

# Forest Restoration and Rehabilitation in the Philippines

by

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## PART A

### STATUS OF LAND USE AND FOREST (AND LAND) DEGRADATION

The Philippines is an archipelago in Southeastern Asia made up of 7,107 islands and a total land area of around 30 million ha. It is favorably located in relation to many of Southeast Asia's main water bodies such as the South China Sea, Philippine Sea, Sulu Sea, Celebes Sea, and Luzon Strait. Luzon, Visayas, and Mindanao are the three major islands which constitute about 7 percent, 19 percent, and 34 percent, respectively, of the total land area (FMB, 2004). The country is divided into 17 administrative regions covering 81 provinces, 118 cities, 1,510 municipalities, and 41,995 *barangays*<sup>1</sup> (NSCB 2007).

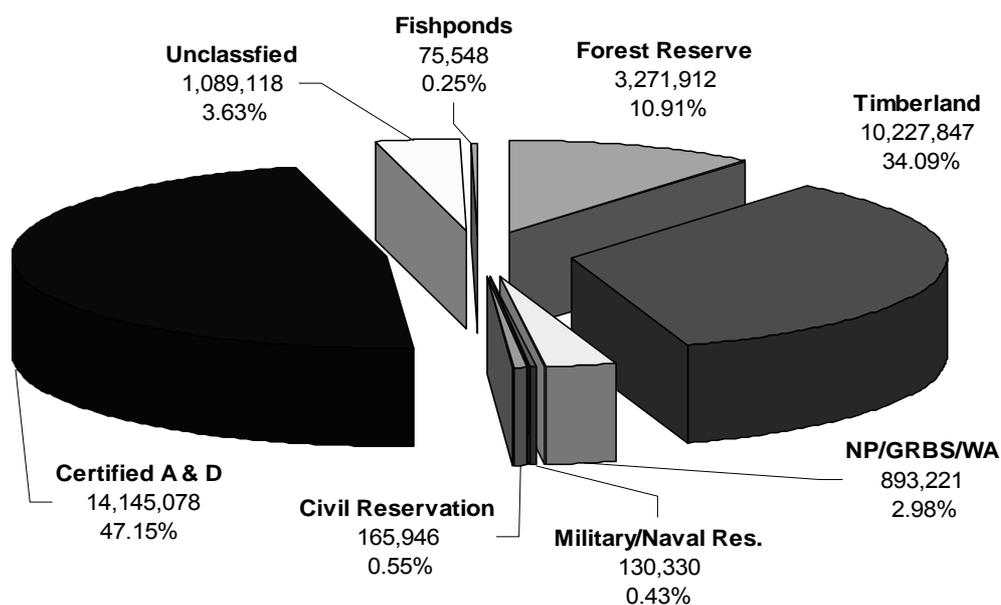
The Philippines has a total projected population of about 87 million for the year 2006. The average annual rate of population increase from 1980 to 2000 is about 2.34%. While the average growth rate is expected to decline through time, current projection indicates that the population is likely to reach more than 141 million by the year 2040. As of 2003, about 30% of the total population subsists below the annual capita poverty threshold of P 13,133<sup>2</sup>. The average annual family income in the same year was P 148,616 (NSCB 2007).

As of 2003, 49.2 percent of the Philippines' land area, or 14.76 million ha, have been officially classified as "forestland" (FMB 2004). In the context of the Philippines, "forestland" refers to all property owned by the national government that is still in the public domain based on the official system of classification. It is a legal, not a botanical description. In reality, much "forest land" does not contain forests (Pulhin et al. 2006). Topographically, most of the forestlands are hilly and mountainous with slopes  $\geq 18$  percent and hence are not suitable for agricultural purposes. As such, they will remain part of the nation's permanent public forest estate according to Section 15 of the Revised Forestry Code of 1975. On the other hand, about 14.15 million ha are classified as "alienable and disposable". These are "lands of the public domain which have been the subject of the present system of classification and declared as not needed for forest purposes" (Section 3, Presidential Decree No. 1559). They may be issued with permanent title and/or used for varying purposes such as for residential, agricultural, commercial, and other use. The remaining 1.09 million ha of the country's land area have not been subjected to an official process of land classification and by virtue of existing government law, remain under the forestland category. Figure 1 presents the breakdown of 2003 land classification in the Philippines.

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<sup>1</sup> *Barangay* is the smallest political unit in the Philippines and often corresponds to a village.

<sup>2</sup> Conversion rate: roughly 50 Philippine Pesos for one US Dollar.



**Figure 1: Status of land classification in the Philippines, 2003.**

## 1. Historical Overview of Forest Degradation

In its Global Forest Resource Assessment (FRA) 2000 Main Report, the Food and Agriculture Organization (FAO) of the United Nations (UN) defined forest degradation as “changes within the forest which negatively affect the structure or function of the stand or site, and thereby lower the capacity to supply products and/or services” (FAO 2001a:396). The same document describes deforestation as:

*...“the long-term or permanent loss of forest cover and implies transformation into another land use. Such a loss can only be caused and maintained by a continued human-induced or natural perturbation. Deforestation includes areas of forest converted to agriculture, pasture, water reservoirs and urban areas. The term specifically excludes areas where the trees have been removed as a result of harvesting or logging, and where the forest is expected to regenerate naturally or with the aid of silvicultural measures.”*

Some areas when degraded may recover naturally or with human assistance. In other cases, however, forest degradation may be permanent, and thus can lead to deforestation in the long run ([http://glossary.eea.europa.eu/EEAGlossary/F/forest\\_degradation](http://glossary.eea.europa.eu/EEAGlossary/F/forest_degradation)). Indeed, in the context of the Philippine reality, “forest degradation” and “deforestation” the way FAO has defined them are closely intertwined. They can hardly be disentangled, hence are used interchangeably in this chapter.

The Philippines suffered from unrelenting onslaught on forest resources, leading to its current diminished and degraded state. When the Spanish colonizers first entered the archipelago in 1521, about 27 million ha or 90 percent of the country was covered with lush tropical rainforest (Lasco *et*

*al.* 2001). By the year 1900, about two years after the Americans substituted the Spanish, around 70 percent or 21 million ha was still forested (Garrity *et al.* 1993, Liu *et al.* 1993). The Americans introduced the first modern logging operations in 1904 when the Insular Lumber Company was granted a 20-year renewable concession to log approximately 300 km<sup>2</sup> of rich dipterocarp forest in Northern Negros in the Visayas (Roth 1983). Dipterocarp lumber, otherwise known as the “Philippine mahogany”, was introduced to the world market.

Towards the end of the colonial period in 1940, 163 sawmill and logging companies were operating nationwide with a total investment cost of P 30,116,550. American firms accounted for 41 percent of investment in the sawmill industry of the nation, while the Filipino elite accounted for 34 percent (de la Cruz 1941). The Philippines had been transformed from a timber importer to Southeast Asia’s largest timber exporter (Tucker, 1988).

American colonial records in 1920 state that 19 million ha or 64 percent of the country was covered with forest (Bautista 1990). Between 1934 and 1941, however, forest cover had declined to around 17 million ha or 57 percent of the land area (Table 1). From 1900 to 1941, close to 4 million ha of the forest cover were lost at an average of about 92,000 ha annually.

After World War II, the forestry sector supported the country’s macro-economic policy geared towards the enhancement of industrialization to repair the war-ravaged economy. The sector started to liquidate the country’s forest resources into solid capital to spur economic development. Forest industries were rehabilitated within a few years and the exportation of logs and some processed products was resumed (Boado 1985, Quintos 1989). By the 1950s, logging had grown so profitable that timber licenses proliferated. Towards the end of the decade (1959), the country was the major exporter of tropical timber accounting for almost one third of the world’s market in logs (Quintos 1989).

Consequently, forest cover continued to decline after World War II (Table 1). By 1969, estimates of the remaining forest ranged from 10 to 10.9 million ha (Ganapin 1987, Revilla 1988). A national inventory conducted in 1982-88 by the RP-German Forest Resources Inventory Project of the DENR Forest Management Bureau (FMB) estimated forest cover at 6.46 million ha or 21.5 percent of the total land area in 1988 (Bautista 1990).

The 1990 Master Plan for Forestry Development estimated previous forest loss based on available information (DENR 1990). Between 1934 and 1990, the country lost 10.9 million ha of forest cover or an average annual loss of 194,000 ha. Of this area, 10.37 million ha, or 95 percent, were converted to other uses while 0.52 million ha were damaged by logging. From 1934 onwards, the loss rate increased dramatically until it peaked at 300,000 ha per year in the decade 1965-75. The rate then gradually declined to 100,000 ha per year from 1985-90 (Pulhin *et al.* 2006). Over the last 100 years, the deforestation rates have fluctuated with an average of about 150,000 ha per year (Rebugio *et al.* 2005).

## **2. Current Status of Forest Degradation**

Until recently, figures on forest cover and deforestation varied even within the same government department depending on the sources. To reconcile conflicting information and come up with standard government statistics, the National Mapping and Resource Information Authority (NAMRIA) and the Forest Management Bureau (FMB) generated a set of land/forest cover

**Table 1. Change in forest land area by forest type (million ha), 1934-2003  
(c.f. Pulhin et al. 2006)**

<b>Forest Type</b>	<b>1934</b>	<b>1934</b>	<b>1941</b>	<b>1969</b>	<b>1969</b>	<b>1976</b>	<b>1980</b>	<b>1988</b>	<b>2003</b>
Old-growth dipterocarp	10.7	11.1		4.4	5.3	3.67	2.99	0.99	
Closed forest									2.56
Open forest									4.03
Commercial forest			13.52						
Non-commercial forest			3.72						
Residual dipterocarp, Second growth	n.a.	2.5		3.4	3.3	n.a.	n.a.	3.41	
Broad-leaved forest	2.5								
Pine ( <i>Pinus</i> )	0.5	0.5		0.3	0.2	n.a.	n.a.	0.24	
Seasonal molave ( <i>Vitex parviflora</i> )	0.4								
Seasonal without molave	0.4								
Mangrove	n.a.	0.3		0.2	0.3	n.a.	n.a.	0.14	0.25
Forest plantation									0.33
Bamboo	0.03								
Mossy, unproductive	0.7	2.6		1.7	1.8	n.a.	n.a.	1.14	
Sub marginal								0.54	
Mid-mountain	1.9								
<b>Total forest area</b>	<b>17.18</b>	<b>17.0</b>	<b>17.24</b>	<b>10.0</b>	<b>10.9</b>	<b>8.1</b>	<b>7.4</b>	<b>6.46</b>	<b>7.17</b>
<b>% of country area</b>	<b>57.3</b>	<b>56.7</b>	<b>58.22</b>	<b>33.3</b>	<b>36.3</b>	<b>27.0</b>	<b>24.7</b>	<b>21.5</b>	<b>23.9</b>

statistics using LANDSAT ETM images from 2003 (FMB 2004). Using a harmonized land/forest cover terms and definitions in accordance with the international standard, the analysis showed that the total forest cover in 2003 was about 7.2 million or 24% of the country's land area. Of these, 6.5 million were found within forest land while the remaining 0.65 million were within alienable and disposable lands. Open forests constitute 4 million ha, closed forest 2.5 million ha, plantations 330,000 ha, and mangrove 250,000 ha. In terms of regional distribution, much of the forests can be found in MIMAROPA, the Cagayan Valley, the Cordillera Administrative, the Central Luzon, and Eastern Visayas region, in that order (Table 2).

**Table 2. Philippine forest cover by region, 2003 (area in hectares)**

Region	Closed Forest	Open Forest	Mangrove	Plantation Forest	Total Forest
<b>NCR</b> National Capital Region	0	2,790	30	*	2,820
<b>CAR</b> Cordillera Administrative Region	384,877	246,848	0	40,595	672,320
<b>R-01</b> Ilocos Region	37,723	117,217	151	34,710	189,801
<b>R-02</b> Cagayan Valley Region	503,149	604,473	8,602	33,621	1,149,845
<b>R-03</b> Central Luzon Region	226,241	304,214	368	58,672	589,495
<b>R-04a</b> Calabarzon Region	117,162	161,165	11,346	*	289,673
<b>R-04b</b> Mimaropa Region	484,866	604,246	57,567	48,465	1,195,144
<b>R-05</b> Bicol Region	50,618	90,284	13,499	2,075	156,476
<b>R-06</b> Western Visayas Region	105,873	104,686	4,600	49,355	264,514
<b>R-07</b> Central Visayas Region	2,231	43,026	11,770	17,842	74,869
<b>R-08</b> Eastern Visayas Region	36,473	410,111	38,781	34,483	519,848
<b>R-09</b> Zamboanga Peninsula Region	29,652	126,790	22,278	3,474	182,195
<b>R-010</b> Northern Mindanao Region	107,071	226,400	2,492	1,530	337,493
<b>R-11</b> Davao Region	177,503	240,986	2,010	536	421,035
<b>R-12</b> Soccsksargen Region	126,385	218,858	1,350	2,641	349,234
<b>R-013</b> CARAGA Region	64,729	431,832	26,731	*	523,292
<b>ARMM</b> Autonomous Region in Muslim Mindanao	106,319	96,661	45,786	1,580	250,346
<b>Philippines</b>	<b>2,560,872</b>	<b>4,030,588</b>	<b>247,362</b>	<b>329,578</b>	<b>7,168,400</b>

\* Plantation Forest boundaries have not been provided.

Source: <http://forestry.denr.gov.ph/landusereg.htm>

The 2003 forest cover figure is 11 percent higher than 1988 forest cover of 6.5 million ha. DENR attributes this to the following factors (Defensor 2004, Pulhin *et al.* 2006):

- Slowdown in commercial logging due to a logging moratorium in several provinces;
- Shift in logging from old-growth to residual forests in the early 1960s;
- Log and lumber export bans;
- Accelerated public and private reforestation efforts;
- Expanded implementation of Industrial and Socialized Industrial Forest Management Agreements (IFMA and SIFMA) in areas where Timber Licence Agreements (TLAs) have expired or were cancelled; *and*
- Adoption of Community-Based Forest Management (CBFM) as the national strategy for managing the country's forest lands that have led to intensified forest rehabilitation and protection.

Some people outside the government on the other hand argue that despite the recorded increase in forest cover, old growth and secondary forests continue to decline because of logging and expanding frontier agriculture (Guiang 2001, Pulhin *et al.* 2006). Accordingly, forest cover increase is primary due to regrowth vegetation and plantation established through reforestation projects and spontaneous tree growing by farmers and others. The estimate may also include agroforestry and fruit trees (Pulhin *et al.* 2006). Even if the 2003 forest cover estimate is true, most of the country's forestlands are still in a degraded state requiring rehabilitation for ecological and socioeconomic purposes.

Figure 2 shows the statistics on forest degradation based on a study conducted under the ASEAN-Korea Environmental Cooperation Project (AKECOP). Appropriate GIS overlay procedures were conducted to derive the statistical estimates. The figure shows the forest estate (i.e. forestlands) of the country (in green and red colors estimated at 15.88 million ha). The areas in red show parts of the forest estate that are under non-forest use, which are estimated at 65%, or 10,322,000 ha. For the entire archipelago, the official figure on forest cover as mentioned above is 24%. Other estimates from FAO (2001b) put the figure at 19%. We estimate this figure to be 24% based on the GIS analysis undertaken, which is consistent with the government figure. Considering varying estimates, there may be around 9.3 to 10.3 million ha of forest lands showing various degrees of degradation requiring forest restoration and rehabilitation.

### 3. Causes of Forest Degradation

The causes of forest degradation in most tropical countries are complex. They constitute a confluence of socioeconomic, cultural, political and institutional factors. Following the framework of Contreras-Hermosilla (2000) in his analysis of *The Underlying Causes of Forest Decline*, forest degradation in the Philippines may be examined in terms of its *direct* and *underlying causes* (Figure 3). Direct causes are of two types: *natural*, and those resulting from human activities referred to here as "*direct anthropogenic causes*". Natural causes are nature-instigated phenomena that contribute to forest degradation such as fires, pests and diseases, and natural calamities particularly typhoons, floods and landslides. On the other hand, direct anthropogenic cau-

ses are those initiated by humans such as logging, agricultural expansion or shifting cultivation, cattle ranching, mining and infrastructure development like road and dam construction.



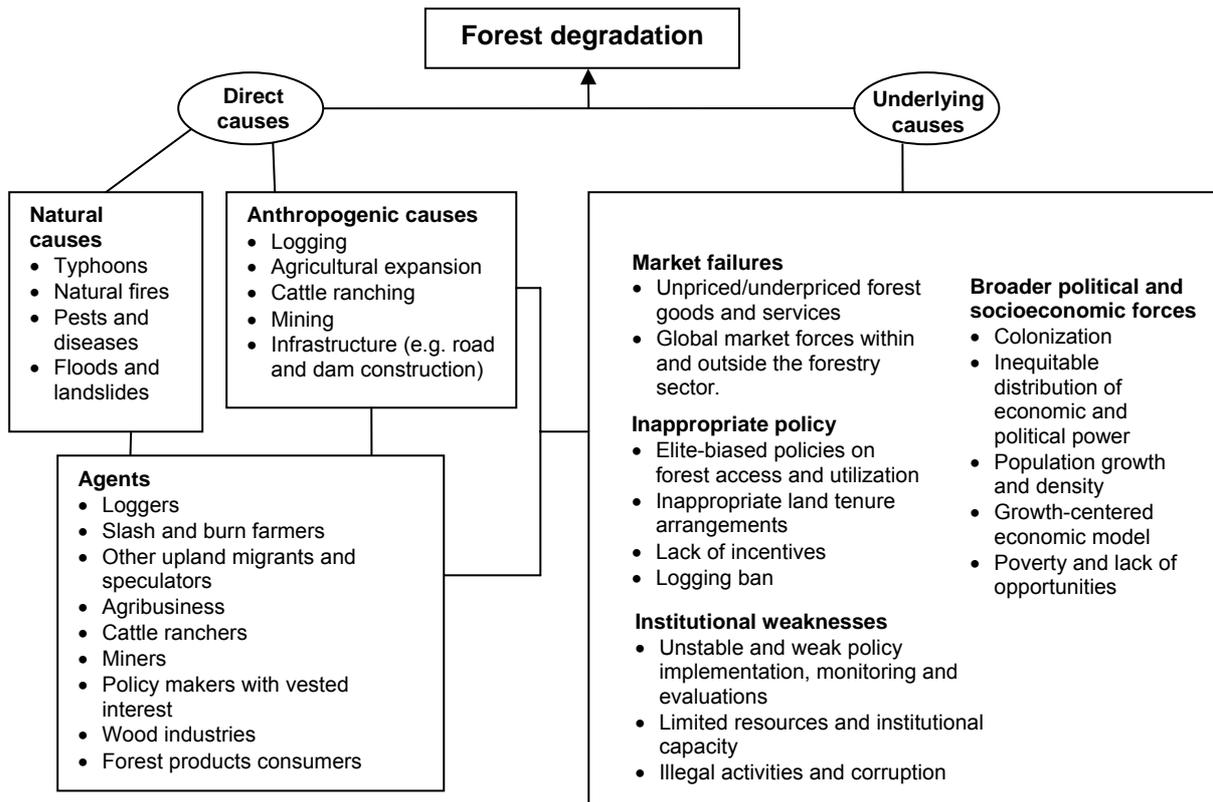
**Figure 2. GIS map of forest restoration in the Philippines**

In contrast, the underlying causes refer to the deeper and much more fundamental forces that drive forest degradation. They are rooted in some of the most basic features of society, such as the inequitable distribution of economic and political power, attitudes towards corruption, population growth, flaws in the market system, and inappropriate government policies. They can also operate across time and space and may originate in other countries and transmit their effects through trade and other market forces. In reality, there are many underlying causes of forest degradation and they operate in numerous and variable combinations (Contreras-Hermosilla 2000).

Another important component of the forest degradation framework are the *agents*. Agents are individuals, groups of individuals or institutions whose actions or interventions result in forest degradation or deforestation. In the context of the Philippine forestry, they include the loggers, slash and burn cultivators, other upland migrants and speculators, agribusiness, cattle ranchers, miners, policy makers with vested interest, wood industries, forest products consumers, and others. The agents interact in a dynamic and complex manner with the direct and underlying causes. Thus, it is a mistake to attribute forest degradation to a simple cost-effect relationship or assume that such a relationship will remain unaltered over time. Multi-causal chains are more likely and the effect of a single force like population growth is very difficult to ascertain (Contreras-Hermosilla 2000, Geist and Lambin 2001).

### **3.1 Direct Causes**

In the Philippines, some of the direct causes of forest degradation with available statistical support are *kaingin* or slash-and-burn cultivation, forest fire, logging, and other natural phenomena such as pests and diseases and natural calamities. Table 3 shows the extent of damage attributed to each factor over a period of 12 years from 1980 to 1991 and then for the year 2001 based on the official forestry statistics produced by the government. While these figures may be underestimated when compared to the annual deforestation as previously discussed, they nonetheless provide an idea of the contribution of each factor to forest degradation.



**Figure 3. Causes of forest degradation in the Philippines  
(Modified after Contreras-Hermosilla (2000))**

### **Anthropogenic Causes**

Historically, logging activities by big companies in conjunction with other anthropogenic factors have been a major driving force that contributes to forest degradation in the Philippines (Kummer 1992). Through logging, primary forests are first converted to secondary forests before they are totally denuded or converted to agricultural areas and other land uses. Logging is seen to abet forest destruction in several ways: through clear-cutting or careless felling that results in the destruction of forest regenerative capacity, and through the development of road networks. The latter is considered to be the most important factor since logging roads open forest lands to encroachment by people (Borlagdan 1997). Once inaccessible, forestlands become “invadable” (Cruz *et al.* 1992) by land-hungry migrants after they have been logged over and made accessible by logging roads. With almost nil effort from TLA holders to do forest protection in logged-over areas, these areas became very prone to non-forest development especially agricultural expansion.

Studying the formation and transformation of secondary forest in the Philippines, Lasco *et al.* (2001) noted that areas subjected to logging (known as residual forests) could be used as a useful indicator for analyzing the extent of forest degradation in the country. Using a temporal analysis, they observed that areas of residual forests remained the same over a 26-year period from 1971 to 1997. In contrast, the area of primary forest declined from over 4.5 million ha in 1971 to less than 1.0 million ha in 1997, a loss of 3.8 million ha in about 25 years. In theory, the said loss in primary forest could have been added to the area of secondary forest assuming the latter were not degraded or converted to other uses. Since residual forests remained almost the same during the 26-year period, the team deduced that 3.8 million ha of secondary forests were denuded in the

same span of time or an average of 140,000 ha per year. This figure is much higher compared to the government figures with a total area of only 28,860 over a 12-year period (Table 3). However, it appears to be more consistent with the overall deforestation pattern in the country, which as earlier mentioned, has been estimated at about 150,000 ha over the last century.

**Table 3. Forest destruction and its causes in the Philippines in hectares (1980-2001)**

Year	Kaingin	Forest Fire	Logging	Others*	Total
1980	6,302	18,324	7,348	666	32,640
1981	5,826	12,471	6,108	0	24,405
1982	3,286	8,063	4,954	0	16,303
1983	2,241	117,951	1,015	0	121,207
1984	1,137	3,177	478	103	4,895
1985	941	11,743	1,918	0	14,602
1986	1,991	4,257	90	0	6,338
1987	570	5386	676	514	7,146
1988	2,914	423	4,474	2,444	10,255
1989	4,683	675	1,727	5,729	12,814
1991	759	5,872	72	530	7,233
2001	70	1,552	0	1,172	2,794
<b>Total</b>	<b>30,720</b>	<b>189,894</b>	<b>28,860</b>	<b>11,158</b>	<b>260,632</b>
<b>% of Total</b>	<b>11.79</b>	<b>72.86</b>	<b>11.07</b>	<b>04.28</b>	<b>100</b>

\* "Others" refers to pests and diseases, natural calamities, etc.

Sources: Various Forestry Statistics

Other than logging, *kaingin-making* or slash-and-burn cultivation contributes to forest degradation. It is employed by both the indigenous forest dwellers in the Philippines as well as by the migrant groups although the practice varies widely from one group to the other (Borlagdan 1997). In general, indigenous forest dwellers employ more sustainable practices compared to their migrant counterparts. However, their environmentally-friendly traditional practices have been significantly altered as a result of the shortening of the fallow period brought about by limited areas available due to population pressure. From 1980 to 1991 government records indicate that a total area of 30,650 ha was destroyed due to various forms of slash-and-burn cultivation (Table 3). Since the early 1980s, the government has been promoting more sustainable farming practice, particularly agroforestry technology, under its various people-oriented forestry programs to reduce the negative impacts associated with *kaingin-making*.

### **Natural Causes**

Recent natural calamities in the Philippines clearly point out that forest degradation is caused not only by anthropogenic pressures but also by the forces of nature. During the 2004 devastating landslides in Dingalan, Aurora and Infanta and Real, Quezon, many lives and properties were lost.

Just recently, in September 2006, Mt. Makiling, Laguna, was devastated by landslides and the low-lying towns were inundated by floodwaters. The tragedy of Aurora and Quezon pointed an accusing finger to improper forestry practice in general and rampant and illegal logging in particular. The analysis of land use/land cover, which spanned a period of fifteen years, revealed otherwise (Cruz *et al.* 2005). The changes in land use/land cover were analyzed and visualized through the use of remote sensing and geographic information system (GIS) technology. While an increase or decrease for a particular land use/land cover is elucidated, shifts over the geographic area (i.e., areas that have been forested before have been converted to another use) can also be seen. It was the force of nature that resulted in forest degradation through mass movement of soil. Incidentally, the contribution of natural calamities like landslides to the overall forest degradation has not been well documented, and hence is not fully understood and appreciated.

Among the various natural causes of forest degradation, forest fire is probably the most documented. While forest fires in reality are mostly human-initiated in the Philippines, natural factors such as dry weather conditions, high temperature, and strong wind velocity induced their occurrence and determine the extent of their damage. As presented in Table 3, forest fires have inflicted the highest forested area destroyed equivalent to a total 189,894 ha, or 72.86%, of the total damage over a 12-year period. It is also worth noting that the El Niño year of 1983 recorded the highest forest destruction brought about by forest fires estimated at 117,951 ha. This constitutes 45.25% of the total forest damaged caused by both human- and natural-induced forces recorded at 260,632 ha in 12 years.

Another natural cause of forest degradation in the Philippines is pests and diseases. However, historical record on the extent of forest degradation caused by this factor is very scanty. Diseases of trees and other plants in the Philippine forests have not been extensively studied unlike that of agricultural crops (Quiñones 1980). Experiences reveal that the occurrence of epidemics and widespread infestations in the country has been associated with the introduction of exotic trees in tree plantations. Examples were the varicose borer (*Agilus* sp.) that infested *Eucalyptus deglupta* from Papua New Guinea and the albizzia cancer. Since then, integrated research programs on pests and diseases of forest trees were undertaken (Rebugio *et al.* 2005). However, comprehensive scientific assessment on the impacts of pests and diseases on forest degradation nationwide remains to be done.

### **3.2 Underlying Causes**

Beneath the observable direct causes of forest degradation in the Philippines there are underlying causes involving a confluence of economic, political and institutional factors.

#### **Market Failure**

Many of the services provided by forests have no market price thereby providing the concerned actors very limited incentives to invest in forest protection and intensive management. For instance, participants of Community-Based Forest Management (CBFM) projects in upper watersheds do not get paid for the services they provide to downstream fishermen and farmers by protecting and rehabilitating the forests. These values include the protection of soil against erosion and irrigation and hydropower dams against sedimentation which can be substantial to downstream operators. Similarly, they do not obtain commercial profits for capturing carbon, maintaining scenic beauty or for preserving biodiversity resources. As a result, upland communities have little incentive to take

these benefits into account and therefore the production of these environmental services will be less than if they could sell them and receive a financial reward. Studies indicate that if it were possible to alter market forces to take these values into account, there would be a higher chance that some forest lands would not be deforested or degraded because they would be more valuable to the private agents like the local communities (Contreras-Hermisilla 2000).

Global market forces such as the high international demand for tropical logs in the world market have also contributed to the forest degradation in the Philippines. High market demand from the United States for premium logs from the Philippine forests from the early 1900 until before World War II and by the Japanese market after the War, contributed to massive timber harvesting and forest destruction during this period at the expense of environmental considerations (Pulhin 1996). Similarly, market forces outside the forestry sector such as the increase in the global oil prices and the decrease in the world price of sugar resulting in the collapse of sugar industry in Western Visayas in 1979 exert an influence on forest degradation. Thousands of affected families migrated into the country's forestlands adding environmental pressures to the already fragile upland ecosystem (Cruz *et al.* 1992).

### ***Inappropriate Policies***

Until recently, most of the Philippine forest policies have favored the privileged few in terms of having access to and control over the country's forest resources. Prior to the enactment of the 1987 Constitution, one TLA holder can have as much as 99,000 ha of timberland for exploitation. Such a policy had led to the highly skewed distribution of forest access and benefits in favor of the economically well-off and politically influential sectors of the society. For instance, during the Martial Law years from 1972 to 1982, close to 1/3 of the total land area of the country was under the control of 217 to 471 TLA holders (Pulhin 1996). It was during this period that the country recorded the highest rate of forest destruction ever, estimated at around 300,000 ha in a single year (Pulhin 1996).

On the other hand, until 1981, forest-dependent communities including the indigenous communities had been deprived of access to forest lands and were considered as "squatters" in their own lands. This had discouraged their participation in forest conservation and development in the past. With the establishment of the different people-oriented forestry programs in 1982, a number of land tenure instruments have been issued to forest occupants. However, the recent cancellation of more than 1000 Community-Based Forest Management Agreements by the former DENR Secretary nationwide has cast doubt on the sincerity of the government to pursue CBFM and hence threatens the continuous participation of the upland communities in forest protection and development.

Other policies that have negative effects on forest rehabilitation include the lack of an appropriate incentive system for the private sector to invest in forest production and rehabilitation as well as the lack of policy stability in relation to timber harvesting. Moreover, the recent government policy to ban logging in all natural forests and in forest plantations in some areas has negative socio-economic and environmental impacts and in the long run is likely to contribute to a further degradation of the country's forest resources.

### ***Institutional Weaknesses***

The DENR, which is the primary government agency responsible for the overall management of the country's forest resources, suffers from a number of institutional weaknesses. Among these are:

- unstable policies and weak policy implementation;
- limited resources and institutional capacity;
- poor monitoring and evaluation; *and*
- the involvement of some of its staff in illegal activities and corrupt practices.

These factors promote poor forest governance and hence contribute to the continuing degradation of the country's forestlands and resources.

### ***Broader Political and Socioeconomic Forces***

The broader political and socioeconomic forces in consonance with the other factors already mentioned also contribute to forest degradation. Forest degradation, for instance, was recorded during the colonial period in an effort of the colonial government, such as the Spanish and the Americans, to exploit the country's resources to advance their own economic interests and promote a growth-centered model of economic development (Pulhin 1996). Similarly, the inequitable distribution of economic and political power during the post-War period contributed to the diminution and degradation of the country's forestlands and resources that had benefited the few economically well-off sector of the society.

Population growth together with other structural factors is also seen as a major driver of forest degradation. Due to the intense population pressure in the Philippines and limited economic opportunities, more people are compelled to occupy hilly and mountainous areas. As of 1985, around 32 percent of the total population of the country, equivalent to 17.5 million people, resided in the "uplands" with 18 percent on a slope and above. The movement of population to these areas is primarily due to an increasing need for areas to cultivate. Farming of these areas, especially those beyond 30% slope, usually results in excessive soil erosion (Cruz *et al.* 1992). At present, a total of around 24 million people are believed to be residing in the uplands most of whom are dependent on the forest for survival. Aptly summarizing the combined effects of population pressure and other structural factors of the degradation of the country's forests, Cruz *et al.* (1992) noted:

*"The Philippine uplands, already a refuge for the growing numbers of poor and landless, absorbed even larger numbers in the first half of the 1980s. The sharp increase in poverty, caused by the stabilization policies adapted so as to secure IMF loans amid the debt crisis, clearly contributed. Rapid population growth, especially among the rural poor in areas already densely populated, adds to the numbers without access to productive lands or alternative employment. Thus, migrants moved to public domain forest lands, sometimes facilitated by settlement programs and commercial loggers, looking for cultivable lands. The result has been further degradation of forests and soils."*

## 4. Impacts of Forest Degradation

Forest degradation has multiple impacts on the different sectors as well as the different groups in the Philippine society.

### 4.1 Sectoral Impacts

Viewed from a sectoral perspective, the impacts of forest degradation in the country involve at least three major areas: the economy, environment and governance.

#### *The Economy*

One of the well-established negative impacts of deforestation in the Philippines relate to the declining contribution of the forestry sector to the Philippine economy. In the early 1970s, wood and other forest products were top dollar earners. Forest products averaged 19 percent of the total value of exports from 1970 to 1973. In addition, the wood industry provided direct employment to many thousands of individuals. In 1982 for instance, the Forestry Development Center estimated that more than 400,000 people or about 1% of the country's total population were directly dependent on the wood industry for livelihood (FDC 1987).

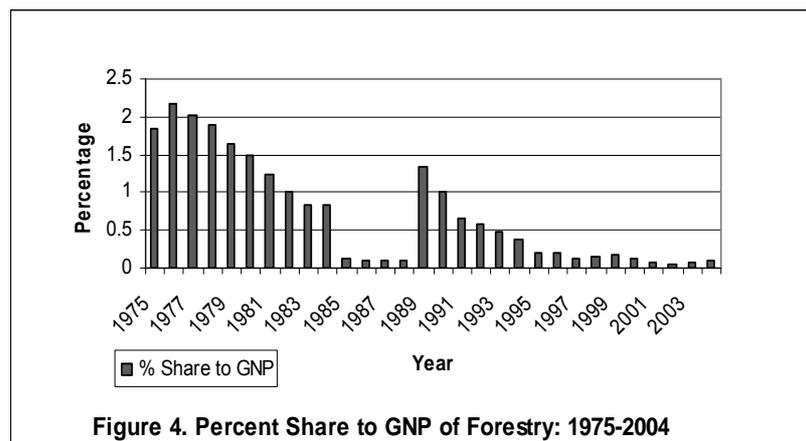


Figure 4. Percent Share to GNP of Forestry: 1975-2004

With the continuous degradation of the country's forestlands and resources, however, the contribution of the forestry sector to the Philippine economy has continued to decline. From around 2.17 percent in 1976, the percent share of forestry in the gross national product (GNP) has plunged to a meager 0.10 percent in 2004 (Figure 4). During the same period, the total forest area has declined by about 1 million ha.

#### *Environment*

Environmental impacts, although not as well documented compared to economic setbacks, are equally significant. Massive forest destruction has resulted in soil erosion and siltation of rivers and lakes. This in turn has led in some instances to the reduction in the lifespan of hydroelectric dams like the Magat Dam in Northern Luzon. Continuing onslaught on the country's forest has also rendered a number of upland areas environmentally vulnerable to soil erosion and landslides

especially during the typhoon months. Indeed, thousands of lives were lost in a number of recent landslides which may, to a certain extent, be exacerbated by forest degradation.

Forest degradation has likewise adversely affected and continued to threaten the rich biodiversity of the country. The Philippines is considered as one of the 17 megadiversity countries, which together contain 70 to 80 percent of global biodiversity (Mittermeier *et al.* 1997). However, with the loss of more than 90 percent of its original forest cover, 418 threatened species are already listed in the 2001 IUCN Red List (Hilton-Taylor 2002). As a result, it is now considered as one of the 25 global biodiversity hotspots (Myers *at al.* 2000). The variety of life found only in the Philippines is now greatly threatened with extinction due to continuing natural resource degradation (Ong *et al.* 2002).

### **Forest Governance**

The inability of the State-centered mode of forest governance to address the continuing degradation and diminution of the country's forestlands and resources contributed to the evolution of a more participatory approach to forest management. Such an approach takes into account the importance of involving the different stakeholders including the local communities, local government units, non-government organizations, and others, in decision-making concerning the management of the country's forest resources. While the impacts of these in arresting the problem of forest degradation has yet to be ascertained, this recent trend appears to be more promising compared to the traditional highly centralized method of forest resource management.

### **4.2 Impacts on the Different Societal Groups**

Another way of viewing the impacts of the forest loss and degradation in the Philippines is looking at them as they affect the different stakeholders in the society. Adapting the approach of Contreras-Hermisilla (2000) the impacts of forest degradation may be better understood in terms of identifying the specific groups of stakeholders that bear the consequences (negative or positive) of forest degradation. These include the range of stakeholders from on-site groups such as the forest-dwelling indigenous communities to local off-site communities, to urban dwellers, to Industrial companies with economic interests, to the national governments and to the global scientific communities (Table 4). While most stakeholders are negatively affected by forest degradation, the greater brunt of the impacts is normally shouldered by the local on-site and economically deprived communities, particularly the indigenous communities. Moreover, few of the stakeholders, such as the business sector, may benefit from forest degradation in terms of increased profits though this may not be sustainable in the long run. All these imply that stakeholder analysis is an appropriate tool to better understand the consequences of forest degradation to specific groups and hence develop a more responsive intervention to avoid further marginalization of the powerless groups.

**Table 4. Consequences of forest degradation from the Philippines from the perspectives of the different segments of the society (Adopted from Contreras-Hermisilla 2000)**

Societal group	Implications of continuing forest loss and degradation
Forest-dwelling indigenous communities	<ul style="list-style-type: none"> <li>• Loss of spiritual values.</li> <li>• Social disruption of traditional structures and communities. Breakdown of family values. Distress and social hardship.</li> <li>• Loss of traditional knowledge of how to use and protect forests in sustainable ways.</li> <li>• Reduced prospects for preservation of forest environmental and aesthetic functions of interest and potential benefit to society as a whole.</li> </ul>
Forest farmers and shifting cultivators	<ul style="list-style-type: none"> <li>• Immediate opportunity to survive.</li> <li>• Forest degradation and declining soil fertility.</li> <li>• Loss of access to forest land and the possibility of food crop production and reduced possibilities for harvesting forest products, both for subsistence and income generation.</li> <li>• Prospects of malnutrition or starvation.</li> <li>• Disruption of family structures and considerable social hardship.</li> </ul>
Local communities, the poor and landless living outside forests	<ul style="list-style-type: none"> <li>• Decreased availability of essential fruits, fuelwood, fodder and other forest products.</li> <li>• Reduced agricultural productivity. (Through loss of the soil and water protection potential of remnant woodlands and on-farm trees: loss of shelterbelt influence leading to reduced crop yield.)</li> <li>• Reduced income generation and possibilities to escape from the poverty trap.</li> </ul>
Urban dwellers	<ul style="list-style-type: none"> <li>• Reduced availability (and/or overpriced) essential forest products such as fuelwood, charcoal, fruits, building materials and medicinal products.</li> <li>• Reduced prospects for assured supplies of clean drinking water and clean air.</li> <li>• Loss of the recreational opportunities and amenity values afforded by national forest parks and wilderness areas.</li> </ul>
Commercial forest industrial companies and forest worker communities	<ul style="list-style-type: none"> <li>• Immediate large profits.</li> <li>• In the longer term, loss of company business and forced closure of forest operations.</li> <li>• Loss of jobs for forest-dependent communities, social disruption and hardship.</li> <li>• Loss of income and possible negative social implications of reduced income of shareholders with significant savings invested in forest industrial company stocks.</li> </ul>

**Table 4. continued**

<p>Mining and other industrial interests</p>	<ul style="list-style-type: none"> <li>• Improved access to potentially profitable mineral or other commercially valuable products located under forests.</li> <li>• Increased profitability of company operations and returns to company shareholders.</li> <li>• Politically negative impact on company operations of criticism by environmentally concerned groups.</li> </ul>
<p>Environmental advocacy groups and conservation agencies</p>	<ul style="list-style-type: none"> <li>• Loss of the essential environmental functions of forests including biodiversity, climate regulation, preservation of water catchments and fishery values.</li> <li>• Loss of cultural values and social hardship for the underprivileged communities whose welfare these groups are committed to protect.</li> <li>• Increased problems of environmental pollution.</li> <li>• Loss of those forest values that could be of vital importance and/or interest to the survival and welfare of future generations</li> </ul>
<p>The global scientific community</p>	<ul style="list-style-type: none"> <li>• Prospects that continued forest destruction will accelerate global warming with potentially negative consequences for human welfare and survival.</li> <li>• Continuing biotic impoverishment of the planet, loss of genetic resources, and all that implies for sustainable food production, and loss of potentially valuable medicinal and other products.</li> <li>• Increasing pollution and toxification of forest soils, contributing to declining forest health.</li> </ul>
<p>National government planners and decision-makers</p>	<ul style="list-style-type: none"> <li>• Immediate escape from political pressures when impoverished populations migrate to frontier forest areas.</li> <li>• Loss of a potential source of development revenues with consequences of reduced employment and opportunities, sustainable trade and economic development.</li> <li>• Loss of the wide range of environmental functions that forests provide in contributing to societal needs and a habitable earth.</li> <li>• Loss of political support in situations where forestry loss and degradation adversely affect the welfare of many citizens.</li> </ul>

**PART B  
IMPLEMENTATION OF FOREST RESTORATION AND REHABILITATION**

**1. History of Restoration/Rehabilitation**

Reforestation is a process of bringing back of crop cover, usually arborescent plants, in once vegetation-rich but now vegetation-bereft lands that also includes ecological reforestation and economic reforestation or their combination (Esteban, 2003). It may also refer to new plantings, assisted natural regeneration and enrichment planting. Reforestation can be interchanged with forest rehabilitation if combined with some vegetative or infrastructural measures to stabilize the soil while forest restoration is a special type of reforestation where the intention is to bring back a semblance of the original forest condition through planting of native species found in an area coupled with assisted natural regeneration and enrichment planting. On the other hand, rain-

forestation is reforestation strictly using indigenous species, but may also include the use of native fruit trees in combination with forest trees to regenerate the area.

The Philippines has almost a century of experience in reforestation. Since 1910, small-scale forest rehabilitation initiatives have already started when the first recorded rehabilitation initiative in the country was initiated by the Forestry School in Los Baños, Laguna (Luzon) as part of its silvicultural class (Annex Table 1). This initiative formed part of the overall concern about forest rehabilitation under the American colonial period (1910-1945). By 1916, about 600 species had been tried in the nursery and plantation of the School, which was then part of the administration of the Bureau of Forestry. The same year saw the government's initial attempt to embark on ex-tensive planting of barren lands when the Philippine Legislature appropriated the sum of P 10,000 under Act 2649 for the reforestation of the Talisay-Minglanilla Friar Lands Estate in Cebu province with an aggregate area of 4,095 ha. According to Orden (1960), the project started with the ejection of the people considered as "squatters" in the area who were hostile to the project and 73% of the area was planted. Due to lack of funds, however, the work had to be stopped for some time resulting in local people returning to the area to make clearings and plant ipil-ipil and other fast-growing tree species.

From 1919 until the outbreak of World War II, several reforestation projects were opened throughout the country among which are as follows: Magsaysay Reforestation Projects in Arayat, Ilocos, and Zambales, all on the island of Luzon; Cincona plantation in Bukidnon (Mindanao) and other reforestation projects elsewhere in the country. Initial fundings were very limited then until 1936. In 1937 until WWII, more extensive and large-scale reforestation was observed. A special office was established under the Director of Forestry to inspect new reforestation projects.

At the outbreak of World War II, a total of 35 reforestation projects were in operation covering an area of 535,000 ha mostly located in Luzon. From 1910 to 1941, a total of about P3.57 million was spent on reforestation including nursery and plantation establishment and maintenance. The government was the main actor in reforestation and the primary purposes were scientific enquiry, re-greening barren lands and presumably providing environmental services to the public. These projects were to be long-term reforestation sites managed by the Bureau of Forestry. Appropriation by the government was the primary source of funding.

During the Post-war era (1946-mid 1970s), 29 of the 35 reforestation projects operating before the war were reopened. In July 1948, a new and permanent source of funding was made available under Republic Act No. 115 that revived reforestation activities that were halted during World War II. The Act levied charges for each cubic meter of timber (P0.5 for the first and second species groups, and P0.4 for the third and fourth species groups) cut and removed for commercial purposes from any public forest. This fund provided a great boost in the reforestation efforts of the government especially during the 70s when annual log production exceeded 10 million m<sup>3</sup> annually.

In 1960, the Reforestation Administration was created under Republic Act (RA) No. 2706. In 1972, 91 reforestation projects were being implemented almost entirely by the government. Also in this year, the Reforestation Administration was integrated with the Bureau of Forestry, Parks and Wildlife Office, and Southern Cebu Reforestation Project under Presidential Decree (P.D.) No. 1. Likewise, the Letter of Instruction (L.O.I.) No. 3 on the same year integrated reforestation activities into the mandate of the then Bureau of Forest Development (BFD).

In the mid-70s, multi-sectoral rehabilitation efforts had been given impetus. For example, P.D. 705 (1975) required the conduct of nationwide reforestation activities with the participation of the private sector.

From 1976 onwards, the holders of TLAs were given the responsibility to reforest inadequately-stocked forest lands within their forest concessions as a requisite in their operation plans (1-year, 5-year and long-term operations plan). The Program for Forest Ecosystem Management (PROFEM) was also launched calling for a holistic approach to forest ecosystem management involving all sectors of the society. In 1977, P.D. 1153 was issued requiring all able-bodied citizens, 10 years and above, to plant 12 seedlings annually for 5 consecutive years. In 1979, the Letter of Instruction (L.O.I.) No. 818 was enacted compelling all holders of existing timber licenses, leases, and permits to reforest one hectare of denuded or brush land for every hectare logged. By the end of the 1970s other sectors of the society such as the private sector, government agencies other than the Bureau of Forest Development, local government units and citizens were involved in various forest rehabilitation efforts. In 1981, the Executive order No. 725 was issued further encouraging and providing incentives in private sector involvement in reforestation through the establishment of Industrial Tree Plantations, Tree Farms and Agroforestry Farms all over the country.

People-oriented forestry programs such as the Integrated Social Forestry Program (ISFP) and the Community Forestry Program (CFP) were given much attention in the 1980s, mostly funded by foreign donors. This period ushered the participatory approach to forest conservation and development. Rehabilitation efforts were seen as a major strategy to address upland poverty and to promote livelihood opportunities among the participating communities.

The period of the late 80s through 1990s saw the more active participation of the different sectors in forest rehabilitation through the different policies and programs initiated by the government. The “People’s Power” Revolution in 1986 became an impetus to contract huge loans to fund forest rehabilitation. In 1987, the Forestry Sector Program (FSPI) from Forestry Sectoral Loan I was launched. There was a significant shift in the national reforestation strategy from regular BFD reforestation projects to contract reforestation by corporate groups, families, local government units, non-government organizations and communities under the National Forestation Program (NFP). The regular reforestation projects were just given meager funds for maintenance only, with no new targets in plantation establishment. Likewise, monitoring of plantation performance was given to independent private groups using a method developed in PICOP called “inspection chart mapping (ICM)”.

Assessment on FSP showed much success in sites developed by communities. In 1995, the second sectoral loan was contracted to launch the FSP II. This time, the vehicle to this nationwide program was the Community-Based Forest Management (CBFM) under the same NFP. In the same year, Executive Order No. 263 adopted CBFM as the national strategy for sustainable management and development of forest lands. Under FSP II, communities were contracted to do the reforestation and were given tenure over areas developed by them. In most areas developed under FSP I Forest Land Management Agreements (FLMA) were issued to communities; these areas were later also to become CBFMA sites.

The 1990s also saw many foreign-assisted projects being implemented all throughout the country. This was also the start of more active LGU involvement in forest rehabilitation and watershed management by virtue of the 1991 Local Government Code.

## ***Major Driving Forces of Forest Rehabilitation in the Philippines***

The first rehabilitation initiatives conducted in the country were driven by scientific needs in trying to find practical methods of converting *Imperata* grassland areas into forest plantations, of testing performance of several tree species over grasslands and as laboratory experimentation exercises for students. Likewise, a major driver of early reforestation efforts was the promotion of environmental stability. Most early reforestation projects were located in established forest reserves, national parks and in the watersheds. Environmental considerations continued to be a major reason in forest rehabilitation even in the 1960s and 1970s with a main purpose of restoring denuded or inadequately timbered areas for protection purposes. However, the 1980s and 1990s efforts were driven by political factors in the face of public clamour and pressure to restore forests that had been perceived as destroyed by commercial logging in the 70s and 80s. Hence, policies were issued compelling TLA holders, LGUs, OGAs and private citizens to plant trees. Rehabilitation efforts of all sectors peaked during this period. Eventually, efforts and enthusiasm for forest rehabilitation waned due to declining financial support from the government and lack of appropriate incentives to the private sector. Major rehabilitation efforts in the period of the 1970s to the 1990s were mainly driven by economic considerations due to the eminent symptoms of an impending timber crisis in the country. Development of tree farms, industrial forest plantations, agroforestry farms and other plantations boomed during this period.

Current efforts to rehabilitate degraded forests are still influenced by many factors but most of them converge on the two major drivers, namely the economic and environmental factors. These twin drivers are fully articulated in the current CBFM program. The Program promotes active and productive partnership between the government and the forest communities in developing, rehabilitating and managing vast tracks of forest areas. It is anchored on the thesis that if the government seriously addressed the poverty problems in the upland communities, these communities themselves would protect and manage the forests. Thus, the CBFM slogan “*People first, sustainable forestry will follow.*” Under CBFM, the communities are being organized and given long term tenure instruments over forest areas with the privilege to derive direct benefits through harvesting of forest products, agroforestry and other livelihood programs with the corresponding obligation to manage and protect the forest area in the long term.

## **2. Current Policies Governing Land Use and Restoration/Rehabilitation**

### ***2.1 Pres. Decree 705 (The Revised Forestry Code Of The Philippines (Pres. Decree 705 Dated May 19, 1975 as Amended)***

Although already thirty years old, this law has remained the statutory basis of the government's policies, plans and programs affecting the country's forest resources. It has provided for the reforestation of open and degraded forest lands mainly by the government. This law has also formalized the establishment, development and maintenance of industrial tree plantations, tree farms, and agroforestry farms and promoted these undertakings with a package of incentives. The incentives include tax discounts/credits, exemption from rents and forest charges, technical and material assistance from the government, and preferences on harvests. The establishment of industrial tree plantations was further enhanced with the issuance of Executive Order No. 725 to facilitate the country's reforestation efforts.

For the wood industry, this law mandated that no authorized person shall cut, harvest or gather any timber, pulpwood, or other products of logging unless he plants three times the same variety for every tree cut or destroyed by such logging or removal of logs.

## **2.2 Executive Order No. 263**

This executive order launched the country's present national strategy for the rehabilitation of open and degraded open lands, the Community-Based Forest Management (CBFM) Program. This program consolidated previous people-centered forestry programs such the Integrated Social Forestry Program under LOI 1260 (1982) and Community Forestry Program under DAO 89-123 (1989). Under this program, the task of restoring/ rehabilitating open and degraded forest lands becomes the responsibility of the upland community through its people's organization (PO). The government extends technical and material assistance to these POs to ensure the sustainability of the CBFM project in their hands. The private sector provides the market for the products that will be derived from the production areas of the CBFM projects.

The DENR is required to work with local government units (LGUs), people's organizations (POs), non-governmental organizations (NGOs), religious groups, business and industry, and other concerned organizations. The principal participants in the CBFM program are the local communities represented by their people's organizations (POs). To encourage POs to participate in the CBFM program, they are entitled to:

- Usufructuary rights over the improvements introduced in the area;
- Possessory and custodial rights over the CBFM area;
- Over-all management of the CBFM project; *and*
- Technical and material assistance from the government.

## **2.3 Executive Order No. 318 (Promoting Sustainable Forest Management in the Philippines)**

Recently, a presidential directive was issued to promote sustainable forest management in the country through EO 318 dated June 9, 2004. A very important guiding principle is the holistic, sustainable and integrated development of forestry resources with priority given to rehabilitation and slope stabilization and protection. This directive provided for incentives to enhance private investments, economic contribution and global competitiveness of forest-based industries such as

- Incentives and services for private forest development including deregulation;
- Development of high-value tree crops and non-timber forest crops; *and*
- Encouragement of co-management of forest resources.

## **2.4 Philippine Strategy for Sustainable Development (PSSD)**

The country's national policy framework for sustainable development is contained in the Philippine Agenda 21 that detailed the Philippine Strategy for Sustainable Development (PSSD). The restoration/rehabilitation of open and degraded forest lands implements two important principles of sustainable development under the PSSD:

- ecological soundness that recognizes nature as our common heritage and thus respecting the limited carrying capacity and integrity of nature in the development process to ensure the right of present and future generations to this heritage; *and*
- bio-geographical equity and community-based resource management that recognizes that communities residing within or most proximate to an ecosystem of a bio-geographical region will be the ones to most directly and immediately feel the positive and negative impacts on that ecosystem, they should be given priority to the development decision affecting that ecosystem including the management of the resources. To ensure bio-geographic equity, other affected communities should be involved in such a decision.

A key component of the PSSD is the social reform and poverty alleviation program of the government that was institutionalized by the Republic Act No. 8425 (Social Reform and Poverty Alleviation Act). To implement this law, the Office of the President issued the Administrative Order No. 21 dated November 8, 2001, which articulated the Philippine approach to social reform and poverty alleviation composing of four dimensions that include:

- Ecological dimension or the sustainable use of productive resources to ensure the effective and sustainable utilization of the natural and ecological resource base, thus assuring greater social acceptability and increased participation of the basic sectors in environmental and natural resources conservation, management and development; *and*
- Governance dimension or equal representation and participation that address the issue of political equity and ensure equal participation in all venues in society, especially in decision-making and management processes.

## **2.5 Revised Master Plan for Forestry Development**

One of the strategic policy measures of the revised master plan is forest resource expansion to be implemented as follows:

- Expand areas under forest and tree cover through afforestation/reforestation with appropriate species (from the point of view of site factors, utilization needs and profitability criteria) in available bare (non-forest lands), degraded lands, deforested areas and marginal lands.

- Further extend tree planting to farm lands, grazing lands, recreation areas, margins of roads and railways, as well as peri-urban lands.
- Provide encouragement and support for expansion and/or improvement of social/community/agroforestry, farm forestry, village woodlots and private forestry through adequate extension and appropriate incentives.

### **3. Case Studies on Forest Restoration/Rehabilitation Initiatives**

In the past few decades, several/different sectors are involved in forest rehabilitation in the Philippines. Involvement can be categorized into initiators and implementers. The following actors fall under both categories as follows: the government itself through the Department of Environment and Natural Resources (DENR), the local government units (LGUs), the private sector, non-governmental organizations (NGOs), communities or people's organizations (POs) and other government agencies (OGA). In a study funded by the Center for International Forestry Research (CIFOR) in 2004-2005, several reforestation sites were studied in Luzon, Visayas and Mindanao including 12 sites with detailed case studies.<sup>1</sup> The main objective of such a study is to document the lessons learned in the long history of reforestation in the Philippines. In the following some case studies in forest rehabilitation examined in the study (Source: Chokkalingam, et al, 2006 (CIFOR)) are given. These case studies were selected and evaluated based on the following simple criteria:

- Driving factors of rehabilitation,
- Project success evaluation (bio-physical, social and environmental impacts),
- Factors contributory to success/failure,
- Lessons learned.

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<sup>1</sup> The Philippine study team is composed of the following persons: Antonio P. Carandang, Rodel D. Lasco, Juan M. Pulhin, Romeo T. Acosta, Unna Chokkalingam, Ramon A. Razal, Mayumi Q. Natividad, and Rose Jane J. Peras.

**Case Study 1: IFMA of Col. Tiempo, Private Fund**

<i>Location</i>	Bgy. Tayawan, Bayawan City, Negros Oriental
<i>Duration</i>	1991 - present
<i>Area (ha)</i>	805 .0
<i>Driving factors of rehabilitation effort</i>	The rehabilitation effort was primarily driven by the desire to commercially produce timber and generate employment in the area. Secondary to the above purposes are the ecological objectives of bringing back the forest vegetation and contribute to watershed protection in the area.
<i>Project success and impacts/effects</i>	In terms of bio-physical accomplishment, the project is successful with accomplishment of at least 158% of the target area. The whole area is now fully stocked with planted trees (mangium, bagras and another eucalyptus sp.). The major impacts of the project are: livelihood/employment generation to the people living within the area through labor works at the plantation; environmental balance as brought about by the well-stocked established plantations; and wildlife tends to go back to the area due to the renewal of forest for their habitat.
<i>Factors contributory to outcomes</i>	The owner was able to obtain funds in 1994 from the Asian Development Bank with a principal sum of P19.8 M payable in 15 years, enough funds to develop the 805 hectare-tree plantations. Likewise, the owner made sure that proper silvicultural techniques from nursery to plantation maintenance are applied.
<i>Lessons learned</i>	One major problem encountered in the site constitutes the forest fires, which are caused by “jealous” people. In this case, the owner formed his own squad of protection personnel that scouts the vicinity of the plantation. Col. Tiempo stated that in the entire process of rehabilitation, government assistance is central in encouraging private capital to come in. As of the site visit in 2004, his main problem lies in the aspect of marketing the timber as he has yet to find a good buyer for his products.

## Case Study 2: IFMA/Davao ESP Resources, Private Fund

<i>Location</i>	Magsaysay, Marilog District, Davao City
<i>Duration</i>	1992
<i>Area (ha)</i>	160.6
<i>Driving factors of rehabilitation effort</i>	The area was developed primarily to produce plantation timber to be sold in Davao City or any other outlet available. The other reason is to provide employment to the residents of the area.
<i>Project success and impacts/effects</i>	The project is successful in enlisting the support of the residents as they agree to help develop their areas by providing labor as well as protect these areas with the end purpose of sharing from the proceeds of the plantations. Physically, the plantations are of various qualities. Those in the ridge tops are mostly stunted, while those below the gullies and along creeks have good performance. In general, the estimate of the owner is that only about 50 percent of the plantations are good. Many of the plantations are now mature.
<i>Factors contributory to outcomes</i>	The owner was able to develop 160.59 ha of forest plantations based on the results of GPS validation conducted by DENR. Many residents in the area were able to obtain employment for a while. This effort has raised consciousness among the residents in the area as they also planted trees and rattan in their farms as a spin-off activity in the area. The technical knowhow gained by some farmers is now being put into good use. The care taker of the area has developed his own nursery where he supplies the seedling needs of the DENR and other local farmer groups who are into rattan and cocoa plantation.
<i>Lessons learned</i>	Two years ago, the IFMA holder tried to harvest the mature gmelina trees ( <i>Gmelina arborea</i> ). However, based on his computations, the proceeds from the timber cannot even pay for the harvesting costs, because of the very low price of gmelina timber in the area. An average cubic meter of gmelina only fetches from P 800.00 to P 1200.00, whereas harvesting costs also amounts to this on the average. The costs include felling, manual hauling and loading and trucking. Hence, the IFMA holder stopped harvesting operations to the dismay of his farmer partners because as a consequence they will not receive their share based on agreed rate of 10% of gross proceeds. At present, the IFMA holder is still looking for good price for his timber. According to the IFMA holder, it is discouraging to find that the forest plantation business is not as profitable as he has projected. The right choice of species plays a big role in the viability of plantations in Mindanao. He also said that it could have been more profitable if portions of his area had been developed into sugarcane plantations because this is allowed in the IFMA PROGRAM. Nevertheless, he hopes to recover when his other crops like mangium ( <i>Acacia mangium</i> ) and mahogany ( <i>Swetenia macrophylla</i> ) mature.

### **Case Study 3: Ihan Reforestation Project, NGO-led, PO-implemented and funded by AUSAID**

<i>Location</i>	Ihan, Kiblawan, Davao del Sur
<i>Duration</i>	1995
<i>Area (ha)</i>	17.0
<i>Driving factors of rehabilitation effort</i>	Basically, the area covered by the project is a combination of public forests and privately-claimed lands. The areas were formerly covered by grasses, hence the farmers agreed to plant their farms with forest trees, particularly mahogany ( <i>Swetenia macrophyla</i> ), Teak ( <i>Tectona grandis</i> ), Gmelina ( <i>Gmelina arborea</i> ) and Bagras ( <i>Eucalyptus deglupta</i> ). Their main objective is to produce timber as the timber sources in the area have become increasingly scarce.
<i>Project success and impacts/effects</i>	The project is successful, which is evidenced by the very good growth of the planted trees. The aesthetic value of the area was tremendously boosted by the lush scenery, compared to adjacent areas which were not developed as other farmers did not cooperate. The area is now becoming a favorite site for field trips by students. Several staff of AUSAID have reportedly visited the area and were happy to see the results of their support. For a while, plantation establishment has provided employment to PO members. The farmers are now happy with the outcomes of the project and are looking forward to harvest time.
<i>Factors contributory to outcomes</i>	The farmers were successful with the family approach where each family planted trees on their own claims and private lands which are very near to them. Hence, maintenance was not a problem as they can always maintain their sites whenever they have free time. The motivation that good maintenance would produce good plantations worked in these families. Besides, there was no funding problem in the project as it is small.
<i>Lessons learned</i>	As far as the farmers are concerned, planting trees for their own benefits alone is already a good incentive to them, especially as they were given free seedlings and were paid for their labor during planting, maintenance and protection.

**Case Study 4: Pilar Watershed Rehabilitation Project, LGU-led and funded through sharing by different sectors/agencies**

<i>Location</i>	Pilar, Bohol
<i>Duration</i>	1997 - 2001
<i>Area (ha)</i>	20.0
<i>Driving factors of rehabilitation effort</i>	The municipality of Pilar, Bohol, through its Mayor, has been encouraging its constituents to plant trees in their respective backyards. There are annual festivities devoted to the environment. In 1997, during the inauguration of the reservoir, the then President Ramos saw the need to reforest/rehabilitate certain parts of the watershed due to the siltation/sedimentation experienced at the reservoir. That same day President Ramos promised a P 1 million budget for the rehabilitation of the nearby degraded upland areas. Basically, the quality of water produced at the reservoir is the major driving factor that led to the rehabilitation of this watershed by the local government unit of Pilar.
<i>Project success and impacts/effects</i>	According to the projects contractors, non-contractors and members of the cooperative, on average the project success is rated 9 in a scale of 1-10, 10 being highly successful. From the focus group discussion conducted, the participants strongly believed that the project had significantly improved the environmental conditions in the area. However, some participants were negatively affected due to a decrease in their farming area.
<i>Factors contributory to outcomes</i>	The relative success of the project was attributed to the smooth implementation of the project. Beneficiaries and non-beneficiaries believe that there is no doubt that the project has provided services to the environment, particularly in reducing the frequency of soil erosion and enhancing the micro-climate.
<i>Lessons learned</i>	It was strongly recommended that in order to be able to compensate those that are negatively affected, they should be given appropriate livelihood project/s and should let those benefiting from the project/s share something in return.

**Case Study 5: Elcadede CBFM Planters Association, Inc., Funded by JBIC, DENR led, PO implemented**

<i>Location</i>	Sta Fe, New Corella, Davao del Norte
<i>Duration</i>	1997 to date
<i>Area (ha)</i>	1,149.0
<i>Driving factors of rehabilitation effort</i>	Saug watershed is an important source of water for irrigation purposes in Nabunturan and Montevista, of Compostela Valley and New Corella of Davao del Norte. Likewise, the watershed is being earmarked to generate electric power through hydro power construction along the Saug River. The project was implemented primarily to rehabilitate the watershed through the community-based forest management approach. The project envisioned to provide a sustainable source of income to participant communities through rehabilitation and institutionalize community participation in forest management.
<i>Project success and impacts/effects</i>	The project area was successfully developed by the PO with a total of 1,232.93 ha of forest and agroforestry plantations established, thus exceeding their planned target. The latest monitoring and evaluation report conducted by an independent NGO showed an average survival rate of 85.23 percent. At the time this survey was conducted, the PO members were busy in maintaining and protecting the plantations especially, the agroforestry sites where they expect to sustain their benefits over the long term. There are a total of 707.79 ha of different fruit trees particularly Durian ( <i>Durio zebithenus</i> ), Lanzones, Mango and Rambutan. The PO expects to start harvesting some fruits from these plantations by 2006. Full blast production of these fruit trees is expected to come by the year 2008. By any standard, these agroforestry farms are large enough to elevate the standard of living of project participants. Project benefit assessment also showed a significant increase in household income from an average annual income of PhP 13,757.39 in 1995 to PhP 19,257.50 in 2002.
<i>Factors contributory to outcomes</i>	The PO attributed their success to the full support given by the DENR to their site with a full project staff (subproject site management office – SUSIMO) supporting them full-time. Likewise, the project was fully funded by JBIC, hence only a small counterpart was provided by PO like PO management support to the project and time of their leaders. PO members who are working in the fields are fully paid by the project. Moreover, most community members consented to using their own farms as part of the project development target.
<i>Lessons learned</i>	In CBFM projects, the most critical activities come during the formative period of the people's organization. Experience in the Philippines showed the significant effect of good community organizing activities to the success of the project. ELCADEFE is a similar case. The efforts of assisting the organization that carried out the community organizing activities provided the critical inputs for the organization of the project communities and in their preparation in conducting forest development as well as keeping their organization intact. However, such a period (the community organizing phase) lasted only two years and due to the concerns to strengthen the organization and capacitate them both technically and socially, the assessment conducted intimated that the PO could have been stronger, if this CO phase were longer, giving enough time for the POs to internalize the CO processes, so that they themselves can confidently continue the CO activities.

### **Case Study 6: Lunga Farmers Association (LUFA), PNOC led, (OGA)**

<i>Location</i>	Lunga, Valencia, Negros Oriental
<i>Duration</i>	2004
<i>Area (ha)</i>	152
<i>Driving factors of rehabilitation effort</i>	Before the Phil. National Oil Company entered into the forest area of Barangay Lunga, most of the residents had been practicing the “kaingin” system of farming. The water shortage brought upon by the El Niño phenomena in 1983 and 1991, the diminishing forest cover within the Banika watershed, and the Ormoc tragedy that has cost thousands of lives had led the community of Lunga to form an organization that would help minimize the experienced impacts of water shortage through forest rehabilitation as well as generate sustainable sources of income for the community.
<i>Project success and impacts/effects</i>	The Lunga Farmers Association (LUFA) officers and members rated the project success since its establishment on the average as 7.38 from a scale of 1-10, with 10 being highly successful. Among the projects’ positive impacts are: provision of livelihood projects; seminars/trainings on livestock production, agroforestry, reforestation, food processing, recording/bookkeeping; environmental awareness/education; travel/trips to other demo areas; provision of additional income through the reforestation component of the project; enhanced micro-environment; interdependence of the community/ social cohesion more intense; good social relationship/ social capital; low/no conflict at all/ good conflict management; and children were sent to high school and college.
<i>Factors contributory to outcomes</i>	The presence of a willing PO that was capacitated to implement the project contributed much to its success.
<i>Lessons learned</i>	Continuing community empowerment and continued support from the funding agency (PNOC) is necessary for sustained project implementation. The PO is still weak in law enforcement. Other incentives like alternative livelihood sources for participating households are necessary to sustain their interest.

#### **4. Assessment of Existing Capacities of Stakeholders' Involvement in Forest Rehabilitation**

The Philippines has a long tradition and rich experience in forest rehabilitation involving different stakeholders including government institutions, private sector, local communities, non-government organizations, civic organizations, local government units, and ordinary citizens. This has been gained through programs of various sizes and forms that were implemented all throughout a century of forest rehabilitation in the country. Technically, the country is equipped to implement any type of rehabilitation program involving different stakeholders. The appropriate technologies on reforestation have long been present and tested, from silvicultural regeneration techniques that include mass production of planting materials through cloning, to models on species site matching up to plantation management as developed by Bukidnon Forests Inc. and others. The FSP II demonstrated that given enough preparation even the communities are capable of reforesting vast tracts of denuded lands. The experience in Pilar, Bohol showed that LGUs can successfully implement rehabilitation programs, provided that a sharing of resources (logistics, manpower and expertise) among stakeholders takes place. The country is not replete with stories of successes and failures that were even documented so that factors contributing to success may be adopted while those contributing to failures may not be repeated in the future.

Nevertheless, there are other aspects of forest rehabilitation, particularly concerning stakeholders as implementers, like social mobilization, organizational, managerial, financial and up to utilization and marketing capabilities of stakeholders that need to be carefully considered in any design of future forest rehabilitation programs in the country. In the CIFOR study mentioned above it was found that institutional capacity of agencies funding and coordinating the effort is central in implementing successful reforestation projects. Capability building in terms of human resource development, financial management, and public relations aspects should be carefully designed, instituted and sustained. Human resource capacity should be supplemented by appropriate logistic support and long-term incentives, and everything else follows naturally.

With regard to other implementers, technical capability can be greatly enhanced by employing knowledgeable people to prevent costly errors. However, other aspects of rehabilitation aside from technical matters must be given enough attention as social and economic dimensions attendant to this endeavor can make or break the project. Further considering that the target areas for these endeavors are usually uplands with plenty of communities, successful rehabilitation goes beyond putting the trees on the ground as it should be simultaneously be concerned with putting the livelihood of the people off-the-ground while enhancing their forest management capability.

### **PART C**

#### **FUTURE ACTIONS FOR ENHANCING RESTORATION/REHABILITATION**

##### **1. Policy Improvement/Reform**

The main law mandating the restoration/rehabilitation of the country's open and degraded forest lands – the Presidential Decree 705 – is already 31 years old. Congressional attempts to revise this law have not been successful so far. Right now, the proposed revision – the Sustainable Forest Management Act – is still pending in Congress and there is no positive indication that it will soon be passed. There is a need for a stronger and more sustained advocacy program to mobilize pressure groups pushing for the passage of the pending bills on sustainable forest management.

At the local levels, it is imperative that national and even international policies enhancing restoration/rehabilitation of open and degraded forest lands should be passed and implemented. The local government units have the required mandate and authority under existing laws to enact the necessary ordinances to pursue a local forest restoration/rehabilitation program or activity.

While “hard laws” are being deliberated, intra- and inter- institutional arrangements can be undertaken. These institutional arrangements could be anchored on the respective mandates, plans and programs of the concerned institutions. The example of the co-management arrangement between the province of Nueva Vizcaya and the regional office of the DENR for the management of a watershed is a model that has been recognized and adopted in other places.

## **2. Building Research and Educational Capacities**

It is important that the country’s research and educational capacities have a solid foundation on sustainable forest management so that it can launch an effective forest rehabilitation/restoration program. In this regard, the University of the Philippines at Los Baños (UPLB) College of Forestry and Natural Resources (CFNR) has re-oriented its research and academic programs to respond squarely to the needs and challenges of sustainable forest management. In the process, the university adopted four general strategies:

- Shifting toward sustainable development and environmental conservation as a guiding framework/paradigm for program development;
- Re-aligning R & D around sustainable forest management-related programs such as in biotechnology, sustainable management systems, participatory resources management, and policy studies;
- Re-aligning curricular programs through curriculum change and development, both in formal and non-formal education; *and*
- Institutional development through staff training and organizational re-engineering.

Curriculum development and change were undertaken by:

- Enriching existing courses by integrating sustainable management strategies;
- Enriching the existing curriculum by instituting new courses in sustainable forest management;
- Revising the existing curriculum to re-orient it towards sustainable forest management; *and*
- Instituting a new curriculum related to sustainable forest management.

### 3. Reconciling Global and National Policies

#### 3.1 Present State

While existing international conventions contain provisions regulating forest-related activities, there is yet no global legal instrument wherein all environmental, social and economic aspects of forest ecosystems are discussed. The closest one that is adopted by the international community is the "Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests (Forest Principles)." This document contains the authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests. Among the more important principles is: "*2(b). Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural, and spiritual needs of present and future generations. These needs are for forest products and services such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks, and reservoirs...*"

The more important global conventions related to forests are:

- International Tropical Timber Agreement (ITTA);
- United Nations Framework Convention on Climate Change (UNFCCC);
- Convention on Biological Diversity (CBD); *and*
- United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification (UNCCD).

The ITTA came into force on April 1, 1985 with the Philippines as a signatory under the category of timber producing country. This treaty recognizes the importance of, and the need for, proper and effective conservation and development of tropical forests with a view to ensuring their optimum utilization while maintaining the ecological balance of the regions concerned and of the biosphere. Relevant to restoration/rehabilitation of open and degraded forest lands are its three objectives:

- To encourage increased and further processing of tropical timber in producing member countries with a view to promoting their industrialization and thereby increasing their export earnings;
- To encourage members to support and develop industrial tropical timber reforestation and forest management activities; *and*
- To encourage the development of national policies aimed at the sustainable utilization and conservation of tropical forests and their genetic resources, and at maintaining the ecological balance in the regions concerned.

The UNFCCC's ultimate objective is to limit human-induced disturbances to the global climate system by seeking to achieve a stable level of greenhouse gases in the atmosphere. An additional legally binding instrument – the Kyoto Protocol – has a more explicit provision related to forests: industrialized countries are obliged to implement and/or further elaborate policies and measures

that include the “promotion of sustainable forest management practices, afforestation, and reforestation.”

Among the goals of CBD is the sustainable use of the components of biological diversity, and considering that forest ecosystems contain an estimated 70% of the world’s plant and animal species, it has considerably expanded its horizon to include forests.

The long-term strategies of UNFCCC to combat desertification focused on improved productivity of land and on the rehabilitation, conservation and sustainable management of land and water resources.

In its 4<sup>th</sup> Session (Jan. 31-Feb. 11, 2000) in New York, the International Forum on Forests (IFF) concluded that the underlying causes of deforestation and forest degradation are the interrelated social and economic factors such as: poverty, lack of secure land tenure patterns, inadequate recognition of the rights and needs of forest-dependent indigenous and local communities; inadequate cross-sectoral policies; undervaluation of forest products and services; lack of participation; lack of good governance; absence of an economic climate that supports sustainable forest management; illegal trade; lack of capacity; lack of enabling environment; national policies that distort the market and encourage forest lands conversion to other uses.

Hence, combating deforestation requires the involvement of many actors, including national and sub-national governments, civil society, forest owners, international organizations, the private sector, research organizations and international and bilateral aid agencies.

Also needed is a broad participation of indigenous and local communities including indigenous peoples and other forest dependent people practicing traditional lifestyles, forest owners possessing important traditional forest-related knowledge and women in forest-related processes.

The most recent international policy initiative is the UN Millennium Declaration that was adopted by the General Assembly of the United Nations held in New York, USA, from 6 to 8 September, 2000. One fundamental value that was considered was “Respect for Nature”, which was described as prudence in the management of all living species and natural resources, by intensifying collective efforts for the management, conservation and sustainable development of all types of forests.

### **3.2 Immediate Challenge**

The immediate challenge is how to translate these global conventions related to forests into the current forest policy system. For the CBD, the country has already passed a counterpart law – Wildlife Resources Conservation and Development Act – but for UNFCCC and UNFCCC, so far only “soft” policies have been promulgated. The following important developments in the global arena should now be integrated into the country’s forest policy system:

- Increasing influence of global markets on forest management including the growing capacity of forest plantations to help meet the world’s wood demands.
- Emerging demands for the environmental services that forests provide, from water purification to eco-tourism.

- Shifting from an excessive focus in establishing new protected areas to strategies that emphasize integrated landscapes and mosaic approaches.
- Widening recognition of the role of forests as carbon sinks and as a common biome for addressing synergies between CBD, UNCD and UNFCCC.
- Growing acceptance of governance, transparency and accountability including the growing role of independent certification as indicators of good resource management.
- Increasing awareness of emerging threats including the risks posed by climate change and non-native invasive species.
- Development of a strong forest conservation infrastructure with a new generation of institutions with the capacity to deal with the complexity and unpredictability of forest ecosystems, manage across jurisdictions within the country, deal with forest problems in an integrative, holistic way and create markets to enable payments for ecosystem services.

Underlying the task of building research and educational capacities of the country is the new sustainable forest management paradigm that puts premium to forest restoration/rehabilitation as a basic strategy.

### ***3.3 Formulate National Program to Combat Forest Fires, Pests and Diseases and Regulate Introduction of Exotics and Alien/Invasive Species***

The country through the Department of Environment and Natural Resources (DENR) initiated a Forest Fire Control and Management Program (FFCMP) in 1981. This program was implemented until 1984 by the then Bureau of Forest Development (Bartolazo, 1994). It involves four major activities:

- *Fire prevention* through the Information, Education, and Communication (IEC) strategy;
- *Fire preparedness*, which covers all preparations for actual firefighting in case fire prevention fails;
- *Fire suppression*: The actual fire suppression is in the hands of the firefighters who are deployed in the different DENR Offices; *and*
- *Monitoring and evaluation*.

All activities in the implementation of the forest fire control and management program are monitored, evaluated, and analyzed for the purpose of improving the system and serve as a basis for policy- and decision-making. An important strategy of this national program to combat fires, pests and diseases is the direct involvement of the upland community and the local government units. This extends the participation of the upland community in the sustainable management of forest resources found in their areas and ensures the support and cooperation of the local leaders.

Further, the government is currently implementing the Rep. Act 9147 (Wildlife Resources Conservation and Protection Act) regulating the introduction of exotic wildlife. This means that indigenous species are preferred for forest rehabilitation/restoration programs. This law is supplemented by Rep. Act 7586 that prohibits exotic species to be used in the restoration of forests within protected areas.

#### **4. Creating Public and Community Awareness and Support**

The success of any undertaking to rehabilitate/restore open and degraded forest lands depends to a large degree on the support and cooperation of society. Towards this end, the government has mobilized civil society organizations, local government units, and the private sector in enlisting the support of the public in forest rehabilitation/restoration. The media, church groups, civic organizations, and non-governmental organizations have been very strong in advocating sustainable forest management through forest rehabilitation and restoration of the country's open and degraded forest lands. The country's educational system, particularly the public elementary and secondary schools, now integrates modules on environmental protection and natural resources conservation in their curricular programs.

#### **5. Planning, Implementation and Monitoring and Evaluation**

The Revised Master Plan for Forestry Development (2003) in the Philippines noted the inadequacies of planning and programming in many aspects of forestry development in the country. Planning/programming are important tools to translate the policies into implementable components (either by subject area, geographic coverage, and time periods, or a combination of those). With respect to forestry plantation development, however, some constraints to proper planning, programming and project implementation must be overcome as follows:

- Inadequate planning capability of institutions implementing plantation development.
- Lack of linkages of several of the ongoing plantation activities to any long-term umbrella plans with a definite programme structure.
- Inadequacies of the knowledge base, reliable statistical information, maps, inventories, surveys, etc. to support realistic planning.
- Inadequate appreciation of economic concepts (e.g. Pareto optimality) of planning and importance of the program structure for future planning and for monitoring and evaluation.
- Lack of a relevant and fresh outlook in forestry development.

In the planning and programming for a wide-scale reforestation, a new forest plantation development outlook is needed. Past trends, current situation and projections of future scenarios provide materials for outlook in plantation development. This outlook is a combination of several forestry outlooks on land use, productivity, ecology, technology, demand and supply, human resources, institutional situations, etc. For example, future production of timber can be estimated based on projections on the above forestry outlooks with several interacting elements such as forestland (area), technology/productivity, local human resources, global and local demand/consumption pattern and others. Each of these, in turn, depends on influencing factors, such as income, price

and related elasticities, availability of substitutes, competing demand, and efficiency levels in production, processing and use (Chandrasekharan, 2003). Program planning and development would then proceed considering other factors such as political situations, stakeholder's capability, community needs and institutional and social dynamics in project areas. Realistic goals and targets on the national, regional and local levels could then be set based on the above outlook analysis. Hence, it is possible to have several levels of plans (national, regional and project/field level plans) depending on local conditions but will still follow the general plan formulated out of a fresh outlook in plantation development.

Monitoring and evaluation (M & E) will be an integral component of the plan. The number of M & E design will also correspond to the number of modules developed in the planning stage. Simple but effective data-capture forms must be developed for affordability in implementation. The costs of this activity must be deliberately included in the estimates of budgetary requirements of the overall plan. Nevertheless, ingenuity in the design of M & E is needed to capture relevant experiences in various sites that would be inputs in the improvement of the program designs and serve as inputs to plantation development researches that would be integral to the overall plantation development program. For purposes of reliability of results, M & E activities must be implemented by independent entities. However, it is imperative for individual project implementers to have internal M & E system that can easily be verified by external M & E.

## **6. Financing for Forest Restoration**

### **6.1 Mobilizing Resources for Reforestation**

It has been observed no current major forest rehabilitation programs are in the pipeline or being prepared by the government. Nevertheless, pockets of efforts to obtain funding can be seen in some national programs like the Mindanao Rural Development Project II, where a natural resources management component aims to pilot small efforts of forest rehabilitation through the communities and is being integrated into the whole programme. The Department of Agriculture and the Department of Environment and Natural Resources have pipeline proposals on forest management/biodiversity programs requesting the Global Environmental Facility (GEF) to be considered under its current resource allocation framework for the country. Still fragments of small efforts are observable in some LGUs and Regions where small local and international funding is available. Definitely, forest rehabilitation is a daunting task. However, there are some basic questions that need to be answered before we strategize on mobilizing resources for reforestation, among which are as follows:

- ***Is the government still interested in forest rehabilitation?***
- ***If it is, can it fund forest rehabilitation?***
- ***How much area is needed to be developed to have a significant impact?***

Assuming that the government would target 2.5 million ha of denuded forests in 25 years it has to develop at least 100,000 ha per year with at least 2 years lead time for negotiation and planning. With development costs of P 36,000 per ha (2006 prices), the government needs 90.0 billion pesos or roughly 1.8 billion USD to do this.

## **6.2 Traditional Sources of Rehabilitation Funds**

In the past, the country was able to acquire forest rehabilitation funds from several sources among which are as follows:

- Multilateral donors (WB, ADB, JBIC ) – all loans, not forthcoming in the near future, not feasible in the short term;
- Bilateral donors (USAID, foreign embassies coming from their official development assistance to third world countries);
- International Donors/NGOs (WWF, OISCA) – cover small areas, very site-specific, very difficult to access;
- National Government Agencies – DENR, NIA, NAPOCOR, PNOC, etc., no more budget for rehabilitation except NAPOCOR from its watershed management fund;
- Local government units – forest rehabilitation not a priority, if at all, only small amounts are available;
- Local NGOs – effective, but feasible in small areas only because of high cost/unit area;
- Private Sector – competitiveness of the effort with respect to other investment options, not enough incentives because of very high risks of not recovering capital, unstable policies, low potential profit in forestry businesses, *and*
- POs/local communities – vast managerial and labor potential, with people power, however, no money and incentives for them to plant on their own.

## **6.3 New Potential Funding Source**

In the face of the budgetary difficulties the country is facing, it is also difficult to convince policy makers to allot budgets for forest rehabilitation in the regular budget cycle of the government as regularly enacted through the general appropriations act (GAA). Thus, it is strategic to explore all possible sources of funds as follows:

- RUPES: rewarding the upland poor for environmental service;
- Adopt a Mountain Program, where interested and committed civic organizations and private businesses will be encouraged to support efforts to rehabilitate and protect a particular mountain or forest, especially if this is the source of their water supply;
- GEF (Global Environmental Facility) for biodiversity conservation, sustainable land management and other operational strategies that are being funded under its many programs through conduit organizations like UNDP and World Bank;
- CDM (Clean Development Mechanism) for carbon sequestration and trading;

- Multilateral environmental agreements; *and*
- Other sources like CBD, CCD, UNFCCC.

#### **6.4 Formulation of a National Strategy for Reforestation**

The following are some of the basic ideas the authors are forwarding with respect to keeping the Philippines green:

- Develop a long-term national forest rehabilitation plan that would involve various stakeholders (with ecological, economic and social development components).
- The country needs only 400,000 ha for industrial production purposes (RMPFD, 2003). This must be deliberately planned to achieve such a target. Hence, appropriate high-yielding species of high economic value must be planted on appropriate areas specifically established for this purpose and to be maintained for such purpose. The plan must include provisions for processing, marketing and replacement of harvested areas, including reinvestment of surplus income.
- Another 300,000 ha are needed in CBFM for production purposes (agroforestry, high-yielding forest plantations). This strategy would cater for community needs and hence, the adoption of species would be anchored on the socio-economic requirements of the communities. Develop/implement a system on how to recover costs in production areas. Strategies for marketing and utilization and benefit sharing must be in place.
- The rest or around 1.8 million ha maybe developed for restoration/protection purposes, where no harvest will be allowed. All stakeholders may potentially be involved in this endeavor. This would require multi-donor financing, and creative sustainable funding sources. Maintenance of these restoration areas must be ensured and strategies on how to recover costs from these must be thought of (e.g., explore innovative sources of funds (CDM, RUPES, Ecotourism and Mountain projects, etc.)
- Explore Multi-Sources of funds for particular end uses. Ensure sustainability of funding sources. Some fund for subsequent rehabilitation may come from harvests from plantations established in initial years.
- The plan must ensure the sustained COMMITMENT of everybody.

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## ANNEX 1

**Table 1. Evolution of national rehabilitation initiatives in the Philippines**

<b>Date</b>	<b>Description of Events</b>	<b>Main Actor/s Involved</b>
1910	First recorded rehabilitation initiative in the country by the Forestry School in Los Baños, Laguna (Luzon) as part of silvicultural class.	Academe-Forestry School in Los Baños
1914	Some 118 species were tried and planted in Los Baños.	Academe-Forestry School in Los Baños
1910-1936	The “piloting period” since the trial plantings laid down the foundation or more extensive reforestation in the years to come. It may be noted, however, that reforestation was sporadically. Undertaken depending upon the release of the budget by the Philippine Legislature.	Government/Bureau of Forestry
1916	Act 2649 – established Reforestation of the Talisay-Minglanilla Friar Lands Estate in Cebu Province (Visayas) with budget of P10,000. Later, other reforestation projects were opened (e.g. Caniaw, Nasiping, Paraiso, etc.)	Government/Bureau of Forestry
1919	Magsaysay Reforestation Project established in Arayat, Ilocos, and Zambales (Luzon).	Government
1919-1926	Reforestation funded from general appropriation of the Bureau. Limited funds confined activities to small projects.	Government/Bureau of Forestry
1927-1931	Act No. 3238 appropriated P 50,000 to continue reforestation activities. Cincona Plantation in Bukidnon (Mindanao) plus 3 other projects established.	Government/Bureau of Forestry
1932-1936	P 310,000 made available for reforestation activities. Money was used to maintain the then existing projects and no new projects were started.	Government/Bureau of Forestry
1937-1941	Establishment of Makiling Reforestation Project (Luzon) Extensive reforestation due to substantial fund appropriation by government to enhance previous efforts Special Office under the Director of Forestry established to conduct inspection of new reforestation projects. A new Division of Reclamation and Reforestation under the Bureau of Forestry was established in 1939. Of the 545,000 hectares of open, denuded grasslands in critical watershed, about 28,000 hectares already planted.	Academe/ Bureau of Forestry

**Table 1. *continued***

Pre-World War II	Total of 35 projects established with a total area of 535,000 ha (11 in Northern Luzon, 14 in Central Luzon, 1 in Southern Luzon, 6 in the Visayas and 3 in Mindanao) Total area planted was 26,660 ha; Forest nurseries with a total area of 24 ha and annual capacity of 17 million seedlings established; A total of P3.57 million spent on reforestation from 1910 to the start of World War II.	Government/Bureau of Forestry
Japanese Period	Large portion of established plantations destroyed, only 15% or 4000 ha survived the war. Republic government, through RA 115, imposed a reforestation fee of 50 centavos and 40 centavos on every cubic meter cut in the public forest on the 1st and 2nd group and 3rd and 4th group of species, respectively.	
Post War: 1946	Commonwealth Act No. 718 appropriated P540,000 for reforestation; 29 of the 35 projects reopened.	Government/Bureau of Forestry
1948-1960	Congress passed Republic Act 115 to solve funding gap; levied P0.5 for each cubic meter of timber from the 1st & 2nd group species and P0.4 for 3rd & 4th group species removed from public forest to support reforestation projects.	Government/Bureau of Forestry
1960	R.A 2706 created Reforestation Administration as a separate agency under the then Department of Agriculture and Natural Resources (DANR) It attained an average rate of 10,000 hectares planted annually and even reached 35,400 hectares in 1963. Reforestation projects increased in number from 57 in 1960 to 91 in 1972 with a total of 182,000 hectares planted.	Government
1966 onward	Reforestation became a joint undertaking by the government through its regular and foreign assisted funding; the industrial tree plantation (later the IFMA), tree farm and agro-forestry schemes and the upland people through socially-oriented programs in which reforestation is a component such as the Integrate Social Forestry (ISF), the Community Forest Stewardship Management Agreement (CFSMA), and the Community Forest Management Agreement (CFMA). Project under PD No. 1 and Letter of Instructions No. 3 into Bureau of Forest Development.	Government, Private Sector
1972	LOI No. 3 integrated reforestation activities into mandate of the Bureau of Forest Development.	Government
1974	By 1974, more than 91 projects since 1916. Area planted from 1946-74 equals 161,714 ha.	Government

**Table 1. continued**

1975	P.D. 705 issued requiring the conduct of reforestation nationwide; the Bureau of Forest Development (BFD) was formally organized.	Government, private sector
1976	Launching of PROFEM to intensify reforestation activities; called for a holistic approach to forest ecosystem management involving all sectors of the society.	Government
1977	P.D. 1153 issued requiring all citizens to plant 12 seedlings annually for 5 consecutive years.	Government/Citizens
1979	LOI No. 818 requires all holders of existing timber licenses, leases and permits to reforest one hectare of denuded or brush land for every hectare logged.	Government/Lease holders
1981	Executive Order No. 725 issued encouraging the establishment of Industrial Tree Plantations (ITPs).	Government/ Lease holders
1982	Integrated Social Forestry Program launched;	Government/foreign donors
1980s	NGO work on forest regeneration and agriculture with up-land communities;	NGOs/communities
1986	Launching of National Forestation Program (NFP) to involve wider sector of the citizenry in reforestation; integrated all reforestation efforts undertaken by government and non-governmental sector. 6.5 M ha total target, 1.4 M ha target from 1987-2000.	Government
1987	Community Forestry Program launched;	Government/ foreign donors
1987	Around 135 regular reforestation projects under the jurisdiction of the then Bureau of Forest Development (BFD) were already established throughout the Philippines with an aggregate area of about 1,055,000 hectares. Of these, about 263,000 hectares were already planted as of March 1986 (BFD, 1989).	Regular BFD budget
1988	Forestry Sector Project Loan I (under NFP) replaced the traditional government reforestation by contract reforestation which involves contracting families, communities, NGOs, LGUs, corporations and others to reforest.	Government/various sectors of the society Funded by ADB, OECF, GOP: USD 283 M
1995	E.O. 263 adopted CBFM as the national strategy for sustainable forest management and social justice; Entrusted the responsibility of forest rehabilitation, protection and conservation to communities with the promise of equitable access to forest benefits; Forestry Sector Project Loan II (under NFP) using CBFM	Government/legitimate organized communities  Funded by JBIC, ADB and GOP: USD 140 M
1990s	Other foreign-assisted community-oriented projects continue; LGU efforts intensified with enactment of the 1991 local government code;	Government, NGOs, communities, LGUs

**Table 1. *continued***

By 2002	Area planted from 1975-2002 equals 1.6 million ha, 58% by DENR, 31% private sector, 6% by LGUs and OGAs, and 5% by citizens. Budgeted amount in this period ≥ USD 570 M.	All sectors
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Sources: Esteban, 2003, Chokkalingam et al, 2006, Pulhin, et al. 2006, and RMPFD, 2003.