spencer 1967) and rice imports to balance production shortfalls have been the norm ever since.

Most rice farms only produce one crop per year in the wet season. This is especially the case where irrigation is deficient or non-existent. Rainfall is held on the land through the provision of bunds or small dikes. The risk of water deficits is high and rainfall variability can have a marked effect on yield on a year to year basis. Two crops of rice can be produced in areas with indigenous irrigation technology, which has been in place, in some instances, since the pre-European period. Other areas have been provided with irrigation infrastructure more recently through government programs which require damming of rivers and streams at both large and small scale. The areas easily irrigated have been serviced. What remain unserviced are small, isolated areas with potential for further irrigation development. There are no new potential sites for the development of either large scale or small scale rice production i.e. all the land with potential to grow lowland rice has been exploited and that still possible for cultivation of upland rice is extremely fragile. In actuality, the area available for rice production is in decline as urbanization swallows up large areas of reasonable good rice land in Luzon. There is also the problem of destabilization of island hydrologies that undermines the provision of stable supplies of irrigation water and leads to field conversion from wet rice cropping to other cropping patterns, typically corn-based (Urich 1996a).

3.6.2 - Corn

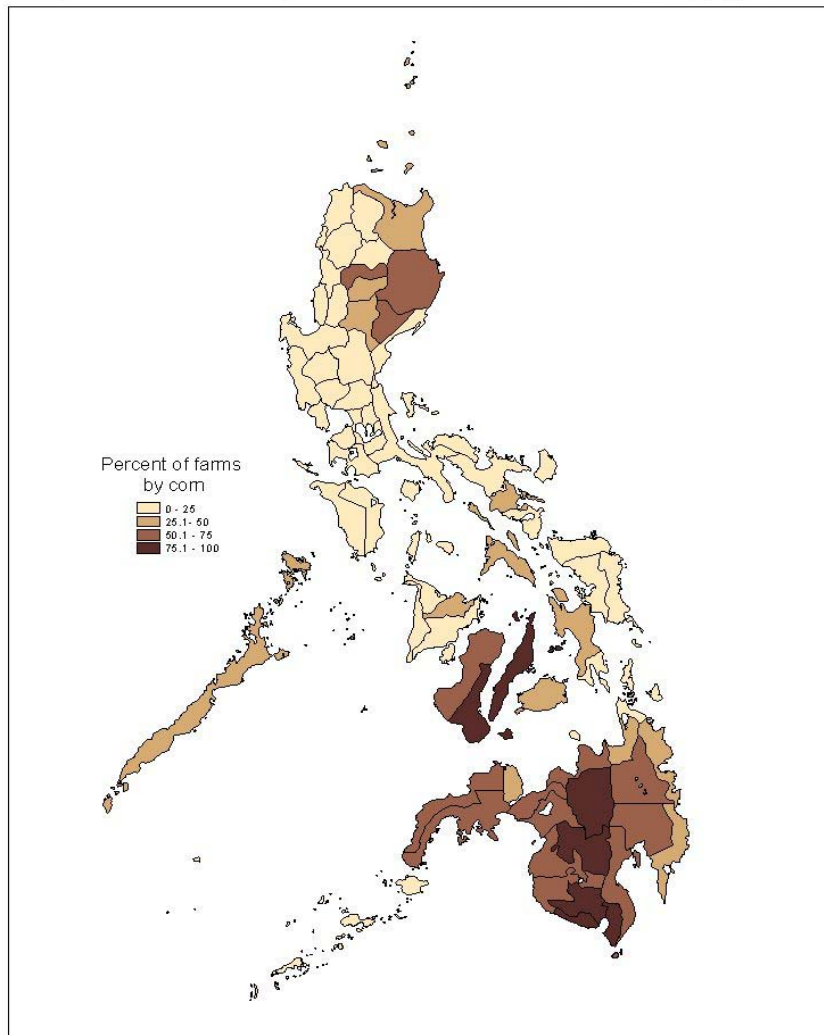
As Phelan (1959) noted, corn was introduced to the Visayas in the sixteenth century and then spread from there to the rest of the archipelago. It is known in the Philippines as *mais* and although slow to be accepted by cultivators it has since grown to be an important crop and is highly adaptable with its cultivation supplementing rice and tuber crops. It grows reasonably well in

slightly drier environments surrounding lowland rice fields or on the slopes of hills. It has gained regional dominance where rainfall is sporadic and wet seasons can fail with some regularity and also where soils and slopes are conducive to corn rather than rice (Figure n° 3.2). The island of Cebu is one such island with its steeply sloping lands and limestone soils. Much of Mindanao is also conducive to its cultivation with its mountainous terrain and limited lowlands and lack of a wet rice tradition. Many settlers of Mindanao originated from the corn growing provinces of Cebu, Negros and Bohol in the central Visayas and they continued their cultural practices of corn production and consumption in Mindanao.

Corn, like rice can be grown anywhere in the Philippines (Figure n° 3.3). In areas with year around precipitation up to three crops a year can be grown but in areas with more seasonal rainfall cultivation is limited to the rainy season. Both 'local' and improved varieties are widely cultivated. A white corn is most commonly grown as it is dried and mashed and cooked with rice to form a 'corn rice' concoction for the table. Disease and pestilence is an ongoing problem with corn production, and yields may decline markedly in subsequent plantings of corn on the same plot. The rotating and resting of fields is a common practice but as population pressures increase and land areas per farm family decrease the ability to fallow land for extended periods is decreasing. Hence corn yields are in rapid decline. Provision of improved seed varieties is being attempted but they require a whole host of other inputs to reach their professed potential and these are often expensive and out of reach of many small scale cultivators.

A primary corn producing area surrounds Davao Gulf in southern Mindanao. Production from this area supports the corn deficit area of the Visayas. A number of secondary production areas include the Cagayan Valley of Luzon, the Batangas Peninsula of

Figure n° 3.3 – Percent of farm area planted to corn by province, 1991



southwest Luzon, the Sorsogon Peninsula of southeastern Luzon, eastern Panay island and a wide area of western Mindanao. In the immediate post-World War Two era the Philippines was self-sufficient in corn. From the 1970s onward and as more corn has been channeled to livestock feeds rather than human consumption deficits have occurred and imports have increased. The potential for

a return to self sufficiency is not foreseen as marginal areas further decline in land quality from over exploitation and the areas available for colonization and cultivation of corn rapidly diminish (Jackson 1992; Kummer, Concepcion *et al.* 1994).

3.7 - Social development and control of land

Land tenure status and relationships between landed status and economic, political and ecological issues are gaining wider prominence in the development literature (Putzel 1990; Thiesenhusen 1991; Friedmann 1992; Ward 1992; Suhrke 1993; Marks 1994). As a bi-product of colonialism, land tenure systems have been formalized not only by colonial overlords but also by regimes of so-called free and independent states. Codification of land holdings in the Philippines through the issuance of titles and clear and unencumbered ownership of property has been deemed a necessary part of the development process, as it had been in western 'developed' states for some time (Miller and Storms 1913). Thinking in this regard remains little changed with, for example, Indonesia currently pursuing broad and far reaching land registration programs, although not without considerable debate in the academic community (Ward 1995).

In the Philippines, rural land tenure reform and concomitant productivity increases have been portrayed as being essential to urban industrial development. However historically, its implementation appears to be driven by the need to reduce social conflict rather than as a method of facilitating economic growth and positive social change (Kerkvliet 1979).

Philippine government policy in the area of agrarian reform has been labeled as 'abusive'; a 'failure', 'watered-down', 'inefficient', 'biased', 'impotent', 'corrupt' and 'conservative' (Kummer 1992; Lim 1995; Mangahas 1986; Putzel 1992). With the overthrow of the Marcos regime in 1986 and the ascendancy of Corozon Aquino and the writing of the 'New' constitution of 1987 hopes rose for the formulation and implementation of a more 'comprehensive' agrarian reform policy. Aquino's discretion in not pushing forward a program of reform when she held relatively unlimited law making powers under the Freedom Constitution

stretching from March 12, 1986 to July 27, 1987 has been questioned (Romero, *et al*, 1991). Reform remained high on the political agenda with strong pressure being exerted on the State by an increasingly militant peasantry exasperated with rising landlessness and the increasing concentration of land in the hands of a relatively few powerful élite. Land take-overs—peasants seizing and cultivating land owned by holders of large tracts of land—were occurring with more frequency (Kerkvliet 1993). The Philippine Government responded to this ‘threat’, but in an unexpected manner; they granted many small parcels of land to peasant farmers from the stock of publicly held resources. The release of these lands had severe ecological and hence social consequences that are being played out today (Urich, in press).

In the Philippines the study of resource exploitation, the way people gain access to the means of production, is important because historical patterns of political and social organization have strong contemporary correlates (Scott 1991). “Slavery and bondage were ubiquitous and significant in Philippine life. In the practice of agriculture, terms distinguished the division of labor, not of property” (Scott 1991:15). Social differentiation and cultural interdependence were the hallmarks of Philippine social organization both before and during Spanish occupation.

Only very recently have some institutions dating to pre-Spanish times been undermined. Their longevity is important given the pressures for change occurring around them. Oral histories and Spanish reports tell of a system of land claiming in the resource-rich lowlands whereby an individual interested in a piece of unencumbered (uncleared) land simply laid claim to it by initiating clearing and cultivation. By continuing to cultivate or by investing—in the case of dry lands—in perennial plantings of fruit trees and coconuts, the land was deemed occupied and counter-claims could not be made to it. Writing of the Visayas, Alzina (1668) outlined cases where land was claimed, cleared and, on the boundaries, fruit and other economic trees were planted. Lands were then abandoned, yet the trees remained. After a number of years, the original claimant could then return and ‘re-claim’ the land

which was marked by the fruit bearing trees on the boundary.⁷ There was an unwritten understanding between villagers that a piece of land with conspicuous plantings of fruit trees had been claimed.

Similarly, by cultivating or by investing in landesque capital (irrigation canals, terraces) and by maintaining the investment on a lowland property it could be held in perpetuity. Clearly, areas of wet lowlands must have been under a traditional tenure system. Without secure tenure farmers would not have been interested in investing such amounts of time and energy in constructing very durable stone terraces and extensive irrigation systems.

Basins were more easily defended as being rightfully owned due to the tradition of extending use rights from the valley floor to the summits of surrounding hills. Today's more affluent families are often the descendants of relatives who claimed more expansive areas of land. Their ancestors cultivated the lowlands and realized their excellent agricultural potential. By distributing the surplus harvest they attained status and also expanded the area under their control. Peripheral and less powerful families were supported by the élite in return for their assistance in cultivating the land. These less powerful families had self-interest in improving the land. By investing their labor in the construction of landesque capital they improved their share of the harvest and household food security. They also had a relatively secure existence. However, over the long term more benefits accrued to the dominant families.

The permanency of wet rice cultivation and the investment in landesque capital involves a formalized traditional land holding system. These lands were highly valued and were not abandoned or distributed as compensation payment. In contrast, the dry cropped lowlands in most of the interiors of the islands have been only permanently settled in the last 100 years (with the notable exception of the interior of Luzon with its ancient rice terraces and some other

⁷ Alzina described the system thus, "Formerly, they (Visayans) readily yielded to him who came first (the right) to select (his land) and much more to him who planted first his coconuts, trees, fruits, abaca, and other things. They have always a right and dominion over their [land] even though they may affirm that they may go to live in another village" (Alzina 1668:82).

island interiors). Still they too are becoming highly valued lands as more permanent crops, such as coconuts and economic trees, are planted. This very rigid situation prevailing in both the wet and dry lowlands is markedly different from that operating in the extensive uplands.

Uplands, like the lowlands, were claimed by individuals. A person claiming an area of the lowlands was, by tradition, recognized as the claimant of all the upland from the point where lowland met the upland, and then extending to the hill's summit (Urich 1989). This system still applies in lands being claimed today on the now slowly expanding frontier.

Summits and slopes of hills, either gently rounded or in some instances quite flat, were cleared and cropped. In these instances use rights were customarily recognized. In many cases cultivation was not feasible and these cleared and generally grass-covered areas were used by the community as a common property resource. Writing on the land holding system at Spanish contact, Bernad (1972) commented on the presence of formalized individual holdings for lowland plots and communal use of the summits of hills. Indeed, many of the uncultivable hills are still being communally managed.

In summary, two regimes have been in place regarding the usufruct rights to land. One is exclusive to the lowlands, and the other—widely recognized within society as *de facto* ownership—involves communal pasturing or cultivation in the uplands.⁸ This dichotomy is not unexpected. Historically, value has been placed on lowland resources as demonstrated by the investment in irrigation structures like canals, terraces and field bunds. Control of lowland resources and a surplus of rice enhanced the power of the family which originally claimed the land. These patterns, established in this earliest phase of local history, mark the patron-client relationships of today.

⁸ Lowland in this instance refers to flat land which may be found at any elevation i.e. including plateaus within island interiors. Uplands refer to sloping lands surrounding lowland areas and may be anything from small localized hills to mountain ranges.

3.8 - The American Period

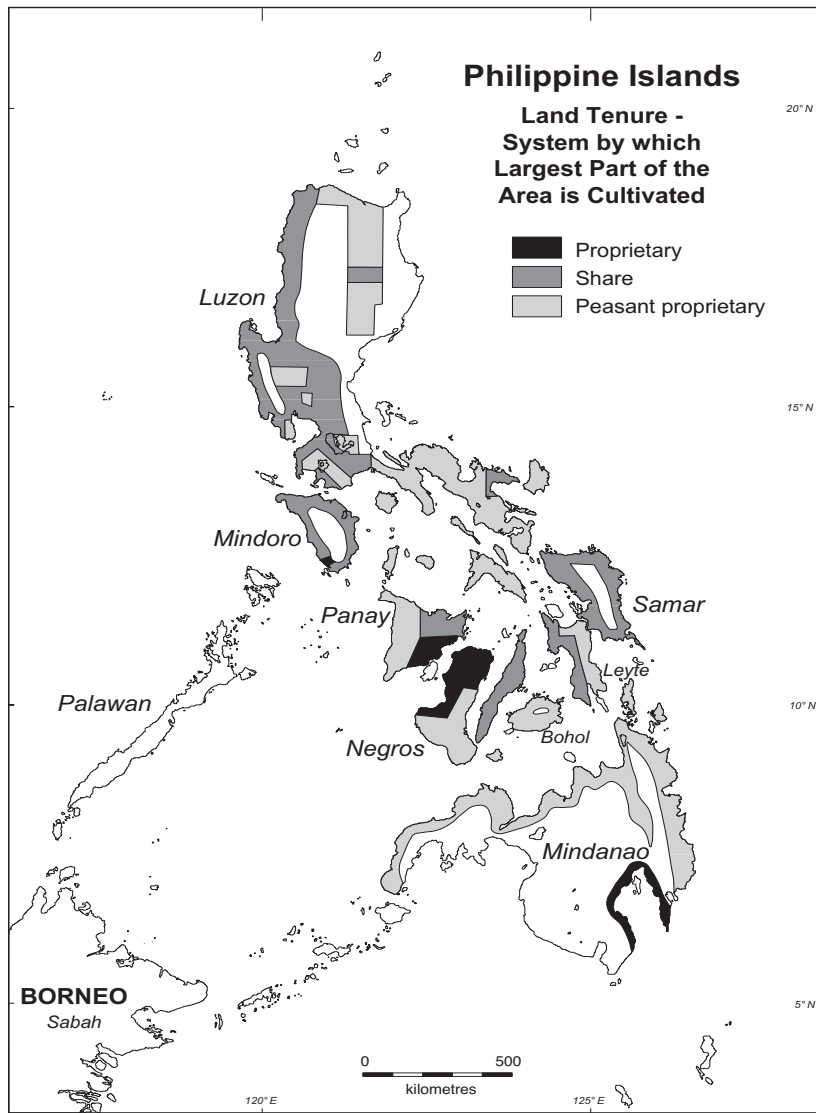
Early in the American period it was recognized by the new colonial masters that rights to land in the Philippines changed with some regularity. These changes were also not always complete in that they could be recognized as custom, inheritance, law or contractual and could extend from one cropping cycle to any number of years or for a certain amount of the product of the land. The land holding systems for the larger parcels were defined by Miller and Storms (1913) as either proprietary, share or rent systems. The smaller parcels were cultivated by either peasant proprietors, hired labor or on a sharecropping basis.

The proprietary system was based on an owner operating a farm either directly or through the use of a manager. Laborers worked on the farm for a wage and were supervised by a foreman. The sugar haciendas were the best example of this type of system. A derivative of the proprietary model was the 'peasant proprietary system'.⁹ This was based on land 'owners' tilling their own land, and was most common in long-settled areas, and where there was a "wide distribution of wealth" (Miller and Storms, 1913:184) or where new land was being opened up for cultivation. Importantly, in the proprietary and peasant proprietary systems the owners actually tilled the soil (or supervised its tillage) and they were the only ones interested in the crop. Moreover, they owned the land and had sole use of the soil.

In contrast to the above systems, Miller and Storms identified an emerging rent system, which was already widely used in Europe and the United States. Under this system a person could obtain temporary rights to the total product of the land by paying a stipulated sum or an amount of production to the actual land owner. Miller and Storms found this rental system widespread in the Central Plain of Luzon, Mindoro, Panay and Leyte, among other regions (Figures n° 3.4 and n° 3.5).

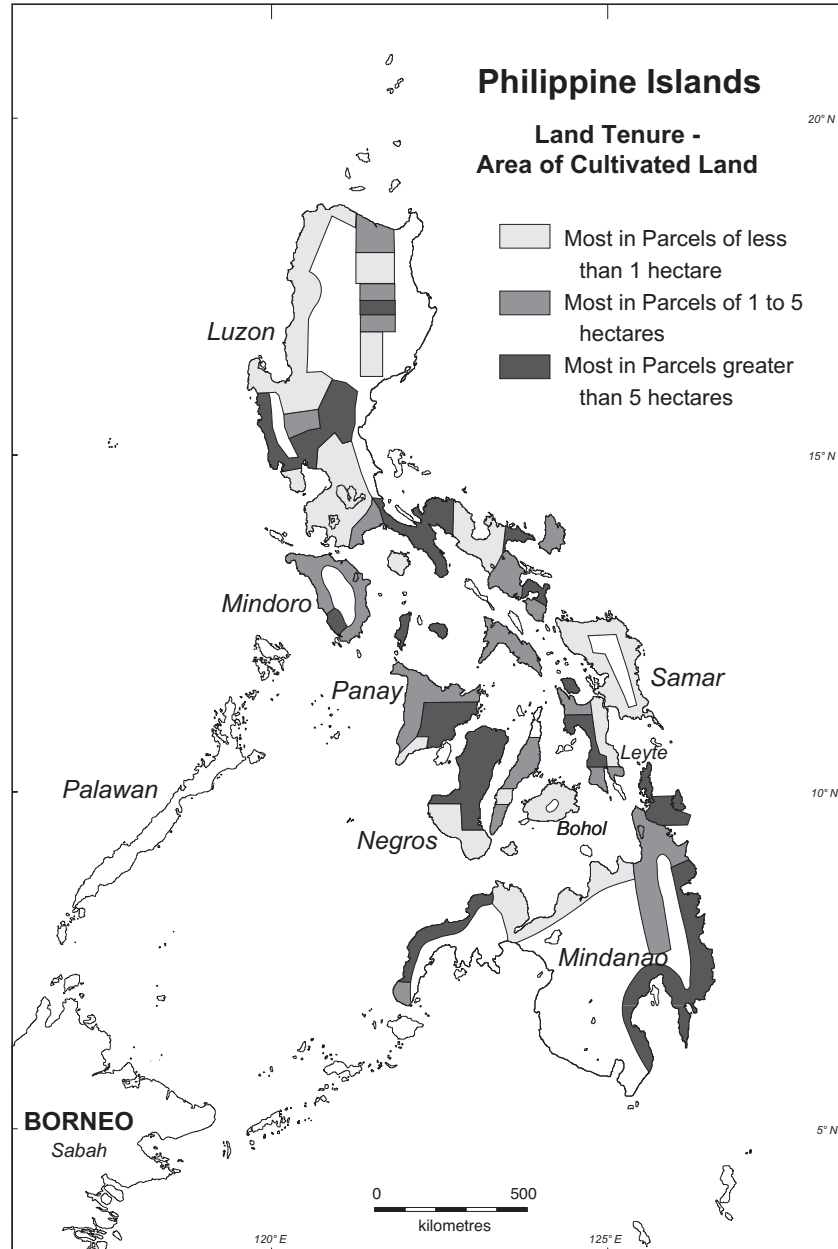
⁹ Others in the Philippines included a 'proprietary system' (hacienda) and 'share system'.

Figure n° 3.4 – Land tenure systems in place in the early twentieth century



Source: Miller and Storms 1913

Figure n° 3.5 – Size of parcels in the early twentieth century



Source: Miller and Storms 1913.

In the systems described thus far the cultivator of the land is the only person directly interested in the amount of the crop. Another system differs in this regard and Miller and Storms termed this a 'share system' whereby the owner and tiller of the soil are both directly interested in the size of the crop produced. In some regions the tiller was relatively free to cultivate the land as they desired. In other regions the landlord held considerable control not only on the direction of land cultivation and development but also in family and everyday activities. Miller and Storms also described a Manorial system which was also a share system. Three subclasses of share system were identified by Miller and Storms.

1] large haciendas cultivated on a share system, known as the *kasama*, *kanan* or *inquilino* systems;

2] a system whereby a large number of scattered plots were owned by one person and leased to tenants – the scattered land holdings system, and;

3] leasing and re-leasing by peasant proprietors—the interleaving system.

Clearly there is some historical basis for the evolution of considerable complexity in the land holding systems encountered by the new American colonial regime in the early 20th century.

Regardless of this complexity, in the first century of the United States colonial administration, a series of land laws was promulgated to supersede any customary land holding system. A flurry of regulations pertaining to the formalization of land rights was enacted and first adopted by the Christian lowland cultures of the archipelago.¹⁰

The motivations for the establishment of a formal land titling system were diverse and often contradictory. First, as part of the Treaty of Paris signed in 1898 that ceded the Philippines to the US

¹⁰ Christian lowland cultures refer to those generally sedentary cultures that had adopted Catholicism. The term 'lowland' in this case in no way refers to an agricultural system, meaning lowland or wet rice-based system. It is used to refer to linguistic groups commonly residing at the coast and in the foothills of the archipelago's larger islands.

from Spain, it was stated that existing property rights of private establishments, the church, and individuals, had to be respected. Secondly, the method of land registration was modeled on the homesteading system used in the settlement of the American west. An underlying motive of the American regime was to bring about an agricultural middle class (Miller and Storms 1913).¹¹ The US administration envisaged that the creation of ‘independent farmers’ would result in the type of citizen who, because of their investment in land, would have a greater interest in government and thus ensure the survival of democratic principles. Furthermore, economic development would take place, as farmers—through the formation of an independent agricultural middle class—became consumers. It was thought that consumerism would raise the interest of farmers in not only the quantity, but also the quality of crops (Miller and Storms 1913). Moreover, “the homestead laws, the activity looking toward the settling of land titles, and the agitation for lower interest, *all have in view the extension and protection of the peasant proprietary class*” (Miller and Storms 1913:213) emphasis added.

The first legal act passed by the United States in the Philippines was the Cooper Act in 1902, also known as the Philippine Bill. It legitimated and empowered Philippine civil government to legislate land laws. Civil government ruled that land could be granted or sold to actual occupants or settlers, or any other Philippine citizen, as long as the area did not exceed 16 hectares per individual, or 1024 hectares for a corporation or ‘association of persons’. Following closely after the passing of the Philippine Bill was the more comprehensive Public Land Law of 1903 that took effect on July 26, 1904. Act No. 926 as it was known, clarified and expanded upon the provisions of the Cooper Act. Regulations were put in place governing homesteading¹², selling and leasing of lands in the public domain, issuing local patents to native cultivators of

¹¹ Hugo Miller, an American, was the Head of the Philippine Department of Industrial Information. Miller and Storms’ book on the economic conditions in the Philippines in the early 1900s included extensive accounts—and policy statements—on land tenure systems, agricultural labor and food crops.

¹² Homestead claims were initially limited to 40 hectares but were increased to 144 hectares in 1924. Between the years 1906 and 1911 only 1400 homestead claims were made in the entire Philippines (Miller and Storms 1913:214).

public lands, settling disputes over imperfect titles, and making provisions for the leasing or renting of public lands by United States or Philippine citizens, and corporations.

To facilitate the provisions of the Public Land Law a Public Lands Division was created in the Insular Bureau of Public Lands. Soon after, a Court of Land Registration was created where Torrens titles could be applied for upon establishment of one's 'ownership' over a parcel of land. Developed in parallel with the Torrens land titling system was a bureaucratic system for defining areas and landuses of individual plots for the purpose of taxation. In lieu of a Torrens title, a person could apply for a tax declaration. Although areas are computed for taxation purposes, specific measurements and vectors are not shown on the document in the same way as they are on a Torrens title.

A Torrens title was meant to be the only legal form of ownership recognized by the Philippine judicial system. To discourage use of tax declarations for this purpose there is a disclaimer printed on every tax declaration "not to be used in the settlement of legal cases". Yet throughout the Philippines many land disputes are settled in a court of law on the basis of a tax declaration. Legally occupied lands were therefore registered under two systems: tax declaration, and tax declaration plus formal Torrens title.

Original ownership was established by proving that one had been cultivating the land in question for three years prior to the date of application. While refinements of these laws occurred through the decades leading up to World War Two, the Cooper Act and Public Land Law of 1903 had set precedents that still apply today, to a large degree.¹³ These land laws were swiftly interpreted by certain sectors of society.

¹³ See Putzel (1992) for a detailed review of the role the United States played in development of land laws in the Philippines.

3.9 - Republic Act No. 6657 – 1988 Comprehensive Agrarian Reform Law

A long series of land reform initiatives have been promulgated for the Philippines. Reforms have had similar rhetorical names to Comprehensive Agrarian Reform, such as President Quezon's 'Social justice program'; Magsaysay's 'Land tenure act'; Macapagal's 'Land reform code'; and, Marcos' 'Land reform decree'.

It is a policy of the State to pursue a Comprehensive Agrarian Reform Program (hereafter CARP). The stated intent is that welfare of the landless farmers and farm workers will receive the highest consideration in order to promote social justice; to move attention towards sound rural development and industrialization; and, establish owner cultivatorship of economic-sized farms as the basis of Philippine agriculture. However, tenancy rates in the countryside range from 50 to 70 percent. Just like other marginal farmers, tenants—whether sharecropping or leasehold—have to contend with a rural élite which not only enjoys a monopoly in land resources, but also controls the distribution of technological inputs, rural banking, the renting out of farm machinery and the storage, transportation, processing and marketing of farm produce. Taken as a whole, marginal farmers, tenants and farm workers total 10.2 million, 70 percent of whom are landless. The Comprehensive Agrarian Reform Law (CARL or RA 6657) was passed in 1988 to change this situation. With an allotment from the Congress of about P 50 billion (US\$1.92 billion), the ten-year law has a remaining balance of P4.91 billion (US\$0.18 billion) to date. However, distribution of lands to the tillers is below the expected targets and may not be accomplished during the last year of CARP. After a quarter of a century, from 1972 to 1996, the government distributed a cumulative total of 2.56 million hectares or 60 percent of the planned allocation of 4.3 million hectares.

Debate on the social, economic, and more recently, ecological ramifications of inequality in Philippine land ownership is polarized. Dominant, and on the right, are the conservative legislators with landed interests. Opposing them are the liberals, including foreign aid agencies and segments of the Philippine NGO

movement. Peasant militants and some NGOs take a more radical stance and see a revolutionary approach as the only way forward (Putzel 1992; Broad and Cavanaugh 1993). It is the militants who persistently focus on the issue of the concentration of land ownership and who have steered debate to the left by drawing attention to the government's continuing inability to formulate a more widely acceptable land reform policy, and to carry that policy through to implementation.

An opportunity to address past grievances was not taken by the Aquino regime (Putzel 1992). Subsequent government policy on the redistribution of land—written and passed by land-owner controlled Congresses—has permitted the large areas of public land to be legally occupied and cultivated. This policy was formulated in a period of increasingly vociferous and militant armed uprising (Jones 1989). The 'classical' counter-insurgency strategy involved suppression of dissidents and allocation of public lands on long-term leases to particular groups (Dillon 1995; Magno and Gregor 1986; Pugh 1987; Urich, in press).

CARP's primary objective was to wipe out 'rural poverty and communist insurgency by removing the root causes of landlessness spreading across the archipelago'. The use of the term 'comprehensive' gives the impression of something unprecedented in the area of land involved and number of potential beneficiaries. Areas subject to reform, paradoxically, extended to environments which under Philippine law were outside CARP's jurisdiction as they were legally classified as restricted from occupation for a number of reasons. For example, Executive Order 229 stated that all types of land, agricultural land, urban land, and other lands of the public domain, were subject to the laws of comprehensive agrarian reform. Of interest to this study was the inclusion, also within Executive Order 229, of public lands with beneficiaries determined by the DENR in conjunction with the DAR.

At least two laws should have served to restrain the distribution of at least some if not all of these 'public lands'. RA 66547 explicitly states that parks, forest reserves, reforestation sites, fish sanctuaries, breeding grounds, watersheds and mangroves could not and should not be released for occupation, i.e. cultivation. This

was reinforced by the wording of the Law of Agrarian Reform which noted that for the sake of ecological balance, land reform would apply 'to public lands and other natural resources only when it would preserve and not adversely affect national parks or other preserves such as endangered forests'. Section 51 of Presidential Decree No. 705 of the Forestry Reform Code of the Philippines is more specific. 'Any occupation in forest land that will result in sedimentation, erosion, reduction in water yield and impairment of other resources to the detriment of community and public interest shall not be allowed' (La Viña 1991:143).

3.10 - Summary

The geography of the Philippines is fragmented and along with this fragmentation has come divergent development that reflects local resource potential and varying social and political agendas. Generally, land tenure systems are diverse and have a long historical legacy that has been little changed through time in spite of marked intervention in land holding policy. More recently, from 1960 to 1990, during the period of the latest population explosion the number of farms in the country has more than doubled. However, the total farm area increased by only 28 percent. Consequently, the average farm size has decreased over these decades. There are indications of rapid fragmentation of agricultural land in the country, even as the majority of farmers own, in full or part, the land that they are farming. There has been more 'intensive' and 'extensive' use of land for agricultural purposes. There is a demand for new land to cultivate but the land frontier has effectively closed with almost all subsequent lands opened for agriculture being located in conservation and watershed protection areas. Thus, any new land formally approved for cultivation is likely to come through the reclassification of public, protected lands. The following chapter reviews the population dynamics that relate so strongly to the systems of land use and holding described thus far at the macro level.