

## THE FORESTRY CRISIS IN THE PHILIPPINES: NATURE, CAUSES, AND ISSUES

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THE 1970s can be considered one of the watersheds in Philippine economic history. Among other things, it ushered in a process of debt accumulation which contributed to the much publicized financial and political crisis of the 1980s. This period also coincided with the continued loss of forest cover, aggravating the existing related problems of dwindling timber resources and ecological imbalance. While natural resource depletion and the worsening state of the environment have not absorbed the public mind as intensely as the financial or political crises, it has nevertheless aroused interest and concern among various groups in the country.

This paper explores the nature and causes of the problem as well as some of the issues which need to be confronted over the short and medium term. It delves into the role of different agents, i.e., the state, loggers, and upland residents in deforestation. In the course of the discussion, the different positions in a growing public debate are outlined.

### I. BACKGROUND: THE STATE OF THE PHILIPPINE FORESTS

Historical accounts indicate that the original vegetation of the Philippine archipelago represented a "continuous forest of one type or another."<sup>1</sup> Spanish colonial officials estimated the forest area in the country to be from 19.5 million to 20.9 million hectares or at most about 70 per cent of the country's 29.6 million hectares.<sup>2</sup>

Heavily forested at the start of the century, the Philippine landscape was greatly transformed in subsequent decades. Based on the 1920 American colonial government statistics, there were about 16.6 million and 2.1 million hectares of commercial and noncommercial forest lands, respectively [17] and about 0.26 million hectares of mangroves. Together, these comprised approximately 64 per

<sup>1</sup> Brown and Matthews [5]; Dickerson [9]. Dickerson, for instance, wrote "in the open country and in the secondary forests of the Philippines, specific species endemism is less than 10 per cent; while in the primary forests, it exceeds 80 per cent. This condition merely emphasizes the fact that the primary forests represent the indigenous flora of the Archipelago... It may, with reasonable safety, be assumed that the original vegetation of the Philippine Islands before man reached the Archipelago was continuous forest of one type or another" (cited in Sajise [22]).

<sup>2</sup> These estimates of forest lands by Spanish officials were cited by the head of the Bureau of Forestry, George Ahern, in his annual report dated July 30, 1901.

TABLE I  
CHANGE IN FOREST LAND AREA BY FOREST TYPE, 1934-88

Forest Type	(Million hectares)						
	1934a	1934b	1969a	1969b	1976	1980	1988
Old-growth dipterocarp	10.7	11.1	4.4	5.3	3.67	2.99	0.99
Seasonal molave	0.4						
Broad leaved	2.5						
Residual dipterocarp, 2nd growth	n.a.	2.5	3.4	3.3	n.a.	n.a.	3.41
Pine	0.5	0.5	0.3	0.2	n.a.	n.a.	0.24
Mossy, unproductive	0.7	2.6	1.7	1.8	n.a.	n.a.	1.14
Submarginal							0.54
Mangrove	n.a.	0.3	0.2	0.3	n.a.	n.a.	0.14
Seasonal without molave	0.4						
Bamboo	0.03						
Mid mountain	1.9						
Total forest area	17.18	17.0	10.0	10.9	8.1	7.4	6.46
% of total country area	57.3	56.7	33.3	36.3	27.0	24.7	21.5

Sources: 1934a: Ganapin [10]. Based on official data of former Director of Forestry Arthur Fisher.  
 1934b: Revilla [21]. Based on forest map.  
 1969a: M. L. Bonita and A. V. Revilla. Based on large-scale photograph. *The Philippine Forest Resources: 1976-2026*, PREPF Technical Report No. 6 (1978).  
 1969b: Extrapolated from data in Department of Environment and Natural Resources, *Philippine Forestry Statistics*.  
 1976: Forest Management Bureau.  
 1980: Forest Management Bureau.  
 1988: Philippine-German Forest Resources Inventory Project, *Natural Forest Resources of the Philippines*.

cent of the country's total land area. By 1934, however, forest lands covered close to 17 million hectares, making up about 57 per cent of the total [10]. Table I further reveals that relative to the 1934 figures, the area and proportion of forest to total lands continued to decline after the war. The latest nationwide inventory survey [13] shows that by 1988 the country's forests have shrunked to 6.5 million hectares or 21 per cent of the Philippine's total land area.

The most severely affected forest type is the naturally-grown dipterocarp forest. Once dominating the country's silvicultural pattern, it now stands marginally in only four out of twelve regions.<sup>3</sup> From 1934 to 1988, the size and proportion of the old-growth natural forest declined from between 11.1 and 13.6 million hectares (or 65 per cent of forest lands) to about 0.99 million hectares (or 15 per

<sup>3</sup> The specific provinces in each region are Cagayan, Isabela, and Kalinga-Apayao in Region 2; Palawan and Aurora in Region 4; Agusan del Sur and Bukidnon in Region 10; and Davao del Norte and Surigao del Sur in Region 11.

TABLE II  
AVERAGE ANNUAL LOG PRODUCTION, EXPORT, GROWTH RATE,  
AND EXTENT OF UNDERREPORTED EXPORTS

Period <sup>a</sup>	Average Annual Production (1,000 m <sup>3</sup> )	Average Annual Export (1,000 m <sup>3</sup> )	Share of Export (%)	Growth Rate		Rate of Under-reporting <sup>b</sup> (%)
				Production (%)	Export (%)	
1911-15	378			13.3		
1916-20	411	26	6.3	15.5	55.2	
1921-25	738	80	10.9	10.1	36.6	
1926-29	1,307	191	14.7	11.5	19.0	
1955-60	5,105	2,393	46.9	10.7	21.0	38.9
1961-65	6,749	3,879	57.5	0.02	42.1	65.4
1966-70	15,475	7,865	50.8	69.7	23.3	56.1
1971-75	10,177	6,940	67.8	1.4	-3.2	63.2
1976-80	7,330	1,711	23.0	-10.4	-31.2	30.1
1981-85	4,383	813	17.7	-10.8	-0.004	59.1
1986	3,434	412	11.9	-3.8	-36.9	72.0
1987	4,147	205	4.9	20.8	-50.2	14.3
1988	3,809	174	4.6	-8.2	-15.1	4.7

<sup>a</sup> 1911-29 data obtained from Bureau of Commerce and Industry, *Statistical Bulletin*, various issues. 1955-88 data obtained from *Philippine Forestry Statistics* and *Philippine Trade Statistics*.

<sup>b</sup> Based on the ratio of Philippine export volume of logs and Japanese import data. The latter was obtained from Ministry of Finance, *Annual Return of the Foreign Trade of Japan*.

cent of forest lands). In other words, as much as 93 per cent of the natural dipterocarp forest in the mid-1930s were either cleared or transformed into residual or submarginal forest areas, unproductive mossy fields, or open cogon and brush lands by the 1980s.

The continuous decline in forest area over time highlights the following observations. First, the loss of forest lands did not begin during the postwar period but can be traced back to the early part of the century when the country was under American colonialism. From the 1920s to 1934, the annual loss of forest lands was at least about 140,600 hectares. This rate of deforestation was only slightly lower than the estimated annual loss of 172,000 hectares from the 1950s to 1973 [4].

Second, deforestation partly reflects the growth of log production and export demand. The average annual log production in the postwar years greatly exceeded prewar levels (see Table II). This partly accounts for the faster rate of deforestation in the period after World War II. Log production, which reached its peak in the late 1960s, was induced by external demand as reflected in the annual growth in log exports by 42 per cent and 23 per cent respectively in the first and second half of the 1960s (Table II).

Several points regarding the information in Table II are worth noting: (1) The share of exports in earlier decades are not shown in the table. They cannot be

estimated because of the unavailability of data. (2) The computed percentages of exports in the table are not accurate because of the presence of unreported, illegally shipped log exports. The last column in Table II in fact reveals the extent to which the volume of log exports from the Philippines to Japan are underreported, relative to Japanese import statistics.

Third, the continuous loss of forest lands over time reflected not only the growth of log production but the limited reforestation activities as well. Forest resource extraction was hardly guided by the principle of sustained-yield management. Moreover, despite the huge profits generated from log production and export, very little was allocated to forest regeneration. It is estimated that private logging concessionaires have reforested only 250,000 hectares as of 1986 [21].

Finally, as increasing portions of the natural growth forests were logged over, timber production began to contract by the later part of the 1970s. To offset the declining supply of timber amidst continued demand, more forest lands had to be exploited and consequently, lost. It was estimated that about 319,000 hectares were lost annually from 1968 to 1984 [4].

The unceasing exploitation of the forest has thus transformed the country's physical landscape and a supposedly renewable resource into a shrinking stock endowment. This has, in turn, brought about an impending timber shortage and an environmental problem which threatens to become increasingly more severe.

The timber shortage and environmental degradation accompanying deforestation represent two forms of the forestry crisis in the Philippines. These problems were not as apparent in earlier periods because of the seemingly localized effects of forest destruction. However, as the timber shortage and the effects of environmental destruction begin to be felt nationwide, the crisis has become more real in the public's consciousness.

In the immediate future, the country's timber requirements will be drawn primarily from the remaining old-growth forest because the trees in the residual, second-growth forest are still too young (with an average age of only 14.3 years [25]) or are harvestable only in 15 to 20 years. However, the stock from the remaining old-growth forest is inadequate in the medium term. Given its potential yield of 46 million cubic meter roundwood equivalent, and a 14 per cent annual domestic demand growth rate for timber, the old-growth forests by 1994 cannot provide sufficient supplies to meet domestic needs.<sup>4</sup> If foreign demand for wood is added to the picture and if the historical rates of deforestation persist, the accessible stock in the natural forest may be exhausted earlier. The country may also completely lose its old-growth dipterocarp forest by 1993, if not sooner.

<sup>4</sup> According to Schade [23], the remaining old-growth forest is said to yield a total log production of 46 million cubic meters in the coming years. Given the domestic demand for timber in 1985 at 3.345 million cubic meters and annual demand growth rate of 14 per cent, the available supply for local consumption will not be sufficient up to 1994. If the export of wood products is included (1 million cubic meters annually), log supply will be depleted at an earlier time.

The Asian Development Bank [2] estimates a local supply gap of 3.9 million cubic meters in 1995.

Historically, the commercialization and eventual loss of the natural forest have impaired the reproducibility of this resource and reduced the productive potential of the entire ecological system. Apart from felling trees, logging operations, including the construction of access roads, have resulted in the exposure of the forest floor to the elements, the eventual loss of biomass, nutrients, or precious top soil, and the progressive removal of the best seed bearers or potential mother of elite trees. Genetical degradation has further constrained forest regeneration.

As forest lands are disturbed, they lose their natural capacity to conserve soil. The rate of soil erosion rate can go as high as 300 to 400 tons of material per hectare annually, depending on the extent of forest and vegetative cover loss.<sup>5</sup> The Department of Environment and Natural Resources has conservatively estimated soil erosion to be about 100,000 hectares of land at one meter deep annually. Out of the fifty provinces in the country, fourteen have at least 50 per cent of their lands eroded.<sup>6</sup>

Extensive soil erosion has, in turn, resulted in the siltation of watersheds, reservoirs, and dams, shortening their productive life span in the process. A written appraisal of the Magat reservoir, for instance, reveals that because of erosion arising from upstream activity (logging, shifting cultivation, and cattle-grazing in the deforested uplands) its probable life span of 100 years has been cut to a fourth [7]. The degraded<sup>7</sup> watershed areas have not been able to retain and store water allocated for irrigation and hydroelectric power. As a consequence, floods have prevailed in the rainy months while drought periods have become more common and extensive in the dry season. Agricultural and industrial production have thus certainly suffered as a result of deforestation and watershed degradation.

At present, there is a paucity of comprehensive studies on the costs and effects of soil erosion and watershed degradation in the country. Available researches merely describe the extent of siltation in certain localities. For instance, some areas in the Agno River Basin of Luzon are said to be so silted that they have become much higher than the surrounding rice fields [19]. On the other hand, the only available quantitative study on soil erosion estimates the cost of nutrient loss in terms of the required amount of chemical fertilizer (about U.S.\$50 per hectare per year) to restore soil fertility [7].

In the absence of radical changes in forest management and massive forest renewal efforts by both the government and forest land concessionaires, the yearly loss of a portion of the remaining natural forest is expected to continue and further aggravate the existing environmental problems. Most of the existing

<sup>5</sup> The annual soil loss in undisturbed forest lands is on the average one ton per hectare per year. In degraded secondary forest, the rate of soil erosion can be six times the above.

<sup>6</sup> About 60 per cent (8.3 million hectares) of total alienable and disposable lands (which include agricultural lands) are said to be severely eroded, while hilly and mountainous lands (9.3 million hectares) are highly susceptible to soil erosion. They both constitute about 59 per cent of the country's total land area.

<sup>7</sup> In the late 1970s, at least 2 million hectares of the 5 million hectares of deforested lands were in critical watershed areas.

TABLE III  
 NUMBER OF TIMBER LICENSE AGREEMENTS (TLA) ANNUALLY GRANTED  
 SINCE 1971 AND FOREST AREA UNDER CONCESSION

Year	No. of Agreements	Area	Cumulative Area	(1,000 hectares)	
				Share of Classified Forest Lands (%)	Average Size per TLA
Postwar period to 1970	58		3,368	39.4	58.1
1971	5	203	3,571	40.6	56.7
1972	no data				
1973	57	1,681	5,252	58.8	29.5
1974	51	2,053	7,305	80.6	40.3
1975	—	—384	6,921	75.8	40.5
1976	48	1,084	8,005	86.4	36.6
1977	11	274	8,279	89.3	24.9
1978	-23	-1,219	7,060	75.9	34.1
1979	-9	-284	6,776	72.6	34.2
1980	-7	-276	6,500	70.0	34.0
1981	-7	39	6,539	60.4	35.5
1982	2	170	6,709	60.6	85.0
1983	-61	-1,317	5,392	51.5	43.1
1984	17	486	5,878	43.0	41.4
1985	6	215	6,093	43.5	41.2
1986	-6	-418	5,675	37.9	39.9
1987	-15	-270	5,405	36.0	42.6
1988	-7	-665	4,740	31.6	39.5

Source: *Philippine Forestry Statistics*, various years.

old-growth and secondary forests (5.4 million out of the 6.3 million hectares as of 1987) are under timber license agreements which entitle holders to extract timber resources for the domestic and external market. Apart from effecting a timber shortage crisis, the exploitation of the remaining natural forest shall certainly have adverse ecological consequences because these natural forests are mainly located in critical watersheds and steeply-sloped mountainous areas [1].

As the timber shortage, the loss of the remaining natural forest and its more generalized environmental consequences begin to be felt nationwide, an imminent forestry crisis will become more obvious unless the limits on state action in this matter are widened. The unfolding crisis is likely to loom larger because of possible conflicts between upland residents, affected lowland communities, and environmentalists on one hand, and timber license holders, the wood industry, and the government on the other.

The following sections explore the forestry crisis in greater detail. They specifically focus on (1) the underlying factors behind the crisis, (2) the conflicts at the local and national level, and (3) some critical issues to be resolved.

TABLE IV  
PHILIPPINE LAND AREA BY LAND CLASSIFICATION CATEGORY  
IN SELECTED YEARS

	(Million hectares)						
Land Category	1903	1948	1957	1969	1978	1982	1984
Public lands:							
Forest lands	16.2 (54.8)	3.1 (10.3)	4.9 (16.3)	8.2 (27.3)	9.3 (31)	11.0 (36.6)	13.6 (45.5)
Unclassified lands	8.5 (28.3)	18.3 (61)	13.9 (46.3)	9.3 (31)	7.6 (25.3)	5.6 (18.7)	1.8 (6)
Privately held lands:							
Titled and untitled	4.9 (16.4)	7.1 (23.8)	*	*	*	*	*
Alienable and disposable		1.5 (4.9)	11.2 (37.3)	12.5 (41.7)	13.1 (43.7)	13.4 (44.7)	14.5 (48.4)

Sources: Report of the Chief of Forestry Bureau, September 1903, Report U.S.P.C., Vol. 3, cited in Henry Parker Willis, *Our Philippine Problem: A Study of American Colonial Policy* (Henry Holt & Co., 1905). National Economic and Development Authority, *Philippine Statistical Yearbook*, various years.

Note: Figures in parentheses show percentage.

\* No data, subsumed under the alienable and disposable category.

## II. FACTORS BEHIND THE FORESTRY CRISIS

The loss of Philippine forests and its ecological consequences arose out of three related factors: (1) the nature of state policies with respect to land classification, public land allocation, and access on one hand, and those governing the pricing of forest land access and taxation of timber extraction and exportation on the other; (2) the limited perspective, economic interest, and time horizon of loggers and exporters, as reflected in their practices; and (3) the weak enforcement capacity of the state which partly results from the prevalence of private interest among bureaucrats and enforcement agents, and the dominance of natural resource exploitation in its policy orientation.

### A. *The Nature of State Policies*

#### 1. *Policies on land classification, public land allocation, and access*

Under the American colonial period and the political administration of the different Filipino presidents, a large proportion of the country's land area was deemed part of the public domain. In 1903, for instance, five years after the start of American colonization, as much as 84 per cent of the country's land area, consisting of public forest lands (55 per cent) and public lands available for alienation (28 per cent), were under the control of the colonial government (Table IV). Titled or untitled privately owned lands only amounted to 4.9 million hectares (16 per cent of the total land area). Similarly in 1948, two years after

TABLE V  
STATUS OF ALIENABLE AND DISPOSABLE (A & D) LANDS  
AS OF DECEMBER 1985 AND 1987

Status	(Million hectares)			
	1985	%	1987	%
Total	14.66		14.11	
Applied for	12.70		12.76	
Judicially registered	3.08	21.0	3.11	22.0
Patented and approved under:	5.17	35.3	5.97	42.3
Lease	0.21	1.4	—	—
Sales	0.28	1.9	0.34	2.4
Homestead	2.20	15.0	3.06	21.7
Free patent	2.48	16.9	2.49	17.6
Special patent	—	—	0.05	0.4
Application pending			1.49	10.6
Approved application not patented/cancelled			0.83	5.9
Unaccounted patents	3.07	20.9		
Remaining disposable lands	3.34	22.8	2.69	19.1

Source: Bureau of Lands, unpublished data.

the Philippines obtained its political independence from the United States, the public domain covered about 71 per cent of total lands while privately owned lands amounted to about 24 per cent of the total. The former consisted of classified forest lands (10.3 per cent) and unclassified forest and other public lands (61 per cent).

With its control over a substantial land area, both the colonial and post-colonial states had the capacity to determine overall land use patterns and to bestow landownership or leasing rights to aspiring users. The increase in the proportion of privately owned lands and the commercial exploitation of the country's forests both reflect not only the state's role in the forestry issue but in the creation and promotion of propertied families and groups as well.<sup>8</sup>

Given the extensive area of unclassified public lands, the classification of such lands through time by the state became the mechanism for setting the pattern of public land use and the manner of dispensing ownership or lease rights. In general, unclassified public lands are categorized as either "alienable and disposable" or forest lands. The former are either sold, given as homesteads, or leased to individuals or Filipino corporations (Table V). Classified forest lands, on the other hand, are either placed on reserve, held by particular government agencies and corporations, like the National Development Corporation (NDC), or leased out to the private sector for exploration, development, and exploitation.

Although presidential administrations have differed in the pace with which

<sup>8</sup> The data suggest that the landholding pattern was greatly influenced by the action of the colonial and post-colonial state and that land market transactions in early historical periods transpired in a relatively small portion of total lands or within supposed public lands.



TABLE VI  
THE ALLOCATION OF NEWLY CLASSIFIED LANDS INTO ALIENABLE/DISPOSABLE OR  
PUBLIC FOREST LANDS UNDER DIFFERENT PRESIDENTIAL ADMINISTRATIONS

Period of Presidential Administration	Newly Classified Lands (1)	Alienable/ Disposable (2)	Forest (3)	(1,000 hectares)	
				Percentage Change of (2)	(3)
1948/49-1952 (Quirino)	1,340	1,006 (75.1)	334 (24.9)	11.7	10.8
1952/53-1956 (Magsaysay)	2,328	1,298 (55.8)	1,030 (44.2)	13.5	29.9
1956/57-1960 (Garcia)	2,815	978 (34.8)	1,836 (65.2)	8.9	41.1
1960/61-1964 (Macapagal)	1,897	481 (25.4)	1,417 (74.7)	4.1	22.5
1964/65-1968* (Marcos)	450	108 (24.2)	361 (80.2)	0.9	4.7
1968/69-1972 (Marcos)	1,065	274 (25.7)	771 (72.4)	2.2	9.6
1972/73-1976 (Marcos)	642	227 (35.4)	414 (64.6)	1.8	4.7
1976/77-1980 (Marcos)	733	294 (40.1)	439 (59.9)	2.3	4.7
1980/81-1985 (Marcos)	5,705	1,390 (24.4)	4,315 (75.6)	10.5	44.5
1985/86-1987 (Aquino)	438	-551 (-125.8)	990 (225.8)		

Sources: Department of Environment and Natural Resources. *Philippine Forestry Statistics*, various annual volumes.

Note: Figures in parentheses show percentage.

\* The unaccounted 20,000 hectares shows up in the next period.

they classified lands under the public domain and their preferred allocation of newly classified lands,<sup>9</sup> an overall bias in favor of retaining these lands within the public domain or designating them as forest lands is quite apparent. Note for instance that about 72 per cent of newly classified lands from 1957 to 1985 were allocated to the forestry sector (Table VI).

The precise uses of classified forest lands cannot be accurately determined at present. While the Department of Environment and Natural Resources is in charge of monitoring all forest lands, various agencies exercise jurisdiction over particular forestry related concerns. Up to the present, the area of the public

<sup>9</sup> The pace of public land classification was relatively faster during the presidential administration of Magsaysay, Garcia, and Marcos. The last five years of Marcos is, however, unparalleled. After the mid-1950s, the forestry sector claimed a greater portion of newly classified lands.

TABLE VII  
SPECIFIC USES OF CLASSIFIED FOREST LANDS AS OF DECEMBER 1985

Forest Land Use	Area (Million Hectares)	Share of Classified Area (%)	Share of Licensed Area (%)	Average Hectarage per License
Forest lands under reserve:				
Forest reserves	3.47	24.8		
National park, game refuge	1.26	9.0		
Military reserves	0.13	0.9		
Civil reserves	0.31	2.2		
Subtotal	5.17	36.9		
Forest lands under license:				
Timber license	6.09	43.4	76.9	41,169
Other timber	0.50	3.6	6.3	
Pasture and grazing	0.47	3.4	5.9	430
Industrial tree plantation	0.29	2.1	3.7	3,598
Mining lease contract	0.20	1.4	2.5	100
Stewardship contract	0.14	1.0	1.8	2.5
Agro-forestry project	0.09	0.6	1.1	985
Fishpond lease	0.05	0.4	0.6	21
Special use forestry permit	0.03	0.2	0.4	262
Tree farm project	0.02	0.1	0.3	134
Quarry mining license	0.002	0.01	0.03	45
Industrial mining project	0.001	0.01	0.01	28
Subtotal	7.76	56.4	100.0	
Unaccounted for	0.94	6.7		
Total	14.02	100.0		

Sources: National Economic and Development Authority, *Philippine Statistical Yearbook, 1986*. Department of Environment and Natural Resources, *Philippine Forestry Statistics, 1986*. Bureau of Mines and Geosciences, unpublished records.

domain held specifically by government corporations is not known. Moreover, in some public forest lands which theoretically cannot be leased out, e.g., forest reserves, national parks, and military reserves, logging and mining activities have transpired. Given these limitations, Table VII roughly reconstructs from different government sources the various uses of classified forest lands as of December 1985. Despite the data limitations, however, three observations can be abstracted from the table.

First, about 56 per cent of classified forest lands in 1985 were under one form

of lease or another. Corporate interests, including foreigners, have been able to secure timber license agreements, pasture leases, mining licenses, mangrove and other forest product permits, and approval of agro-forestry, industrial tree plantation, or tree farms projects from specific government bureaus. Most forest occupants, however, have not been able to secure documented use-rights.

Second, while the table does not specify the public forest lands held by government corporations, it is possible that a substantial portion of the 940,000 hectares (6.7 per cent) of classified forest lands which cannot be accounted for are held or leased by the National Development Corporation to the private sector.<sup>10</sup> If this is the case, then the proportion of classified forest lands under lease is larger than what has been specified.

The speculation regarding the control and subsequent leasing of forest lands to private individuals or groups by NDC is based on the historical experience of this corporation. Historically, since it was established by the American colonial administration in 1918, NDC has been able to hold public agricultural and mineral lands in excess of the limit imposed on private corporations, associations, and persons by the Constitution and laws of the country. Under the martial law regime of Marcos, the NDC was specifically empowered to hold, develop, or dispose of lands acquired by Americans under the Parity Amendment, as well as logged-over public lands. Earlier in the 1960s, it was also able to acquire "unpatented" or "cancelled patents and applications" for alienable and disposable lands, which were later leased out to agribusiness interests [11]. Given the constitutional limit on landholdings and the extensive areas of deforested public lands, the NDC has effectively served as the entry point of foreign and local capital into the public domain or its joint venture partner.

Third, Table VII reveals that a substantial area of forest lands (47 per cent) have been leased out for logging and other forest product extraction activities. The increasing allocation of newly-classified public lands to the category "forest land" facilitated the opening of public forest lands to licensed loggers. Table III shows the number of timber license agreements (TLAs) granted on an annual basis in the 1970s and 1980s. While about 40 per cent of forest lands were leased out by 1970, the proportion held by licensed loggers steadily increased during the martial law period. After only four years, the martial law regime had already allocated 167 out of the total 192 licenses granted during the entire postwar period up to 1987. By 1977 or halfway through the Marcos term, almost 90 per cent of forest lands were under a TLA.

The post-1970 figures in the first column of Table III represent the increase or reduction in the number of TLAs. The negative numbers indicate either of two things: that agreements granted in the past, i.e., during the 1950s and early 1960s, had expired, or that those granted in later years were cancelled by the authorities due to violations or voluntarily turned over by the licensees.

According to one study, most forest concessionaires (66 per cent) hold on to

<sup>10</sup> Aside from the NDC, a number of government agencies and corporations control public lands which they either operate independently or in tie-ups with private corporations or which they lease out to local and foreign business interests.

their TLAs for an average of only nine to ten years [16]. Considering that each TLA is valid for twenty-five years and renewable for another twenty-five, the early voluntary return of leased lands may reflect the capacity of licensed holders to exhaust the standing timber within their concession area, as well as their lack of interest in replanting and sustaining yield. The declining proportion of forest lands under license after 1977 may thus be indicative not only of the expiration, cancellation, or turnover of existing TLAs<sup>11</sup> but also of the diminishing supply of timber resources.

Despite the above trend, new TLAs covering extensive areas were again made available after 1980, following the designation of newly-classified public lands as forest lands. Given the large-scale loss of forest lands, the allocation of newly-classified public lands to the public forest land category, was, in retrospect by no means a desire to conserve or develop the country's forest cover but to facilitate their exploitation.

With the rapid and extensive disposition of timber license agreements in the 1970s and early 1980s, 5.4 million hectares (about 85 per cent) of the remaining forest lands in 1987 are under a license agreement (Table III). The Philippine Wood Products Association acknowledges that concessionaires control most of the remaining old-growth dipterocarp forest, as well as the residual second-growth forest [18].

## 2. *Taxation of access and exportation of timber*

Apart from the government's public land classification policy and bias in favor of forest resource exploitation, low forest charges and export tax policies partly account for the high demand for forest concessions and the monetary incentives to the wood products industry. These policies have facilitated the unceasing exploitation of forest lands by the private sector. Based on the volume of timber removed, forest charges<sup>12</sup> as an ad valorem rate averaged only 6.3 per cent of log value (wholesale price) in the 1950s. It was even reduced to only about 2 per cent of the wholesale price of logs before 1981/82. Thereafter, it amounted to only 5 to 6 per cent. Low cutting charges have thus virtually made access to timber resource exploitation close to being free, thereby conferring rent incomes to the logging concessionaires.<sup>13</sup>

With respect to domestic sales and export tax, no amount was levied in the 1950s and 1960s. A 10 per cent tax on domestic and export sales of wood was only imposed in 1970. In order to induce the processing of logs and generate greater value added in the industry, the tax rate on log exports was later increased

<sup>11</sup> The declining proportion reflects the increasingly unproductive status of the country's supposed forest lands.

<sup>12</sup> Before 1980, forest charge for premium species was 3.5 pesos per cubic meter. In 1980, it was raised to 9.35 pesos (for domestic use) or 13.25 pesos (if exported). By 1984, it was 30 pesos, regardless of destinations.

<sup>13</sup> Cruz and de los Angeles [6]. The granting of forest concessions has historically been instrumental in the process of elite formation in the country. Most of the prominent businessmen were one time forest concessionaires. Local and national political figures and their associates have also been recipients of forest licenses.

to 20 per cent by 1980 while a smaller rate was imposed on processed products —4 per cent for lumber and veneer, and zero for plywood. As a proportion of officially-earned export value, taxes from wood exports amounted to only 10 per cent before the late 1970s and about 20 per cent thereafter.

Government revenue from forest resource extraction, in the form of forest charges, domestic sales, or export taxes, constitute a certain portion of the potential resource rent or excess profits which the forestry sector generates. Based on specific price, cost, and profit assumptions,<sup>14</sup> the potential resource rent can be calculated as a residual. With these assumptions and government's low forest charges and taxes in the early 1980s, government revenue amounted to only about a fourth to a third of the rental income. Also, with a fixed export tax rate, the share of government becomes smaller, and the greater is the differential between the domestic and export price. In the absence of any substantial taxation on natural resource use, the state has in effect opted to hand over a substantial portion of the potential resource rent or excess profits to loggers and exporters. It has thus provided a source of "primitive" capital accumulation.<sup>15</sup> Furthermore, it may be hypothesized that on an inter-sectoral level, these profit opportunities<sup>16</sup> have also skewed the distribution of profit rates, hence diverting capital from the normal profit rate areas, like food crop production, to the extractive industries.

#### B. *The Practices of Loggers and Exporters*

Specific practices in the industry reflect the limited, and short-term concerns of most TLA holders. For instance, the use of powerful equipment and large machines is common in the logging operations of TLA holders because the technology facilitates timber extraction or the immediate capture of gains. The high cost of extraction per unit volume associated with the technology has also made logging operations intensive. In most areas, selective logging has hardly been practiced because intensive logging operation is easier and its cost of extraction per unit volume lower.

TLA holders have also not undertaken silvicultural treatments on the residual forests [25] nor the required replanting activity because such conservation schemes impinge on their profits. After exhausting the timber within their concession, many timber licensees have considered forest management on a sustained

<sup>14</sup> If cost of production is 402.5 pesos per cubic meter, profit is 25 per cent of cost, and the domestic price for timber is 1,000 while the foreign price is 1,510 to 2,000 pesos per cubic meter, then the excess profit will respectively be 496.80 pesos, 1,007.10 to 1,496.90 pesos. Assuming forest charges are 30 pesos per cubic meter and the domestic sales tax is 10 per cent while the export tax is 20 per cent, then the share of government in the rent from domestic sales is 26 per cent, while its share in export-based rent is 29 to 33 per cent.

<sup>15</sup> What distinguishes this form of primitive capital accumulation from the classical one is the role of the state in the provision of legal access to resource exploitation and of non-produced means of production or natural resources in the creation of surplus.

<sup>16</sup> Based on the study of Marian de los Angeles, the profit rate from the sale of domestic logs (as a percentage of production cost) may reach 137 per cent while that of exported logs may be 264 per cent.

yield basis as economically unviable, and have abandoned their areas [8].

Most concessionaires apparently have not considered their involvement in the industry as a going concern. They have either sought new concession areas or simply left the industry. Few have availed of regulated tree plantation areas. The cost of establishing a new plantation, together with the ten-year gestation period of fast-growing tree species, pales in comparison to the excess profits earned from merely extracting from the natural forest.

As a result, very little reforestation activity has been carried out in the deforested areas. The 1986 *Forestry Statistics* has estimated 741,000 hectares of reforested areas for both government and forest land licensees. This figure, however, needs to be validated. According to one forestry specialist [21], the more realistic estimate is probably 300,000 to 400,000 hectares of reforested (not just planted) lands. While about a third to a fourth of these are in government projects, the rest are in private forest licensees' plantations. The latter (200,000–250,000 hectares) constitutes only about 2 per cent of "deforested forest lands" (total forest area less the productive area, including the residual forest) in 1987.

### C. *The Weak Enforcement Capacity of the State and Its Overall Weakness*

The massive loss of forest lands against the meager replanting efforts indicates that most licensed loggers have not complied with the sustained-yield requirements of their TLA. Specifically, they have not undertaken selective cutting and replanting activities. The state, for its part, has not been able to enforce such requirements. It has also failed to enforce avowed conservation policies, such as a selective logging ban and the limitation in June 11, 1979 of log exports to 25 per cent of the allowable cut (Presidential Decree 1159). Thus, despite the ban of logging activities in Zambales, Mindoro, Romblon, Marinduque, and Leyte, or in regions 5, 6, and 7, deforestation has persisted and even intensified at a higher rate.<sup>17</sup>

The state's weak enforcement capacity is also reflected in the illegal shipment and undervaluation of logs and other wood product exports, as illustrated in the discrepancy between Philippine export statistics and the trade data of importing countries. In the late 1970s and early 1980s, for instance, log shipments based on official Philippine statistics were only 46 to 73 per cent of their value in Japan (Table II).

These undervaluations may suggest that a portion of exporters' rent incomes has gone to some district forest officers, national government bureaucrats, local government officials, military officers, and soldiers. Aside from constraining the collection of public revenue, such practices within the bureaucracy also depict a state unable to counter the limited, short-term concerns of loggers and exporters, control the overseas flight of locally realized profits from natural resource exploitation, and prevent the depletion of the country's natural resources.

<sup>17</sup> The lower rate of deforestation in TLA areas in contrast to those where logging has been banned, like in Negros Oriental, is uncritically used as an argument to support the maintenance of existing TLAs. The justification, however, fails to consider the extent of forest cover in the restricted areas at the time of the ban, and the extent to which the disenfranchised logging interests continued their operations, illegally this time.

The dominance of commercial concerns and the absence of any appreciation for the environment and the interest of the nation and future generations has unfortunately underlied forestry policy formulation. In an avowed attempt to change this thrust, a log export ban was decreed (President Decree 705) on May 19, 1975 while the policy of promoting processed wood exports was maintained.<sup>18</sup>

Loggers and exporters strongly opposed the export ban even if it did not extend to processed products. To justify their position, the wood industry merely argued that the ban would deprive the country of foreign exchange earnings, that the existing processing plants would not be able to absorb the logs, and that the domestic market is not capable of absorbing the processed products. The last two arguments meant that the logging interests were not even open to limiting their extractive activities.

Succumbing to the pressures of the wood industry, the Marcos administration suspended the ban and allowed logging to continue in certain selected areas/provinces. After a partial log export ban was effected in June 1979, a total export ban was re-contemplated in May 1982, but again, it did not materialize. Instead, as noted earlier, TLAs were granted in both periods, and logging has been allowed in selected provinces.

In summary, the factors underlying the forestry crisis are related. Policies on public land classification and use formalized the state's preference for continued control over forest lands and exploitation through lease. Together with its low forest charges and export tax, these policies provided the context for greater private incentive for forest exploitation.

State policies, however, cannot sufficiently account for excessive logging. There have been government policies as well which have sought to constrain exploitation or promote sustainable yield. Moreover, by giving excess profits to the legal users, the liberal policies on land access and export tax provided them the wherewithal to invest in reforestation. The fact that they did not reflect something about the nature of both the private forest users and the state.

As revealed in their practices, loggers and exporters have limited financial concerns and time horizon, while the state has a weak enforcement capacity, or is dominated by the private interest of some bureaucrats and enforcement agents. Hence, it has been unable to enforce the terms of the TLA contracts, prevent logging in forest reserves, or illegal shipment and export undervaluation.

Apart from the limited organizational character of the state, its ideological orientation also underlies the forestry crisis. The dominance of forest resource exploitation in its policy orientation or its failure to formulate even a minimum conservation policy indicates that the primary, if not the sole component of the state's cost-benefit calculation in natural resource use has been the financial benefits of extraction and processing. The costs of the externalities of forest resource

<sup>18</sup> According to economic policy advisers, the processing of timber which generates greater value added enables the country to realize its comparative advantage, promotes efficiency of resource use, and thereby promotes forest conservation (Power and Tumaneng [20]). This view, however, neglects the fact that increased demand for cheap processed wood necessarily requires forest resources or natural resource extraction which may not be accomplished under sustained-yield management.

extraction and of resource depletion itself have never been a consideration in state policies. With its limited concern for the financial benefits, this state orientation has wedded it to the private commercial interest of resource exploiters. Since it has never been autonomous, the relative power of private interest over the public interest has dominated state policy and structure.

### III. EMERGING CONFLICTS

#### A. *Over the Public Domain*

The country's public lands have increasingly become the site of conflict between indigenous residents and upland migrant-settlers on one hand, and those with legal claims to the lands, such as certain government agencies and corporations, agribusiness corporations, or timber licensees on the other. Various factors account for this observation, among which are the following:

First, state control and classification of a substantial land area has historically been premised on the assumption of a largely uninhabited public domain, as in America at the start of the century. However, since some of the forest lands were actually populated, their allocation for other uses consequently deprived tribal minorities and indigenous residents of their subsistence source [14].

Second, state classification of public lands and their lease to concessionaires, together with the control of state corporations over a substantial portion of these lands, have set off an enclosure-like process which has thereby restricted the access of aspiring settlers and small cultivators and undermined the tenurial rights of indigenous residents. The area potentially available for alienation and disposition with the exclusion of those already judicially registered in 1985 and 1987, amounted to only 37 to 39 per cent (Table V) of the country's land area.<sup>19</sup> Moreover, the inefficiency of a politicized bureaucracy has also limited the disposition of designated alienable lands. About 3.3 million hectares of such lands in 1985, for instance, had not been processed while another 3 million hectares could not be accounted for.

Uncertain control over alienable and disposable (a & d) lands has resulted in conflicts, informal settlements, or migration to conflict-prone areas within the public domain. Since the total area applied for exceeds the available area of a & d lands (Table V), some applicants have occupied and cultivated idle lands to ensure their claims. The lands they virtually claimed, however, have been subsequently granted to newly registered owners, patent holders, or those with approved rights. Failing to establish an informal settlement, such as a tenancy arrangement, the displaced have been more likely to encroach on the forest reserves or the partly logged-over lands.

It is interesting to note the difference of about 1.2 million hectares between the total area of cultivated croplands or plantations and the area of "alienable

<sup>19</sup> The area potentially available for alienation is limited partly because of the existence of large holdings within the judicially registered lands, and more importantly, by the greater proportion of lands kept under the public domain.



and disposable" lands.<sup>20</sup> If the discrepancy were not solely due to errors of estimation, it strongly suggests that cultivation has been carried out in many portions of the "unaccounted" forest lands, in unclassified public lands, in partly logged-over, if not deforested areas under license, or in forest reserves. In the residual, partly-logged-over forest lands, conflict, if it still has not ensued, has a high probability of transpiring as forest land concessionaires seek to protect their property rights and secure their residual harvest, and forest occupants do likewise.

Apart from the movement of displaced settlers, particular lowland agrarian features and developments have also induced migration into the public domain. Among these are the historically-established tenancy system; the limited scope and success of land reform; the low productivity and labor absorptive capacity of agriculture resulting from the limited flow of capital to crop farming; the contraction of hired employment opportunities in rice farming; the limited availability of nonfarm rural employment opportunities; and the keen competition for employment as a result of the sheer growth of the landless population [3].

Migration, whether of displaced settlers or poor lowlanders, has also been facilitated by earlier intensive logging activity which paved the way and opened formerly forested areas to settlement and agriculture. To a large extent, the movement of capital has preceded the movement of landless migrants. The pattern and consequence of migration into the uplands is crucial in the implicit ongoing debate on the culprit(s) in the country's forestry or ecological crisis.

#### B. *The Debate on the Nature of the Forestry Problem, the Culprit behind Deforestation, and the Required Response*

While this paper has defined the country's forestry problem as both the depletion and imminent shortage of a supposedly renewable resource and the accompanying degradation of the environment, the dominant view in the Philippines has emphasized the timber shortage, disregarding the adverse ecological outcomes of deforestation.<sup>21</sup> Environmentalists, on the other hand, who constitute a less powerful group, stress the latter.

The ongoing debate within the country dichotomizes the forestry problem as either a "prospective timber shortage" or an "ecological crisis." The difference between the two views and the proponents' adherence to each side of what otherwise are complementary positions, stems mainly from their conflicting proposals for action and varying perspectives on the cause of deforestation.

##### 1. *The imminent timber shortage view*

The "timber shortage view" recognizes the possible timber shortage faced in the medium term and the threat it imposes on the life of the remaining natural forest. However, the proponents hold the view that the shortage is not inevitable

<sup>20</sup> In 1984, for instance, there were 14.5 million hectares of alienable and disposable lands, but the area of cultivated lands and plantations amounted to 15.8 million [15].

<sup>21</sup> Top officials of the DENR, policymakers, economists, and some foresters have emphasized the prospective timber shortage. Their views are amplified in Lennertz and Uebelhor [13] and in the "Position Paper on the Proposed Total Logging Ban" (1988), computer printout.

and that the life span of the country's forest can be extended if the following proposals are followed: (1) a reduction of the rate of extraction which is tantamount to a partial logging ban; (2) the protection of the forest from illegal logging and continued upland migration; and (3) the practice of sustained-yield management by timber license holders.

The proposed program of action directly proceeds from its analysis of the problem or its perception of the culprit behind the deforestation. Both local and external proponents of the "prospective timber shortage" view generally cite the following as the major factors responsible for the destruction of the forest: (1) shifting cultivation and encroachment by lowland migrants; (2) illegal logging; and (3) the noncompliance of concessionaires with the provisions of their timber license agreements.<sup>22</sup>

Some proponents tend not to rank the above causes. Others, however, are more explicit. The UN Food and Agriculture Organization, for instance, singles out illegal loggers as the culprit behind forest destruction. The World Resources Institute (WRI), together with the World Bank and UNDP, on the other hand, point to the uplanders and upland migrants as the primary cause of tropical deforestation. In its 1987 report, WRI reiterates a "tragedy-of-the-commons" argument [27]:

it is the rural poor themselves who are the primary agents of destruction as they clear the forest for agricultural lands, fuel wood and other necessities. Lacking other means to meet their daily survival needs, rural people are forced to steadily erode the capacity of the natural environment to support them.

There is, however, no conflict between the FAO and WRI position because the rural poor are after all unlicensed in their clearing activity.

Like their foreign counterparts, local foresters, some academicians, and department officials agree (but with a stronger tone of sympathy and understanding) that shifting cultivation, as the only means of subsistence by landless, uninformed upland migrants, is the main cause of forest destruction. Questionable estimates of upland population, together with government statistics on the extent of deforestation due to shifting cultivation, fires, illegal logging, pest, and diseases, are

<sup>22</sup> The position paper, mentioned in footnote 21, referred to five "causes of forest destruction and resource depletion." These are: (1) the ignorance of the growing number of poor upland migrants with regard to the appropriate cultivation techniques in their new setting, (2) the absence of clear or secure property rights which results in a lack of interest to ensure the sustainability of the land, (3) the undervaluation of natural resources, (4) the inadequacy of government resources, and (5) the absence of a comprehensive land use plan.

The relationship of the third factor to the nature of the state or its overall weakness relative to the private interests in the sector is, however, not specified. There is no substantive discussion of the state, nor any mention of the role of loggers and exporters in the deforestation problem. In the position paper, the state is merely characterized as being both ill-equipped to enforce forest rules and regulations and burdened with "an excess of forest protection regulations."

uncritically forwarded as evidence in support of this contention.<sup>23</sup> In its Primer, the Philippine Wood Products Association also expresses the view that poor uplanders are the culprits [18].

Even if one assumes that the "prospective timber shortage" view is not ideologically motivated,<sup>24</sup> it can be faulted for omitting to take the following factors into consideration.

First, most proponents of the view have immediately singled out voiceless and cloutless shifting-cultivators and upland migrant-settlers as the cause of deforestation even in the absence of a careful estimate of the upland population, a study of the period and destination of upland migration, the relative environmental damage of their activities, as well as a consideration of the effects of public land allocation policies.

Without absolving uplanders from aggravating the problem of environmental degradation, existing information, however, has implications which may cast doubt on the position that they are the primary culprits. Based on cursory observation, shifting cultivation is more prevalent in the lowland, residual forest areas which were opened at an earlier period (specifically before 1956, 1961, or 1966) to logging operations. In other words, a first-cycle logging activity had cleared parts of the present residual forests and had facilitated the migration and subsequent cultivation of these partially cleared areas by upland settlers.

While it can be argued that shifting cultivators have slashed and burned portions of the forest, two questions have to be answered first before laying any major blame. First, were the cultivated residual forest areas under specific timber concessions? And second, to what extent are poor migrants, with their simple tools and family labor capable of cutting the standing timber?

In the absence of hard documentation to the contrary, the culpability of upland cultivators with respect to environmental damage more likely lies not in the extensive extraction of trees but more in the constraint which their cultivation practices and sheer presence in the area partly pose on forest regeneration. Assuming some of these areas were under concession in the earlier years, forest regeneration would not have been constrained if TLA holders maintained their presence within their concession areas and invested in sustained-yield management.

<sup>23</sup> Generated by local forest officers, the reliability of statistics on the extent of deforestation due to fires, shifting cultivation, pests, diseases and illegal logging activities must be assessed. The bureau's estimate of the extent of deforestation by the above causes averaged to about 47,000 hectares annually from 1976 to 1987. Within this same period, the area logged by timber licensees averaged to about 58,000 annually.

<sup>24</sup> The viewpoint of international agencies, like FAO, may have been formed with at least two influences: (1) upland resource depletion in depressed regions, like Nepal and Bangladesh, in the past decades because of extreme poverty, landlessness, and dependence on wood energy, and (2) the need for policy action. The image of a multitude of people desperately eking out a subsistence on the uplands may have conveniently provided the model to understand the situation in other poverty-stricken countries. In addressing the existing population pressure through policies, other historical forces behind the deforestation problem may have been inadvertently excluded.

Granting that upland settlers have illegally cut some trees within the residual forest and have partly made the environment in the cleared areas un conducive for natural forest regeneration, the large-scale blame placed on them as the main culprit behind deforestation is not only uncritical but also seems to be self-servicing, especially on the part of timber license holders.

The presence of upland settlers in the residual forest areas has constituted both a partial loss of effective control by timber license holders over the residual forest area and a constraint on their immediate and future access to the remaining timber resources. It was noted earlier that the residual forest areas have been leased out to TLA holders for the past twenty to thirty years. Some of the trees in these areas have already matured. Given a cutting cycle of thirty to thirty-five years, the second harvest in the logged-over area may commence in five to fifteen years. Hence, there is great interest on the part of TLA holders to protect their "property rights." It is within this context that the conflict between upland residents and TLA holders may have begun to intensify, especially in regions where the residual forest can be harvested in the medium term.

Second, the noncompliance of licensees with the provisions of the TLA has been cited as a less important factor behind deforestation. Since noncompliance automatically warrants cancellation of license, all the present holders are assumed to have been compliant. The enforcement capacity and record of past administrations, however, have not been investigated to evaluate the past activities of present licensees. Because deforestation has been a decades-long process, there is a need to assess the past activities of supposedly compliant loggers.

A final consideration. The cited causes of the forestry problem implicitly leave the state out and fail to relate both its past and present policies and enforcement capacities to the deforestation process. The failure to discuss the role of the state together with the implicit exclusion of present licensees from any responsibility for the current predicament have unfortunately placed much of the blame on poor uplanders.

With respect to the proposed program of action associated with the "timber shortage view," two crucial questions have not been critically considered. One, assuming the program is carried out, will the yield in the managed and protected forests sufficiently meet demand within the medium term? Two, is the wood industry a dependable partner in forest conservation?

There is doubt as to the efficacy of the proposed program in meeting the prospective shortage. A 50 per cent reduction of annual forest destruction through effective forest management and protection can retain some 3.4 million logged-over forests by 1995, but based on their stand structure and spatial distribution, the forests' production capacity of 4 million cubic meters after 1995 cannot adequately meet estimated local consumption of 5 million cubic meters.<sup>25</sup> The imminent timber shortage thus requires more drastic action. Specifically, current

<sup>25</sup> Based on the ADB study [2] and articles of Schade [23], Uebelhor [25], and Revilla [21].

timber consumption has to be reduced even at this point. Exports of logs and lumber should be limited, if not banned, at least over a period of time, while intensive replanting and reforestation must be massively undertaken.<sup>26</sup>

These measures of course will require the cooperation and commitment of various sectors, in particular, the Philippine Wood Products Association. While quite vocal in its position on the cause of deforestation and antagonistic to any proposed logging ban or moratorium, the association has been silent with regard to the eventual loss of the old-growth dipterocarp forest and imminent timber shortage. It is, of course, aware that the prospect of a future shortage is real. A study of the Department of Trade and Industry in which the association and DENR collaborated, noted that an excess demand or shortage is projected in 1991 if the industry seeks to raise production by 10 per cent in the coming two years in order to increase revenue from exports. However, in response to the question as to whether it is alarmed at the increasingly small natural forest area, the association asserted in its Primer [18]:

No, because as we were among the first in this part of the world to put our forest under sustained yield management, we are now nearing the end of our first cutting cycle averaging 35 years. However, the 3.4 million hectares logged before are adequately stocked to supply most of our timber requirements on the second cutting cycle.

The response indicates, on one hand, that the association can secure its timber requirements from the second cutting cycle in the residual forest. On the other hand, it also asserts that it can confidently meet its future supply requirements beyond the second cycle, because of its practice of sustained-yield management. There is a need, however, to verify whether association members or TLA holders do indeed practice sustained-yield management, or whether their future participation in the industry extends beyond the second cutting cycle in the residual forest. Like most of their predecessors in previous forest concession areas, will they also withdraw from the "industry" after the second cutting cycle?

## 2. *The ecological crisis view*

Proponents of the ecological crisis view maintain that because of the imperiled state of the environment, the instability of the ecology, and the accompanying social costs, the nation cannot afford to lose its remaining natural forest. In contrast to the program of action associated with the other position, they propose a total logging ban or moratorium as embodied in Senate Bill No. 706.

Perhaps owing to the heterogeneity of those with an ecological view of the problem and the relative absence of a coalition among them, no formal consensus has yet emerged from the various groups. The profits obtained by loggers are alluded to but proponents of the view are still silent on the relative roles of the

<sup>26</sup> Intensive reforestation of denuded and unproductive brushlands is imperative. To meet a supply shortage of 1.2 million cubic meters of wood, for instance, requires at least 160,000 hectares of fast-growing timber plantations.

state, logging concessionaires, and migrant settlers in bringing about a forestry crisis.

Aside from the absence of a systematic analysis of the problem, the "ecological view" has not addressed the question of how the country will meet its immediate and long-range wood demands. The lack of attention given to alternative strategies, which should complement a much needed conservation thrust, springs from an identification of demand for wood products merely with the interests of the profiteers in the industry. While indeed, this sector stands to gain from short-term commercialization, the timber requirements of the general population are also important.

Over the next few years, as the forest resources of the country continue to diminish, an endemic conflict between those who hold the "timber shortage view" and the proponents of the "ecological crisis" will intensify and will be waged at the level of the state. While recognizing the qualitative difference in the interests of some segments of each position (e.g., the wood industry on one hand, and the environmentalists on the other), an urgent comprehensive strategy will have to consider the more valid arguments of each group. Some of the issues involved in formulating such a strategy are discussed in the next section.

#### IV. CONCLUSION: CRITICAL ISSUES TO BE RESOLVED

The forestry crisis poses at least five issues confronting the present administration or any aspiring political force. State response to these issues can, together with organized popular strategies, determine whether the threat of an imminent timber shortage and a damaged environment will persist.

##### 1. *On the sources for the immediate demand for wood*

It is extremely important to address questions of where to secure the present and medium-term timber requirements, which particular requirements are to be satisfied, and to what extent and under what conditions they are to be satisfied. Because the existing tree plantations are inadequate and have predetermined uses while most of the residual forests can only be harvested after the medium term, the remaining natural forests and imports are the only possible sources for the country's current and medium-term requirements. If imports are considered a drain of precious foreign exchange, then immediate timber requirements shall come mainly from the remaining old-growth forest. Like the present partial log ban, the proposed selective log ban (which permits logging in areas with more than 40 per cent forest cover) will merely reduce the rate of exploitation within an unspecified period.

With respect to demand, there has effectively been no policy which restricts exports on behalf of domestic consumption. Differential export taxation has only partially restricted the export of logs, while export quotas have been subverted through undervaluation and illegal shipment. Given the resistance of the wood industry to the planned ban on log exports, it is expected that a proposed plan to limit, if not ban, the export of semi-processed timber products, like lumber,

will generate as much, if not greater resistance. Thus, if timber demand cannot be reduced and existing policies are maintained, both immediate domestic and external timber requirements will have to come from the remaining natural forest. This will surely deplete the country's stock of wood.

Portions of the remaining natural growth forest may possibly be spared from further assault if two out of the three options within the present Forestry Master Plan are selected. The said plan provides three options with respect to the old-growth forest: (1) continue logging in the old-growth forest; (2) protect areas in the old-growth forest which should not be logged, after a transition has been made toward selective logging of residual forests on a TLA basis by the end of December 1990; (3) stop logging altogether in these old-growth forests and incorporate them in a national protected area system by January 1990, after a transition has also been effected as in (2). While the Master Plan appears promising because two of its options are premised on forest conservation, the actual choice of option will be the outcome of struggle within the bureaucracy and outside it. Moreover, it should be noted that the TLA holders play a critical role in the transition and the protection of the natural growth forest.

If the state does not have the capacity to strictly enforce the TLA terms (on selective cutting, sustained-yield practices, and replanting) or to simultaneously undertake a massive reforestation or tree plantation program, the loss of the remaining dipterocarp forest will be inevitable. Moreover, if the state cannot reduce the forest area under TLA or impose a ban on log and lumber export, then the shortage may be expected at an earlier time. The failure of the government to undertake the necessary actions while providing the country's immediate timber requirements will, therefore, intensify the so-called timber shortage and ecological crises.

## *2. On the state's weak enforcement capacity*

Given the imperatives to maintain a productive forest, regenerate the damaged environment, and prioritize the various demands for forest products, the state must have the commitment and capacity to enforce TLA requirements, limit or set a moratorium on forest exploitation, mobilize support and resources within the country, and effectively meet the resistance of private interest groups. Such capacities, unfortunately, do not seem to be present within the relevant state agencies.

In a 1988 multi-sectoral meeting, government officials of the Department of Environment and Natural Resources (DENR), policymakers, academics, and various business interest groups formulated a joint position against the Senate bill proposal for a total logging ban or moratorium. Critical in forging this position, the logging and wood-processing interest groups succeeded in pushing their view that the industry is overregulated and that since government's enforcement capacity is inadequate, especially in preventing the deforestation activities of upland settlers, it should not waste limited government resources in regulatory activities but instead concentrate on development-oriented programs in logged-over areas. Apparently, this idea underlied the department's own rejection of the total logging ban which

pragmatically argued solely on the nonviability or nonenforceability of the proposal. There is, therefore, an implicit acceptance of the department's weak enforcement capacity as a given.

Given the weakness of state enforcement capacity in the face of an urgent need to avert a crisis, the task of environmental protection and conservation has fallen on local communities within or near forested areas. With its potent enforcement capacity, the New People's Army has not taken up the conservation issue, but instead some units even partake of portions of the rents by taxing logging and sawmill firms.<sup>27</sup>

The efforts of some local communities to block logging operations and the passage of logging trucks, however, have been contradicted by state institutions. Local courts, for instance, have ruled that such actions are contrary to the legal property rights bestowed by the national government. In some cases, these injunctions have also been complemented by the violence inflicted on the resisting communities by the concessionaire's private security force and military soldiers.

### 3. *On the primacy of natural forest conservation and the role of forest land occupants*

While a strong state enforcement capacity is absolutely necessary, it is not sufficient to ensure that the remaining dipterocarp forest will be protected. Even if it is enforced, the practice of selective logging has certain limitations. It can prevent neither the damage to residual trees nor the removal of the best seed bearers. Selective logging, in other words, cannot maintain genetic quality and effectively regenerate the forest stand [26].

With the limits to natural forest regeneration, the practice of sustained-yield management in the form of planting new species eventually results in the replacement of the natural forest by commercial tree plantations. The optimism of the World Bank for the viability of monocultural eucalyptus or pine tree plantations is, however, not shared by some foresters who view with great uncertainty the long-term economic and ecological prospects of large-scale exotic tree plantations, particularly in the humid tropics [24]. There is apparently no substitute for the naturally-grown dipterocarp forest.

Since the old-growth forests are located and serve as critical watersheds, there is no choice but to foster the value of conserving these forests. Legal TLA contracts will then have to be withdrawn in these areas, and all logging and extractive activities should be stopped. Cultural minorities and long-time residents who consider these areas part of their ancestral domain may not necessarily have to be prevented from obtaining their subsistence requirements from the forests if their activities do not affect the sustainable growth of the forest.

But who will be responsible for protecting these areas? The state with its limited enforcement capacity is not in a strong position to protect the old-growth

<sup>27</sup> Various factors possibly account for the behavior of the NPA, such as the imperative to internally finance its activities, the implicit ideological view that the situation in the forestry sector does not reflect the primary contradiction which revolutionary action must address, and the nontreatment or insignificance of non-produced means of production within its political economic framework.



forests. Groups living in these areas have a greater potential of being mobilized. But what could be their interest in protecting the forest apart from the abstract notion of preserving the nation's patrimony? The potential of their protective role can only be actualized if they have access to the residual forest lands around the old-growth and can depend on agricultural activities in parts of these lands for their subsistence. This then requires redefining the access rights of different parties in these lands. At present, TLA holders have legal access to most, if not all of the residual and old-growth forests.

#### 4. *On the financial and organizational requirements for forest renewals*

In financing the necessary reforestation, the government apparently depends more on external funds than on internal sources. The only current internally-funded plan, the Forest Renewal Trust Fund, is drawn from TLA holders who are supposed to deposit an amount for undertaking the required replanting within their concession. Since the fund merely ensures compliance with the replanting requirement of the TLA, its coverage is limited to areas presently under the TLA.

Very little government budgetary resources are directly applied to reforestation because a substantial chunk (40 per cent of the 1988 budget) is annually allocated for debt servicing.<sup>28</sup> While external debt payment is an apparent constraint, there is internally no call for "burden sharing" among those who have benefited from past forest exploitation. Probably because of its view on the culprit behind deforestation, the government has not conceived of any plan to mobilize the wood-processing industry and major importing nations to share in the cost of forest renewal.

The state has shied away from taxing past TLA holders and logging violators partly because of the possible political repercussions of such an act. Instead, it opts to depend on the World Bank, Asian Development Bank, and most especially on Japanese official development assistance (ODA) for whatever financial support and type of reforestation program. It should be noted, however, that environmental conservation has not been the preference of ODA flows.

On the organizational agency for forest renewal, present policies as well as the proposed Master Plan give the TLA holders priority in the extraction, development, and protection of the forest. The preference for TLA holders is guided by the legality of the TLA contract and the economic pressure of supplying both domestic and international timber demand. They also have the technology for timber extraction and processing. The local population, on the other hand, are neither organized nor technically equipped to meet timber demand. Furthermore, they may be too tied up with eking a living to bother about seriously regenerating the forest. Some of those in their ranks can even be contracted to cut trees illegally from both the old-growth and residual forests to augment their income.

However, to continue denying the local population access on the basis of the

<sup>28</sup> The debt-for-nature program of the World Wide Fund (WWF) for Nature with the Philippines cover U.S.\$2.0 million of the country's external debt. In promoting this program, WWF depends on private donations, the magnitude of which is probably the constraint to its objective (Kemf [12]).

above factors, does not only transgress against the value of equity but reinforces the denudation of the forests through illegal means. In addressing both poverty and the environmental problem, it is almost imperative to develop integrated schemes which will enable the community to provide its own subsistence while regenerating the forests. This means that over the short run, while the environment is still being upgraded and while neither the residual forests and upland agricultural areas are productive for harvesting, these communities will have to be organized in search of alternative sources of income.

5. *On the valuation of domestic forest resources versus wood importation*

The role of the remaining natural forest as the primary source of timber in the short run is based on the assumption of the wood products association and the DENR that imports are more costly than available local supplies. In terms of market prices, the assumption is empirically valid. However, the valuation of natural resources in market terms has certain limitations. The domestic price of timber, for instance, does not reflect the damage or loss of resources associated with its extraction. It also fails to provide an assessment of the value of the resource not only in the current ecosystem but also in that of the future. The limitations of market valuation, in other words, indicate that it exists separately from and possibly also in contradistinction to alternative valuation processes outside of the market framework.

For some natural scientists, environmentalists, farming and fishing communities, the value of the natural forest lies in the function it performs for human existence or for the life of this planet. This distinct valuation implies that the forest as an essential part of the ecological system has value which is realized not in the market but in its non-use or non-commoditization. As an alternative basis of valuation, this view is definitely a threat to commercial interests, and poses certain demands on society, if not on the world community. For instance, the adoption of this perspective leads to the conclusion that the loss of an important ecological zone weighs much more than the cost of imports.

Aside from threatening the current income source of loggers and wood exporters, this conclusion also requires the rest of society to bear the burden of relatively higher import value within the medium term in order to subsidize forest or environmental renewal.

Dependence on imports for domestic forest resource conservation, however, is based on a parochial and short-sighted strategy and on faith in technological innovation. The strategy merely replicates the practice of developed countries to conserve their own natural resources while depleting those of endowed but poorer nations. The availability of other sources as traditional ones are exhausted probably accounts for the absence or slow development of timber substitutes. The depletion of the resource base of former timber-supplying countries has apparently not induced technological developments. The limitations of the nation-state approach to resource conservation and technology development, therefore, call for a global approach to the problem of deforestation and mankind's present and future timber requirements.

In the meantime, it is urgent for Filipinos in government and popular organizations to begin mapping alternative strategies which address the related problems of forest resource depletion, environmental destruction, inequitable access to forest lands, and poverty in the uplands, which are cognizant of political, ideological, and pragmatic considerations.

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