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A Matter Of Survival

By

Roberto Millena
INTRODUCTION

In November 1991, flashfloods measuring 12-foot high raged into the province of Leyte in Eastern Visayas, exacting one of the heaviest tolls in terms of lives lost and property damaged in any natural calamity that has struck the Philippines. Over 6,000 persons, mostly children, were killed and tens of thousands of others were left homeless. Damage to property was estimated at over half a billion pesos.

The rapid deforestation of Mt. Amandirin, located about 10 kilometers from the southern part of Ormoc City, which accounted for more than 80 percent of the total casualties, was immediately pinpointed as one of the major factors for the tragedy. Newly-cut trees, believed to be part of a massive illegal logging operation in the province, were among the debris swept by the flood waters into the Ormoc Bay.

The Department of Environment and Natural Resources (DENR) said that illegal logging could not have precipitated the devastation, but pointed out that forest lands in the area had been converted into agricultural lands as early as 1952, and thus made the upland soil highly erodable.

Soon after, though, the Government launched a crackdown on illegal logging with President Aquino ordering the release of P1 million from the DENR’s intelligence fund for the prosecution of illegal loggers and their coddlers responsible for the denudation of forest lands.

But logging, whether under licence or illegal, was just the tip of the iceberg insofar as threats to the country’s environment and natural resources are concerned. The November 1991 disaster had in many ways aroused awareness on an effective management of the environment and natural resource sector, or whatever is left of it.

Overview

Economic "sectors" are usually defined as a set of distinguishable institutions contributing to the economic product of society. The environment and natural resource "sector" is better defined as a set of processes of enhancement, depletion or degradation of the stock of social capital which either foster or threaten the sustainability of economic development. In the Philippines, certain processes have been judged of greatest economic significance to the economy, where policy changes and other interventions could achieve significant enhancement of
natural resource management and thus make a substantial contribution to the country's prospects for sustainable development. These processes include the disappearance or degradation of forests, which once covered nearly one-half of the Philippine land area; the erosion and changes in hydrological regimes which result from the conversion of forest and other land uses, notably shifting cultivation and pasture; the conversion of mangrove swamps to fishponds; degradation of coral reefs; and depletion of nearshore fisheries through overfishing and destructive techniques. These problems are linked in three ways: (a) all involve use of common access resources which in theory are publicly-owned and managed, but in practice have been subject to nearly unrestrained private exploitation; (b) all involve the livelihood of a large, impoverished and largely neglected segment of the rural population, including upland farmers and small-scale coastal fishermen; and (c) all are related to each other through the physical or biological links of common ecosystems.

Other processes, such as depletion of mineral resources and air and water pollution, exist in the Philippines and are serious in particular areas, but have been regarded as less significant economically. The causes of these problems are relatively obvious, most frequently arise from point sources, and strategies for solution involving a combination of regulation and investments are more readily identified, even if their implementation remains beyond the capacities of the Philippine government at present.

Rural Natural Resources Management Issues

Rural natural resources play an important part in the Philippines' economy. Agriculture, forestry and fisheries together employ half the labor force, earn one-fifth of export revenues and contribute about one quarter of gross domestic product. In addition, over 60 percent of the populace live in rural areas. In terms of national comparative advantage, the agricultural sector has been shown to be a more efficient earner and saver of foreign exchange than the industrial sector. However, a long-term process of resource degradation and depletion threatens the sustainability of this economic role.

In the Philippines, half of the land is classified as "Alienable and Disposable" (A&D), which may be privately owned, and the other half, mostly above the 18 percent slope, as public "Forest Land". Of the 15 million hectares of Forest Land, only six million ha have significant tree cover, and only one million ha is productive, old-growth forest. Government underpricing of rights to harvest the public forest has induced excessive logging, and discouraged interest in reforestation of plantation forestry. Logging in the uplands has opened new areas for settlement through road creation and partial clearing of forests. It has also reduced to critically low levels the forest habitat of the many species of flora and fauna endemic to the Philippines, and directly contributed to short-run soil erosion.
problems. It is mainly due to logging (licensed or illegal) that the old-growth dipterocarp forests, the most valuable commercially, have shrunk from ten million ha in the 1950s to only one million ha today.

Rapid population growth, resulting diminution of unoccupied arable lowland, inequitable land distribution and landlessness, and general impoverishment create a pressure for migration. Because of the availability of semi-cleared land in the uplands, on which immigrants can build a better livelihood, the direction of migration is to the uplands, as well as to the urban areas. As a result, today about 18 million people, one-third of the total Philippine population, live in the upland areas, of which perhaps 8 million are farming on Forest Land. Their annual per capita incomes of such upland farmers average about P2,000 (US$95), less than half the official poverty line for rural residents. Continuing immigration accounts for the high rates of growth in upland population, as much as 3.5 percent in logging concession areas, compared with a national average of about 2.4 percent. However, a high proportion of forest inhabitants are members of (non-hispanicized) ethnic minorities, whose claims to "ancestral lands" often predate Spanish occupation.

Immigrating farmers, as well as most long-established upland populations, employ extensive subsistence farming techniques (mainly shifting cultivation of rice, corn and root crops). Shifting cultivation is employed because it minimizes labor and cash input requirements by substituting land for labor and fertilizer. In areas of open access, which applies de facto to most upland areas including all the newly settled land, lack of secure tenure or titling provides no incentive for land improvement or nutrient maintenance as the viability of shifting cultivation diminishes. These farming techniques tend to promote very high rates of erosion on some four million ha of land already occupied. (This is not true of all upland farmers--long-established indigenes frequently employ sensible conservation techniques, and in general display more concern for the land local environment than immigrant groups.)

In the upstream areas of watershed, erosion leads to direct loss of soil and nutrients, abandonment of fields, and compensatory conversion of further forest areas to cultivation. Downstream, erosion and unchecked rainfall runoff contributes to siltation, causes alternate floods and water shortage, and critically reduces the efficiency of water use. In combination, these effects are damaging to water conservancy systems in the lowlands, reducing productivity and increasing costs of maintenance and restoration of the irrigation and hydropower systems. For example, an upstream sheet erosion rate of about 50 t/ha/year in the Magat watershed has reduced to 25 years, the effective life of a reservoir originally designed to last 100 years. Deteriorating productivity in the lowlands contributes to the migratory "push" (completing a vicious cycle). The degradation of the uplands thus entails high social costs.
Like the uplands, coastal and near-shore fisheries are a public resource, the open-access nature of which has attracted the most impoverished elements from adjacent agricultural and coastal areas and induced them to use non-sustainable extraction techniques. Most of this population (a labor force of around 770,000 persons) is dependent on the near-shore (municipal) fisheries, which are extremely sensitive to two habitats which figure in different parts of the life cycles of various fish, namely the mangrove forests and the coral reefs. The accelerated cutting for fuelwood and conversion of mangrove areas to brackish water fishponds have reduced the 450,000 ha of mangroves thought to exist in 1918 to 240,000 ha in 1980 and 150,000 today. Coral reefs have been destroyed by the cutting and export of coral and severely damaged by certain fishing techniques. Only 30 percent of the remaining reefs are considered to be in good to excellent condition. Near-shore habitats are also ecologically linked with the inland and upland areas: increased water turbidity and reduced light penetration due to soil erosion reduces growth, or even kills through smothering, the off-shore coral reefs and seaweed beds. Destruction of coastal mangrove forests opens interior areas to increased typhoon damage, creating a backward linkage.

Most of the population employed by the fishing industry are poor, and have few livelihood alternatives which do not add to excessive pressure on the resource base. Overfishing beyond the sustainable yield, and use of destructive fishing methods, are general consequences. Competition between commercial fisheries (mainly larger boats, supposed to keep well off-shore), and the small-scale "municipal fisheries" (with boats under three tons), is also severe, even in the near-shore areas. The municipal capture fisheries account for 75 percent of employment in fisheries and for 50 percent of annual production, while the commercial fisheries employ only 6 percent of the workers but catch 26 percent of the fish (the remainder being aquaculture).

Macroeconomic Consequences

The likely consequence of "policy" of inaction on these issues are quite clear: the primary forest will disappear within a few years, as 7-8 million cubic meters are extracted each year (under license or illegally). The residual, left in poor shape from the first cut, will be further degraded as continued migration from the lowlands and the upland population growth adds to the existing pressure. By the year 2000, perhaps one-fourth of the residual will remain, but with little commercial value; the remaining area will be under shifting cultivation, grassland, and brush. Possibly 30 years from now, long before hardwood forests planted today could mature, timber suitable for furniture or construction use will have been exhausted, and fuel and pulpwood will be in short supply. Fuelwood demands will long since have depleted the remaining mangroves, and the areas will have been converted into fishponds to partially offset the expected decline in the coastal fisheries, due to the excessive fishing pressure.
and reef destruction.

The economic losses arising from this scenario (within the span of a single generation) include relative* losses to the future Philippine population arising from excessive exploitation of resources by the current population, as well as absolute losses arising from unproductive or destructive uses of resources. Even though quantification of these costs is quite difficult, because: (a) understanding of some of the biophysical processes involved in degradation remains incomplete; and (b) insufficient monitoring of various forms of degradation in the Philippines prevents extrapolation from individual cases or pilot studies. Nevertheless, the magnitude of social costs is certainly enough to justify serious concern.

For certain losses to the future population, it is possible to cite indicative magnitudes. It is clear that soil erosion is leading to significant losses of fertility in seven to eight million ha of upland area which will eventually be needed for crops or tree plantations. In areas of overgrazed grassland, as in the Magat Watershed, annual losses of soil and nutrient may cost more than P1,000 (US$50) per ha, on a replacement cost basis. There are about two million ha of open grasslands nationwide, indicating an annual loss approaching P2 billion (US$100 million). Downstream losses—drastically shortened life of dams, increased maintenance and rehabilitations costs for irrigation facilities, and loss of crops due to flooding or decreased dry season water availability—are also significant. Estimates of current and future annual losses to fisheries arising only from excessive fishing pressure (excluding destructive methods) are in the range of P1 billion—P1.8 billion (US$50—90 million). Loss of the remaining habitats which harbor the diverse and often unique flora and fauna of the Philippines entails future losses of potential tourist revenues (an industry which now annually generates over US$600 million in receipts, and which has been growing at 17 percent per annum), and incalculable losses associated with the potential development of medicines, pharmaceuticals, various biochemical products and planting materials based on the genetic pool now preserved in tropical forests and coral reef environments. On the other hand, protection of resources from rapid depletion will also entail significant costs. For example, as a measure to relieve excessive harvesting pressure on domestic forests, the Government has recently liberalized import of logs. In 1989, the first year of liberalized imports, reportedly about 600,000 cu m of logs were imported, at a foreign exchange cost of over US$130 million.

There are also significant fiscal implications: full rental recovery on timberlands alone would yield additional Government revenues of up to P3.5 billion (US$125 million), or 0.4 percent of GDP, equivalent to nearly 3 percent of National Government tax revenues. Not all of this would be collectible, however: conversion of production forests to protected status, which could result from legislation in Congress or administrative decision by DENR, would involve a sacrifice of potential tax

* The asterisk indicates that the term is used in a statistical or mathematical context.
Institutional Issues

The 1987 Constitution gives implicit recognition to management of the environment, linking the better use of natural resources to the goals of expanded productivity, sustainability and equity through open democratic processes and distributive justice. The agencies with the most direct responsibility for the achievement of these ideals are the DENR, the Department of Agriculture (DA) and the Department of Agrarian Reform (DAR). The establishment of DENR represents a major effort to create a natural resource and environmental lead agency. DENR is responsible for management of public lands, including forest land and coastal mangroves, whereas DA’s efforts are confined to farmland. Management of coastal fisheries by default falls largely within the authority of DA’s Bureau of Fisheries and Aquatic Resources (BFAR), although in principle small-scale near-shore fisheries are supposed to be under municipal control. DAR’s focus has been on agrarian reform in rice and corn areas and limited areas of resettlement in the uplands, although it is now charged with the overall coordination of CARP, which is scheduled to distribute some seven million ha of public land over the next few years.

At the national level, the most significant organizational issues relating to natural resource management stem from inappropriate mandates, resource limitations, confusion arising from reorganization, and potential for corruption of the agencies charged with managing natural resources, and from the ineffectiveness of local governments and user groups which still need to be empowered. DENR’s predecessor was primarily a regulatory agency rather than a developmental one, although it was ineffective in performing even this more limited role. It viewed the management of the public Forest Land as its exclusive responsibility, was unwilling to recognize ancestral land rights of indigenous Filipinos and the de facto rights of recent immigrants to the uplands, and resisted attempts by other agencies to service the upland population. However, DENR has begun to take a developmental role, which has been well articulated in its Philippine Strategy for Sustainable Development, corresponding Action Plan, and presentations to international donors at a Mini-Consultative Group Meeting on the environment held in Manila in February 1990. Nevertheless, the UNR remains poorly staffed and equipped to provide the range of services required under its current mandate, both in meeting the needs of upland farmers and its traditional regulatory role. The nucleus of a service program exists within DENR’s Integrated Social Forestry (ISF) program, but it requires strong leadership, training and the resources for a major expansion. Poor mobility...
Communications limit the ability of DENR field staff to perform their traditional functions as forest managers, much less provide services to agricultural communities in which they have comparative advantage. DENR is also handicapped in some important respects by inadequate legislation and regulations.

Conversely, DA, although long developmental in orientation, concentrated on the lowlands and lacks the expertise (not to mention the staff, travel budget, transport and communications) required to contribute to agricultural development in hilly lands. It has recently initiated a new thrust toward support of upland agriculture, but is not yet equipped to challenge DENR's monopoly on service provision to populations using public land. The field organization absorbed from BFAR workers from the same deficiencies in relation to the artisanal fisheries. In general, the services which are required in the upland and coastal communities include: (a) community organizing; (b) assistance in securing or improving resources; (c) research and extension of appropriate production technologies; and (d) modest provision of credit or equivalent access. DAR, despite its focus on land tenure issues and administrative role in CARP, is directly involved mainly with land classified A&D. DENR has the legal mandate to issue the limited instruments (renewable 25-year lease) that are institutionally authorized for utilization of public Forest Land.

Effective provision of such services can only occur at the community level, yet power and authority in the Philippines have traditionally been concentrated at the apex of the administrative hierarchy. Hence, the ongoing government reorganization, which involved a commitment to regionalized management of line agencies, increased empowerment of local governments, and strengthened collaboration between government and private organizations (NGOs) at all levels is a positive development. Although the most effective measures to build local capacity for resource management have been associated with NGOs working from bottom-up, the number of NGOs with effective field capabilities are few, and fewer still are the NGOs able to serve as an effective resource to strengthen other NGOs.

The potential for corruption is particularly high in those agencies directly responsible for allocation, management or regulation of natural resources use. Lacking proper pricing of rights, profit or rent from obtaining and maintaining such rights is sufficient to support high levels of illegal payments. Inaction of onerous rules and regulations, interpreted with administrative discretion, gives officials the power to command payments. Unless the system for allocation, management and regulation of resource use is first changed to reduce reliance on administrative discretion and also to increase statutory resource user fees to levels commensurate with market rents, government decentralization programs may simply centralize the locus of corruption.

Of course, incentives for unlicensed access, illegal
Exploitation, and non-payment of user fees would remain and possibly even increase—consequently there is no escaping the need for thorough monitoring and enforcement programs. This need is increasing as public policy in the forestry sector is shifting from an emphasis on regulation of production to protection from exploitation. Although the extent of illegal logging is a matter of conjecture, it is possible that the volume of logs removed illegally (including illegal practices of licensed concession holders) approaches in size the legal harvest. Even though DENR has broad police powers, there is insufficient disincentive for illegal practices because:

(a) DENR has neither arms, vehicles, nor communication systems to match those of illegal operators, nor does it get systematic police or military support;

(b) DENR must prosecute cases of violations in court, yet is unable to obtain convictions due to insufficient and poorly-paid legal staff, unsympathetic courts, and a legal system offering many opportunities to the defendant;

(c) DENR's monitoring is confined to transport arteries; it is not equipped to monitor on-site logging activities or lumber mills; and only succeeds in identifying and prosecuting low-level operatives; and

(d) DENR's monitoring systems are not designed to minimize lower-level staff collusion in illegal activities.

The legal and regulatory framework which supports the activities of Governmental institutions is too frequently ineffective, outdated, unrealistic, or inconsistent with sound policies. Laws too often were written with no consideration of enforceability, or have never become enforceable due to lack of enforcing regulations or necessary budgetary appropriations.

Certain issues, the problems with the legal framework appear quite intractable. For example, the Philippine land law has formal and local common law components, which are often mutually inconsistent and provide no basis for recognition of ancestral property rights, however ancient in origin. Moreover, Constitution and other laws flatly forbid any alienation of Forest Reserves, and limit administrative powers to reclassify land for non-forest uses, no matter what actual uses prevail. In other words, the law is mainly obsolete: for example, the National Parks enabling legislation dates from 1932 has been modified by a large number of acts, executive orders, proclamations, and presidential decrees since that time. Enabling legislation and the gazetting legislation require a total overhaul. The legal backing for DENR's powers to protect forests is also flawed: e.g., DENR is given nominal police authority, but not the authority to bear arms or to draft the doctrines of law enforcement agencies; fines and penalties prescribed by earlier laws have been trivialized by inflation; liability and penalties for violations are focused on the
cutting and transport of forest products, rather than marketing and processing points; and on individual violators rather than the sponsoring corporate organizations.

Statement of Policy

On May 16, 199 the Government issued a statement of policy on environment and natural resources sector adjustment, setting out the focus and broad objectives of its policies and programs with respect to environment and natural resource management, the policy adjustments that were under way, and the steps being taken to strengthen the institutional framework for implementation of these policies. The statement was in line with the Government’s request for a US$158-million loan from the World Bank to support the policy reforms required to improve management of the country’s natural resources.

It followed the formulation of a Philippine Strategy for Sustainable Development (PSSD) and a corresponding Action Plan. The PSSD, as endorsed by the Cabinet in November 1989, reflects extensive studies and discussions of the Philippines’ environment and natural resource sector and related issues with national and international experts. It was presented to and discussed with representatives of international donors and NGOs at the Mini-Consultative Group Meeting held in February 1990.

In seeking approval for the environment and natural resource sector adjustment program loan from the World Bank, the Government committed to a series of actions in the medium-term which will foster the growth and development of the Philippines and which will form the framework for the PSSD. In order to provide a stable macroeconomic environment in which the PSSD can succeed, the Government further committed itself to pursue appropriate policies in such areas as exchange rate management, public sector management, fiscal balance, and price stability which are conducive for the long-term development of the economy. Implementation of the PSSD will be a long-term process, and many specific actions will entail further study, public debate, congressional decisions, and/or prior institutional strengthening. Alternative actions can be taken in pursuit of the same ends, and the social, private and budgetary costs involved all limit the choice of actions and the pace of change. Within these constraints, many choices have already been taken to deal rationally with the main issues, and further steps during the 1991-1992 period have been identified. These include:

(a) Establishment of an Effective Integrated Protected Areas System. Congressional authorization to develop an IPAS was received in 1989. To date, a task force and associated consulting teams has been appointed to determine and survey proposed sites, prepare and submit required legislation, and prepare management plans for ten priority protected areas. Field work began in June 1990 and a draft of enabling legislation which meets international standards has already been prepared. It is
anticipated that such legislation will prohibit pasture leases in parks, reserves, critical watersheds, and all areas with slopes greater than 50 percent. In the interim, DENR has already initiated a review of the status of nine pasture leases standing in the Magat Watershed (designated as a critical watershed) and issued notices of cancellation to seven leaseholders whose leaseholds lie on slopes draining to the Magat River. A Special Order was also issued creating a committee to review pasture leases nationwide, especially with regard to pastoral land claims.

(b) Proper Resource Pricing. As prescribed by the 1987 Constitution as well as DENR administrative order, no new TLA permits (logging concessions) have been or will be granted. In addition, the utilization of timber resources within any public forest area except those within existing TLAs would henceforth be undertaken under Timber Production Sharing Agreements (TPSA) to be granted through competitive bidding, or under a Community Forest Management Agreement. As a trial of such procedures and a basis for assessing appropriate levels of public charges for timber harvesting, three sites covering a total of 1,594 ha have been identified and inventories of harvestable timber have been authorized. At least two of these sites will be offered to prequalified bidders in public bids to be held before March 1992, if commercial harvesting timber is still legally authorized at these locations.

Legislation prescribing an increase in the forest charge to at least 20 percent of Manila wholesale value of logs extracted has now been passed by Congress. Prior to this passage, DENR, with the authorization of the President, has already issued Administrative Order No. 62, Series of 1990, imposing an Environmental Fee equivalent to that prescribed in the legislation on all existing TLA holders. Implementing regulations provide that inability of TLA holders to provide evidence of full payment of assessed fees will be considered sufficient grounds for immediate cancellation of TLA permits. To monitor compliance, DENR, on a quarterly basis, will compile complete provincial statistics on the volume of logs of each quality extracted from TLA concessions and the corresponding fees received.

Under Administrative Order No. 21, Series of 1988, DENR has also required TLA holders to put up a reforestation deposit of P10,000 per hectare which serves as a guarantee to ensure that funds are set aside to carry out reforestation in logged over areas. To strengthen this scheme, Administrative Order No. 1, Series of 1991, was recently issued to (a) increase the size of the deposit to P12,500 per hectare to cover costs of two years of plantation maintenance and ensure survivability; and (b) impose a three-year surety bond of this amount as a remedy for non-compliance.

(c) Enforcement. In order to increase the effectiveness of Government's enforcement of law and regulations pertaining to forestry, we have drafted plans for introduction of an improved
monitoring system and an upgraded enforcement program.

(d) Property Rights Reform. DENR has issued an administrative order improving the tenure value of the Stewardship Contract (CSC) to the maximum extent permissible under the 1987 Constitution, and has issued appropriately revised contract forms. A special contract form along with corresponding guidelines has been issued for CSCs applicable for mangrove areas. An administrative order and guidelines defining a new instrument granting property rights over trees in reforestation areas to community groups contracting for post-establishment maintenance have also been issued. The CFSA “terms and conditions” contains a provision for the non-waiver of the rights of the indigenous cultural communities to the ancestral domains. In addition, under its Community Forestry Program (CFP) which was launched in late 1989, the DENR has begun implementation of the program at eight sites in 1990; it sought to add at least 20 additional sites in 1991.

Pending the passage into law of the proposed legislation implementing the Constitutional mandate on the recognition and protection of the ancestral domain rights of the indigenous cultural communities, the DENR has initiated activities in this area of concern through administrative issuances. Special Order No. 31, as amended, and Administrative Order No 03, as amended, Series of 1990, set up a task force to assist the delineation of ancestral domains in the Cordillera Autonomous Region and recommended mechanisms for turning over ownership rights and management responsibility for the resources contained therein. In addition to this, all regional offices have been instructed to delineate on maps the various claims of indigenous cultural communities in the areas. Indigenous Community Affairs Desk (ICAD) officers who completed a training on tribal rights will discharge duties and responsibilities at each regional office, with a major task of evaluating, processing and delineating ancestral domains. This initiative is a concrete acknowledgement by the DENR that indigenous communities have a strong Constitutional right to the land they traditionally and historically occupy.

(e) Support Services on Forest Land. DENR recognizes that the population presently residing on public Forest Land is in large part there to stay; that earlier policies of ignoring or evicting them were counterproductive; and that, in the interest of utilizing them as a positive force in resource conservation, it is crucial that issues of their livelihood, tenure, and necessary technical, economic and social services be addressed by the Government. In principle, community services should be provided by the functionally-relevant agencies, regardless of where the communities are located. In practice, service provision for all agencies continues to be constrained by the existing geographical distribution of agency staff, difficulties of redeployment, limited budget for redirection of effort, and shortages of staff with appropriate qualifications. Because DENR’s mandate for management and protection of public resources requires that it promotes sustainable development of communities
residing on public Forest Land, DENR in the short run will take a lead role in stimulating and coordinating service provision for such communities. In so doing, it will actively promote a transition to coordination of service delivery by local governments, provision of agricultural extension by the DA, and provision of health, educational and other services by the appropriate agencies. DENR will continue to make contractual use of NGOs whenever the latter have unique skills to offer, but particularly in training, community organizing, local coordination of service delivery, and monitoring of enforcement and reforestation programs; and to this end will continue to deepen to the municipality level its process of identification and registration of NGOs. In subjects such as community organizing or agroforestry, where DENR, DA and DAR have common training requirements, DENR will assist in implementing a common training program for regional and local staff of three agencies.

Integrated Social Forestry (as well as Community Forestry) is DENR’s lead program for increasing the sustainability of livelihood of communities residing on Public forest land. As part of reorganization, DENR has already taken steps to give ISF new administrative independence and prominence, and to enlarge and enrich the objectives and capabilities of this program under recently-issued ISF and CF guidelines. An entirely new category of civil service positions (Social Forestry Technicians) has been created, and so far about one thousand staff have been recruited and trained to serve the non-traditional functions mandated by the new guidelines. A Census of Forest Occupants were carried out in 1989 to identify the potential clientele of these programs, and an advisory task force including non-governmental experts has been set up to evaluate the preliminary results and take corrective actions necessary.

Conclusion

There has been insufficient evaluation of the costs and benefits of various forms of interventions in the uplands or coastal area, in the Philippines or elsewhere, to justify strong recommendations of any particular packages of interventions for public or private implementation. Nevertheless, there is mileage to be gained by examining some of the discreet choices among policies and technologies proposed for dealing with the problems of degradation and depletion. Aside from the relative magnitudes of net economic benefits, the impact on the distribution of incomes (that is, the poverty or employment problem) needs to be identified.

Likewise, the net social benefits of any program of interventions to protect the environment must be weighed against the net social benefits resulting from inaction, that is, the absence of changes in policies or investments to remedy the effects of private exploitation. Both an intervention program and inaction produce time streams of benefits. In general, if degradation and/or depletion is occurring, inaction produces a
"front-loaded" benefit stream, larger in the short run and declining or disappearing in the future. A useful intervention program is likely to involve reduced or negative social benefits in the short run, rising to higher levels in the future. The net benefit stream from a program which targets "sustainability" may rise to an equilibrium level which is maintained indefinitely.