



Forestry Department

Food and Agriculture Organization of the United Nations

FOREST RESOURCES ASSESSMENT

NATIONAL FOREST ASSESSMENT:

FORESTRY POLICY ANALYSIS

PHILIPPINES

by

Antonio P. Carandang

Manila, July 2005



The Forest Resources Assessment Programme

Forests are crucial for the well-being of humanity. They provide foundations for life on earth through ecological functions, by regulating the climate and water resources, and by serving as habitats for plants and animals. Forests also furnish a wide range of essential goods such as wood, food, fodder and medicines, in addition to opportunities for recreation, spiritual renewal and other services.

Today, forests are under pressure from expanding human populations, which frequently leads to the conversion or degradation of forests into unsustainable forms of land use. When forests are lost or severely degraded, their capacity to function as regulators of the environment is also lost, increasing flood and erosion hazards, reducing soil fertility, and contributing to the loss of plant and animal life. As a result, the sustainable provision of goods and services from forests is jeopardized.

In response to the growing demand for reliable information on forest and tree resources at country and global levels, FAO initiated a programme to provide support to national forest assessments (NFA). The programme includes developing a harmonized approach to NFAs, information management and support to policy impact analysis for national level decision-making.

The purpose of the initiative is to introduce countries to an alternative approach designed to generate cost-effective information on forests and trees outside forests, including all benefits, uses and users of the resources and their management. Special attention is placed on monitoring the state and changes of forests, and on their social, economic and environmental functions. Another main objective is to build national capacities and harmonize methods, forest related definitions and classification systems among countries.

The Forest Resources Assessment Programme is organized under the Forest Resources Division (FOR) at FAO headquarters in Rome. Contact persons are:

Mohamed Saket, Forestry Officer, Mohamed.Saket@fao.org
Dan Altrell, Forestry Officer, Dan.Altrell@fao.org
Anne Branthomme, Forestry Officer, Anne.Branthomme@fao.org

or use the e-mail address: fra@fao.org

DISCLAIMER

The Forest Resources Assessment (FRA) Working Paper Series is designed to reflect the activities and progress of the FRA Programme of FAO. Working Papers are not authoritative information sources – they *do not* reflect the official position of FAO and should not be used for official purposes. Please refer to the FAO forestry website (www.fao.org/fo) for access to official information.

The FRA Working Paper Series provides an important forum for the rapid release of preliminary FRA 2000 findings needed for validation and to facilitate the final development of an official quality-controlled FRA 2000 information set. Should users find any errors in the documents or would like to provide comments for improving their quality they should contact fra@fao.org.

TABLE OF CONTENTS

1.	INTRODUCTION	3
2.	NFA PROJECT IMPLEMENTATION	5
2.1	PROJECT MANAGEMENT	5
2.2.	INVENTORY DESIGN AND DATA COLLECTION APPROACH	5
2.3	DATA ENTRY AND DATA PROCESSING	6
2.4	DATA ANALYSIS AND DATA INTERPRETATION	6
3.	NFA SUPPORT TO NATIONAL POLICY DISCUSSIONS	6
3.1	NATIONAL FOREST POLICY ORIENTATIONS.....	6
3.2	STRENGTHS AND WEAKNESSES OF PRESENT POLICIES.....	8
a.	<i>Current situation of forest policy.....</i>	<i>8</i>
b.	<i>Strength of the forestry sector.....</i>	<i>9</i>
3.3	KEY FORESTRY SECTOR ISSUES	10
3.3.1	<i>Key Issues and concerns related to NFA.....</i>	<i>11</i>
Issue no. 1:	Shrinking forests and forest resources	11
(i)	Land ownership statistics.....	12
(ii)	Uses/users on public land vs. private land	12
(iii)	Impact of landless people.....	13
(iv)	Conflicts of products/service use, distribution of uses on public lands	13
Issue no. 2:	Sustainable use of forest and trees resources.....	14
(i)	Management of forest and trees outside protected areas system.....	14
(ii)	Sustainable supply of goods and services.....	14
(iii)	Role of the sector in food security	16
(iv)	Role of gender in resources management and utilization.....	16
Issue no. 3:	Strengthen markets for forest products.....	17
(i)	Products derived from forest and trees outside forest	17
(ii)	By-product or product groups: trends in supply, end use, user distribution.....	19
(iii)	Wood volumes and distribution by species.....	21
(iv)	Supply of products from Forest vs. Trees Outside Forest.....	22
Issue no. 4:	Dwindling investments in plantation forests	22
(i)	Planted resources.....	22
(ii)	Incentives	25
(iii)	Differences in concepts of forest in local and national levels	26
Issue no. 5:	Improve management of protected areas.....	26
(i)	Information from protected areas	27
(ii)	Uses and users in reserves.....	27
(iii)	Comparison with overall protected areas map	27
Issue no. 6:	Remaining information gaps	28
Criteria and Indicators for SFM.....	28	
Forest Health and Productivity.....	28	
Global Forest Resources Assessment (FAO).....	29	
4.	CONCLUSIONS AND OUTLOOK.....	30
5.	FUTURE PLANS.....	32
6	REFERENCES	34

Prepared by Antonio P. Carandang, *Ph. D.*, Forestry Policy Analyst, FAO-FMB, Forest Resources Assessment Project and the Department of Environment and Natural Resources, Forest Management Bureau, Quezon City, Philippines

1. INTRODUCTION

The first nationwide forest inventory (NFI) in the Philippines was carried out in 1969. This was done before the ratification of the 1986 Constitution. During this period, the disposition of the country's natural resources was done through issuances of leases, licenses or permits. The role of the State then in forest disposition was principally regulatory. The results disclosed that the country had about 10.5 million hectares of forest.

The second national forest inventory was carried out over a period of ten years. The results showed that only about 6.46 million hectares of forest were left. The inventory results came out when the 1986 Constitution was already ratified and when the State has placed the exploration, development and utilization of all natural resources under its direct supervision and control (Art. XII, Sec. 2). Hence, the tremendous significance of forest stock information in the proper management of forest resources.

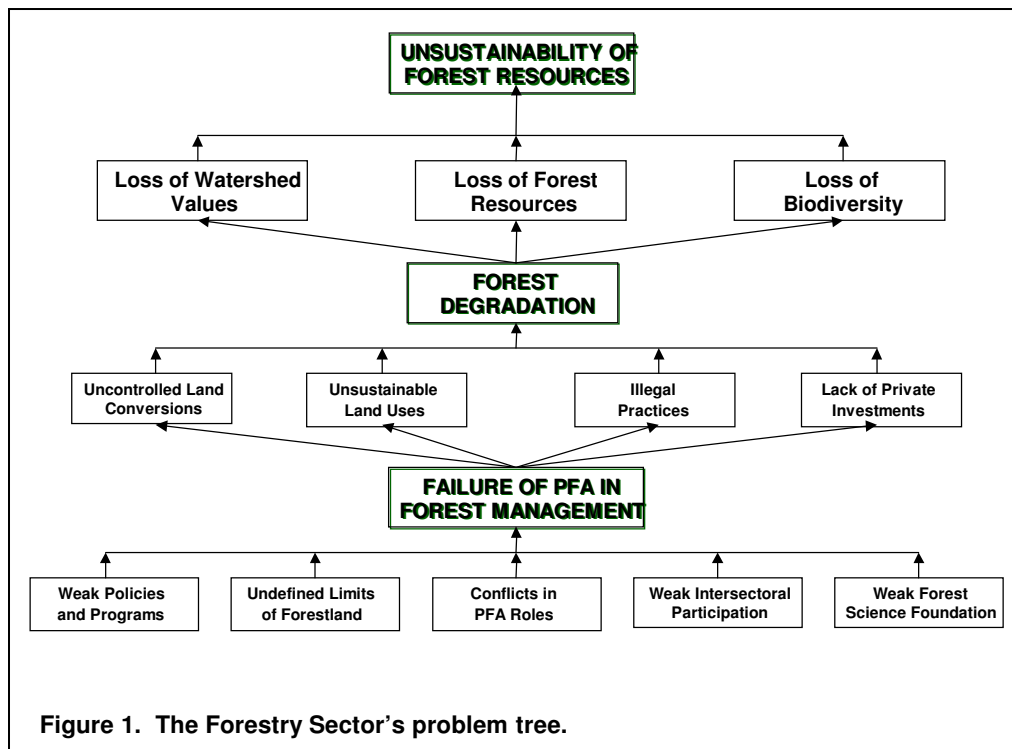
The Philippine's forestry resources continuously declined through the years due to a number of inadequate and poorly-implemented forestry policies which led to the rapid exploitation of timber from old growth and residual forests as well as other non-timber forest resources. The proliferation of only short duration timber licenses in the past discouraged long term investments in forest development and dampened private sector initiatives in contributing to forest recovery (Revised Forestry Master Plan, 2003). Forest rehabilitation through natural and artificial means as initiated by various sectors never coped up with the rate of forest destruction.

In 1934, it was estimated that about 17 million hectares of the country's land area was forested. Traditional forestry policy and planning that governed forest management in the country were generally oriented towards exploitation of resources. Forest exploitation was considered as a convenient source of income, power, and political leverage. Access and use of timber resources had been mainly by timber license agreements that were essentially for large-scale operations. This trend of commercial forest exploitation created the logging booms in the 1960s and 1970s that directly and indirectly contributed to the rapid decline of the country's natural forest. Directly, because of the use of high lead yarding which devastated most forest areas subjected to logging and indirectly because of opening of many forest areas to upland agriculture through access roads built by loggers.

Between the periods 1960 to early 80s, the forestry industry in the country was a very viable and progressive industry. Logging was then one of the backbones of the economy providing direct employment to over 400,000 people and livelihood opportunities for over 2 million people. It also provided the country with valuable foreign exchange as around 50 to 75 percent of log production was exported during that period. Highest export was recorded in the late 1970s when around 7.5 to 7.9 million cu m of raw logs were shipped abroad annually. Total wood product exports during the same period totaled to almost 10 million cu m annually. This accounted for almost 10% of the country's total export earnings. The country's log export was bannered by the "Philippine Mahogany Lumber," the international trademark of high quality Philippine wood that was much sought-after in the international market. The country then was a net exporter of wood and wood products.

Today, timber business from natural forests in the country is considered by many, including many industry insiders, as a sunset industry, mainly because of the lack of access to raw wood materials from natural forests by which they can process and sustain operations. Investments in new plantations, even in private lands, are hampered by bureaucratic regulations and flawed policy implementation. Meanwhile, the industry's

facilities are fast becoming obsolete. These result to high production and marketing costs, further discouraging fresh investments in the sector. From a net exporter of wood, the country at present is a net importer of wood and other wood products. The following problem tree shows the overall condition of the forestry sector in the country



Source: Revised Master Plan for Forestry Development, 2003.

The uncontrolled land conversion and unsustainable land use practices of forest farmers poses a potentially volatile environmental situation in the country. The government recognized that forestry problems could not be effectively addressed without the direct participation of communities dependent on the forests. Hence, the policy shift to people-oriented forestry started with the launching of the Integrated Social Forestry Program (ISFP) in 1982 followed by the National Forestation Program (NFP) in 1987. The aim was to directly involve upland dwellers and communities in bringing back forest cover to denuded areas and protecting remaining forest cover by contract reforestation and other modes.

In July 1995, the government has adopted the Community-based Forest Management (CBFM) as the national strategy to ensure the sustainable development of the country's forest resources (EO 263). The CBFM program integrates all people-oriented forestry projects in the country. Recently, the government adopted sustainable forest management (SFM) as the official policy framework for all plans and programs in the forestry sector (EO 318).

In order to assess the progress of program and project implementation, the country needs reliable data and information on the status and trends of forest resources. Prior to the implementation of the National Forest Assessment (NFA) Program supported by FAO, the latest available data dates back to 1997. Said data was derived based on experts' opinion, through interpolations and extrapolations using as base data the results of the 2nd NFI.

As of 1997, the total forest area is about 5.4 million hectares or about 18% of the country's total area of 30 million hectares. The statistics on forest cover did not change

prior to the completion of the NFA project because of the inability of the government to come up with a reliable data.

Based on the results of the national forest assessment carried out from 2002 to 2003, the country has an aggregate forest cover of 7,162,560 hectares. This shows an increase in forest cover of about 1.771 million hectares from 1997 to 2004.

This paper aims to provide policy assessment of forest situation in the Philippines, expounded potential policy directions from the results of the NFA project and explored potential follow-up projects to sustain gains of this initial NFA partnership with FAO.

2. NFA PROJECT IMPLEMENTATION

The National Forest Assessment Project in the Philippines was initiated in August 2002 for the pilot assessment of Philippine forest and tree resources as part of the framework of the *Forest Resources Assessment Programme* of the *Food and Agriculture Organization of the United Nations* (FAO) to support *national forest assessments* (NFA).

The project aims to provide, among others, information on the distribution of forest and other wooded lands according to tree species composition, ownership and management status, size of holdings, designation/protection status, commercial volume and growing stock, and felling and/or removals.

2.1 Project management

The project was spearheaded by the *Forest Management Bureau* (FMB) and implemented in the field by the *Department of Environment and Natural Resources* (DENR) operating units (DENR regional offices) in collaboration with the Forestry Department of FAO.

2.2. Inventory design and data collection approach

The inventory component of the project was based on relatively low intensity sampling. Around 395 tracts were initially selected in the national sample (sampling intensity of 0.0026% as compared to 2nd NFI at approximately 0.0054%). Each tract was composed of a cluster of 4 rectangular sample plots where field measurements and data collection were carried out. The sample plots measuring 20 m x 250 m were in perpendicular orientation following the 4 cardinal directions and were 250 m apart from each other. Field measurements and data collection were carried out in these sample plots.

The sample plot could be further subdivided into land use sections (LUS), with variable sizes and shapes, representing homogenous land use and forest type units. Most of the data related to forest characteristics, management and resource uses were collected in the LUS. In LUS that was classified as forest, trees ≥ 20 cm dbh were measured and recorded. However, in LUS that was not classified as forest (e.g., other wooded land (OWL), other lands (OL), and inland water (IW), trees ≥ 10 cm dbh were measured and recorded.

Each sample plot included “nested plots” (NP) when the land use was forest. There could be up to 3 locations of NP in the sample plot. The 1st location was centered at 5 m, the 2nd at 125 m, and the 3rd at 245 m from the plot starting point, respectively. The NPs consisted of two levels. The 1st level NP comprised a sample area of 200 m² (20 m x 10 m) for measurement of trees with 10 cm dbh and larger but less than 20 cm dbh. The 2nd

level comprised a sample area of 50 m² (3.99 m radius) for recording tree regenerations, soil information and topography.

The forest inventory was not limited in legally classified forestland as it also included the inventory of trees resources in alienable and disposable land and/or private land. Further, data collection was not limited to the measurement of the biophysical characteristics of the trees as it also included the documentation of the stock and flow of wood and non-wood forest products and services, through interviews with local forest users and external key informants.

Data collection commenced in November 2002 and terminated in July 2004. A total of 360 tracts were visited during this period.

2.3 Data entry and data processing

Field data submission, data entry and data processing were centralized at the Forest Management Bureau (FMB), Department of Environment and Natural Resources (DENR) Central Office, Quezon City. Submitted field data were then electronically stored using both the NFI-Philippines database application developed by FAO-FORM and FMB. All data were entered into the data-form specifically developed for the data entry. The form was structured to look like the original data registration forms. Editing of data was then conducted to correct invalid entries made by data encoders.

The data were then assembled from the various tables by linking those tables by fields containing identical data. By making a query, a piece of information from the data contained in the tables is generated. The query assembled linked data. The data in the NFI-Philippines database were then exported to MS Excel for statistical calculations.

2.4 Data analysis and data interpretation

Considering that all data were in numerical form, these were analysed using statistics, the mathematics of collecting, organizing, and interpreting numerical information. The statistical method used to analyse the data was the Ratio Estimates.

3. NFA SUPPORT TO NATIONAL POLICY DISCUSSIONS

3.1 National forest policy orientations

The Philippine forestry policies and programmes evolve through time to keep pace with the development thrusts and priorities of the government and to make the forestry sector responsive to external changes. The Department of Environment and Natural resources (DENR) has the legal mandate to formulate policies and implement programs on natural resources and the environment.

In the past, Philippine forestry policy and planning was largely a legacy of colonial influences from Spanish and American foresters. These policies generally concentrated regulation and control over forest resources to the State and central authorities and generally oriented towards resource exploitation.

Until the middle of the 1970s, the Forest Act of 1904 (Act No. 1148) enacted by the US Congress was the basis of forestry regulations in the country. Said basic forest policy was reiterated by the revised Administrative Code of 1917 (Act No. 2711), which states: "The public forest of the Philippines shall be held and administered for the protection of

the public interest, the utility and safety of the forest, and the perpetuation thereof in productive condition by wise use.”

Present laws and regulations governing utilization and management of forest resources are still based on approaches and strategies formulated decades ago when the country was still timber abundant. Presidential Decree No. 705, otherwise known as the *Revised Forestry Code of the Philippines*, which was promulgated in May 1975, is still the basic forestry policy. This legal framework adopted the following policies:

- multiple-use of forestlands oriented to the development and progress requirements of the country, the advancement of science and technology, and the public welfare.
- land classification and survey to be systematized and hastened.
- establishment of wood processing plants to be encouraged and rationalized.
- the protection, development, and rehabilitation of forestland to be emphasized so as to ensure their continuity in productive condition.

In pursuit of these policies, PD 705 encouraged the establishment of industrial tree plantations (ITP), tree farms (TF), and agro-forestry farms. A minimum area of 100 ha can be leased for ITP and agro-forestry while 10 ha for tree farms. Incentives in the form of nominal application filing fee, free rental in the first 5 years, reduction to 25% of regular forest charges on products derived from these plantations were among those incentives given for the development of ITP, tree farms, and agro-forestry farms.

The paradigm shift to sustainable forest management had been largely attributed to the implementation of key measures embodied in the 1987 Philippine Constitution, Philippine Strategy for Sustainable Development and Philippine Agenda 21, and the adoption of Community-based Forest Management (CBFM) as the national strategy for sustainable forest development. These key measures were supported by various policy reform agenda embodied in the major forestry programs and projects.

In 1989-1990, the Philippine Government through the assistance of Asian Development Bank (ADB) and the Finnish International Development Agency (FINNIDA), formulated the Philippine Master Plan for Forestry Development (MPFD), which served as the blueprint for the development of the forestry sector over a 25-year horizon. The MPFD highlighted the significance of the forestry sector as centrepiece of the country’s natural resource base and ecosystems.

The Local Government Code of 1992 (RA 7160) also made local government units a direct partner and implementer of certain forest operation activities as well as jurisdiction on certain forest areas. The Code devolved to the concerned LGUs a) the implementation of certain community-based forestry projects like ISF, b) management of communal forest up to 5,000 hectares provided these are converted into community-based projects, c) management, protection, rehabilitation and maintenance of small watershed areas which are sources of local water supply, and d) enforcement of forest laws in community-based forestry projects, small watersheds and communal forests.

Two recent laws strengthened the government’s strategy on sustainable forest management: 1) Republic Act No. 7586, otherwise known as the “National Integrated Protected Areas System Act of 1992”, and 2) Republic Act No. 8371, otherwise known as the “Indigenous Peoples Rights Act of 1997.” RA 7586 supports the government’s mandate to delineate and sustainably manage all protected areas in the country, whereas RA 8371 recognizes, promotes, and protects the rights of indigenous peoples.

The DENR also has undergone several stages of re-organization, institutional strengthening, and re-orientation of technical personnel to meet its dynamic roles in natural resources management and environmental conservation.

3.2 Strengths and weaknesses of present policies

The Philippine's forestry sector is continuously declining in terms of its biophysical, economic and environmental aspects. Such decline is largely attributed to a number of inadequate and poorly implemented forestry policies. Further, the institutions mandated to implement forest policies have not been equipped to fully address the situation.

In 2003, through a funding support from the United Nations Development Program (UNDP), a team organized by FAO and coordinated by the DENR-FMB carried out a planning work that consisted mainly of a review and revision of the 1990 Master Plan for Forestry Development. The activity sought to primarily reassess the situation of the forestry sector in consideration of the observed need to strengthen the institution and the sector's environment policies and refocus its trusts and directions in view of the current realities and emerging trends in the field of forestry and environment, both locally and internationally.

a. Current situation of forest policy

The policy process in the forestry sector has been traditionally reactive than a proactive activity. It is often said that the country has good forestry policies, but policy implementation has generally fallen short of expectations. This failure of policy implementation can be attributed to one or both of the following usual practices of past administrators and planners: a) when implementation failed or when rules and regulations are violated, rather than improving the process of implementation, support and monitoring systems, new guidelines were issued to plug the "loopholes" and b) forestry planning had been usually done for the sake of planning (as a requirement) not necessarily based on available resources and realistic objectives. The first practice had resulted in a maze of guidelines that does not allow forestry clients to profitably operate without violating one or more regulations.

The primary basis of forest policy in the Philippines remains to be PD 705 (Revised Forestry Code of the Philippines), as amended by PD.865, 1975 (Amending Sec:32 of PD 705 to allow temporarily limited and selective Exportation of logs); PD 1559, 1979 (Amendment to Revised Forestry Code), PD 1775, 1981(Amending Sec: 80 of PD 705); EO 273, 1987 (Adopting a Value- Added tax, Amending for the Purpose certain provisions of the national Internal Revenue Code and for other purposes); EO 277, 1987 (Amending Sec 68. of PD 705, as amended, other known as Rev. Code of the Phil, for the purpose of penalizing possession of timber or other forest products without the legal document required by existing forest laws, authorizing the confiscation of illegally cut, gathered, removed and possessed forest products and granting rewards to informers of violation of forestry rules and regulations), among others.

PD 705 was drawn up when the major thrusts of Philippine forestry was towards massive commercial exploitation of the vast state-owned natural resources by large corporations. Now that the focus shifted to people-oriented, small scale, community-based forest management, covering man-made forests as well as the meagre remaining natural resources, PD 705 has become somewhat obsolete.

While most of the provisions of PD 705 are still considered operational, there have been major changes in policies and implementing rules and regulations (IRR) through a maze of decrees, orders directives, letters of instruction circulars and memoranda.

The collection of policies and their IRRs (without any clearly defined hierarchy) tends to contradict, conflict and overlap with each other, and does not adequately serve sectoral development. Thus, the collection of policies becomes a mixed bag of keywords and concepts (ranging from mundane to sublime) without any collective/holistic purpose.

While there is no legislated forestry sector policy in the Philippines (the existing policy is PD 705), there are RAs for a component aspect of forestry (e.g. RA 7161 of 1992 regarding forest charges, and ban on cutting of mangrove trees), which is a strange situation of skewed priorities.

The situation of fragmented promulgation of policies related to forestry makes it difficult to pin down what the current forestry policy is. In addition to being not readily available and tedious to consolidate, the current practice results in varying versions, leading to inconsistencies of policies.

The major weakness in the policy reforms was that the reforms were not supported by legislation to make them more permanent. Changes have been made at the administrative level and have been amended or nullified by subsequent administrations and different interpretations at the provincial level.

The passage of a bill on sustainable forest management act has been proposed and discussed in Congress since 1990, however, no major forestry law has been passed by congress until this very moment.

b. Strength of the forestry sector

It can be said that despite of many forestry problems confronting the country, it has also several significant strengths that are important and relevant in supporting sustained development of the forestry sector (RMPFD, 2003). As enumerated in the revised master plan, these are significant factors that can contribute to the growth of the forestry sector, if only backed-up by appropriate policies and institutional mechanisms. Among the relevant ones are as follows:

- existence of a reasonable extent of natural forests available to support bio-diversity and environmental objectives as well as production of goods and services. Along with private land forestry and agro-forestry, these would form a forestry base of adequate size;
- existence of sectoral institutions and a large number of well-trained and committed professionals and technical personnel with experience, whose performance can considerably improve through retraining and refresher training under congenial conditions;
- availability of a fair amount of science and technology related to forestry, most of which could be made beneficially operative;
- general acceptability of private sector and community participation in forestry activities, opening new avenues for development;
- acceptability of agro-forestry and integrating farming as viable land use alternatives, and tree consciousness on the part of millions of farmers and

homestead owners who are innovative and who have made homestead forestry an important component of the forestry sector, are special strengths;

- availability of traditional knowledge on the uses of NWFPs, as well as artisanal/handicraft skills, which are yet to be adequately explored and utilized; among others

3.3 Key forestry sector issues

The forestry sector in the country is beset by many key issues that keep it from attaining sustainability as earlier identified in the problem tree (please refer back to Figure 1). Among the major issues, problems and constraints identified as highlighted in the 2003 RMPFD are as follows:

1. Weak policies and institutional arrangements - Presently, there is no updated forest policy to guide the sector or the current forestry sector policies are inadequate. These also result to inadequacies of legal instruments, weaknesses of organizational structure of public forest administration and management. The above factors lead to program implementation problems primarily because of inadequacies in the planning and programming system of the public forest administration. This problem is compounded by funding uncertainties and lack of funds to implement various sectoral programs
2. Undefined or arbitrary limits of forest lands – This condition makes it hard for forest administrators and actual field managers to promote with authority, various forest development thrusts of the government as well as define forest areas of production and protection.
3. Conflict in PFA roles – The public forest administration in the Philippines is beset by dual concerns namely: the developmental functions and the regulatory functions, that sometimes render itself in contradicting positions. This is exemplified by the DENR's fieldmen urging a farmer to plant trees for the latter's benefit as a tree is likened to a deposit in the bank that earn interest by itself through time. By a stroke of misfortune, these same people would later apprehend the poor farmer who happened to transport the timber products with inadequate documentations.
4. Weak intersectoral participation – Because of weak and unstable policies, private sector participation in forest development is becoming more and more insignificant nowadays. This is also manifested in the high intersectoral interest in forest rehabilitation but very insignificant success on the ground. The problem is compounded by weak inter-agency cooperation, even on the part of other government agencies, in the aspect of forest laws implementation as well as in pursuing community-based forest management and other people-oriented projects where these agencies are mandated to assist the communities in activities related to their organic mandate.
5. Weak forest science foundation in forest management decisions – Apparently, there are difficulties of central policy and decision makers as well as field personnel in applying scientific knowledge in forest development, management and utilization. Either there is lack of appropriate technologies to utilize or research and development strategies are not readily available to the decision makers. Moreover, there is this lack of resource information that the decision

makers can readily utilize. This leads to serious lapses in the formulation of policies as well as in the execution of development activities.

The above issues and problems are not to be as exhaustive as the revised MPFD of 2003 has identified, but nevertheless, critical enough to significantly contribute to the failures of public forest administration (PFA) in the country. These failures are manifested in the inability of PFA to arrest uncontrolled uses of forestlands, inability to promote sustainable forest management, inadequacy to effectively control illegal practices and inadequacy in promoting and sustaining investments in forestry in the country.

The core impact of these inadequacies is a continuing destruction of forest resources that leads to loss of watershed values, loss of biodiversity, loss of economic opportunities, and ultimately, continuing or perpetuating the cycle of poverty and environmental degradation.

3.3.1 Key Issues and concerns related to NFA

Issue no. 1: Shrinking forests and forest resources

The Philippine forests have been shrinking due to two major causes namely; indiscriminate logging and agricultural expansion in the uplands. However, the position of gradually phasing out timber harvesting from natural forests is specifically detrimental to the forest industry and the forestry sector in general. Statistics show that even without legal logging from natural forests, forest destruction continues to be unabated. For the last 10 years already, natural forest harvests by legitimate TLAs average only around 5,000 ha annually. Yet, forest destruction still rings to a tune of hundred thousand hectares or so annually. This observation shows that the factor that tremendously contributes to forest disappearance is unsustainable upland agriculture (forest conversion). The root cause of this is the poverty situation sweeping the country where 34.0 % are considered poor and live below the poverty threshold level in the year 2000 (NSCB, 2003). In the same manner, there is 28.4 % incidence of poor families in the country. The incidence of poor families in the uplands is assumed to be a lot higher. In many CBFM sites, over 95 % of families are considered poor.

Considering the upland situation, still many Filipinos depend on natural resources systems for their subsistence. They have no time to confront the inexorable reality of ecological principles. About 24 million people live in upland areas and depend on agriculture and forestry for livelihood. Migrant farmers and upland dwellers continue to practice slash-and-burn subsistence farming to survive.

For the upland residents, the forest remains to be an attractive source of income. Cutting of trees is still a common source of income. The shortage of local wood supply as a result of selective logging ban in many areas creates a demand for illegally cut timber. This is the reason why timber poaching through carabao logging and other indigenous practices still flourish in many forests in the Philippines.

Soil erosion, deforestation and environmental degradation all point to the fact that the limits of the natural carrying capacity are already being extended. Indeed, there are strong linkages between population growth, resource depletion, environmental quality, and the incidence of poverty.

How to provide income opportunities for these upland communities is one of the greatest challenges to the country's environmental planners.

(i) Land ownership statistics

Land classification in the country almost remains unchanged since 1988 due to the provisions of the Comprehensive Agrarian Reform Law (RA 6657) which inhibits the Department of Environment and Natural Resources (DENR) from continuing its sub-classification activities until the distribution of public lands to Comprehensive Agrarian Reform Program (CARP) beneficiaries has been completed. As of 2002, out of the 30 million total area of the country, about 15.855 million hectares or 53% are legally classified as forestlands while 14.145 million hectares or 47% as alienable and disposable lands.

Legally classified forestlands are those lands that belong to the public domain and are classified for forestry purposes regardless of the present state of the forest cover. Forestlands include the public forest, the permanent forest or forest reserves, and forest reservations.

Public forest is the mass of lands of the public domain which has not been the subject to the present system of classification for the determination of which lands are needed for forest purposes and which are not. As of the latest land classification statistics, there are still about 0.88 million ha of unclassified lands that falls under the public forest category. Permanent forest or forest reserves refer to those lands of the public domain which have been the subject of the present system of classification and declared to be needed for forest purposes. Currently, around 15.01 million ha of the country's land area has already been classified as permanent forest or forest reserve. However, many of these forest areas are not yet delineated on the ground, hence, exact boundaries are not known to forest managers that makes management and control very difficult.

Forest reservations refer to those lands which have been reserved by the President of the Philippines for any specific purpose or purposes have undefined boundaries on the ground.

Alienable and disposable lands refer to those lands of the public domain which have been the subject of the present system of classification and declared as not needed for forest purposes. No land of the public domain 18% in slope or over shall be classified as alienable and disposable land, nor any forestland 50% in slope or over, as grazing land.

With regard to forest ownership, the results of the NFA project shows that out of the 7.162 million hectares of forest in the country about 6.087 million hectares or 85% are owned by the state, 1.044 million hectares or 14.6% are privately owned, 0.022 million hectares or 0.31% are owned by communities, and 0.0095 million hectares or 0.13% are owned by municipalities.

(ii) Uses/users on public land vs. private land

Determination of the use of land in the Philippines is highly dictated by policies. The Philippine Constitution lays down the guiding principles for the access, use, protection and conservation of the country's land and other natural resources.

The 1987 Constitution of the Republic of the Philippines provides that "All lands of the public domain, waters, minerals, coal, petroleum, and other mineral oils, all forces of potential energy, fisheries, forests or timber, wildlife, flora and fauna, and other natural resources are owned by the state. Lands of the public domain are classified into agricultural, forest or timber, mineral lands, and natural parks."

The exploration, development, and utilization of natural resources are under the full control and supervision of State. The state has the primary responsibility of managing the land to maximize their productivity to meet the demands of increasing population.

The utilization, exploitation, occupation or possession of any forestland, and grazing land or any activity therein, involving one or more of its resources, which will produce the optimum benefits to the development and progress of the country and public welfare, without impairment or with least injury to its resources is allowed. No person may utilize, exploit, occupy, possess or conduct any activity within any forest and grazing lands, or establish, install, add and operate any wood or forest products processing plant, unless he has been authorized to do so under a license agreement, lease, license or permit. Such agreements may be for a period not exceeding 25 years, and renewable for not more than 25 years.

On the other hand, private lands refer to all alienable and disposable lands covered by either administrative or juridical titles such as Free Patent, Homestead and Sales Patent, and Torrens Title obtained under the Land Registration Act (Act No. 496, 1902 as amended), or under the Public Land Law (Commonwealth Act No. 141, 1936). Private lands may be classified as agricultural, residential, commercial, and industrial.

(iii) Impact of landless people

One of the primary causes of forest degradation in the country is the rapid growth in population that results to the migration of landless people from the lowlands into the uplands. Unarguably, the pressures of a bloated population on the shrinking forest resources fuelled the growth of forest resources extraction and the conversion of forestlands to agriculture and other uses.

As of 2002, approximately 24 million Filipinos are living in the upland areas. These people practice shifting cultivation for their livelihood. At the forest household level, the non-profit orientation of farm activities in favor of subsistence production perpetuated the erosive practices of the upland farmers even in the least suitable areas that led to the massive degradation of upland productivity. In doing so, they tend to modify the physical environment to meet their immediate needs, thus increasingly disrupting, even destroying, the biotic components which are necessary for human's physiological existence.

(iv) Conflicts of products/service use, distribution of uses on public lands

Several policies on agriculture and infrastructure development in the name of economic development also have unintentionally contributed to the conversion of forestlands into other land uses. The policies at various points in time that favoured the production of high value crops like coconut, sugar cane and pineapple led to the expansion of agriculture into the forestlands.

The incursion of lowland communities into the uplands was similarly stirred by the development of roads that were meant primarily to improve the access of forestry and agriculture production areas to the post-harvest facilities, market and processing plants.

As the population in the uplands grew, the policies of local governments to legitimize the creation of barangays (smallest unit of government in the Philippines) and even municipalities further encouraged the migration of people into the domain of the public forest. This is the same result shared by the agrarian reform policy in the country that

was designed to give land to the landless. In so doing, many upland areas are already converted into agricultural and resettlement lands.

Issue no. 2: Sustainable use of forest and trees resources

(i) Management of forest and trees outside protected areas system

The Philippines has adopted sustainable forest management (SFM) as the key strategy for all plans and programs in the forestry sector (EO 318, 2004). It provides current understanding and framework on how the country's forests should be managed to address present problems as well as the tools required to generate the desired forestry scenario for the future.

The government is bent on providing adequate tenurial rights and security to the communities and private institutions involved in sustainable forest management. There are adequate rules and regulations pertaining to the granting and defining of roles and responsibilities for long-term tenure on forestlands both for community-based projects and private sector investments.

Lately the government initiated moves for the integration of all people-oriented tenurial instruments into a single integrated instrument (Community-Based Forest Management Agreement), and continues the awarding of Certificate of Ancestral Domain Claim (CADC) and Certificate of Ancestral Land Claim (CALC) on ancestral land and domain claims by the indigenous peoples.

These positive developments indicating a strong commitment to SFM have further encouraged community participation in SFM projects that is a key factor in successful implementation.

(ii) Sustainable supply of goods and services

The science of forest management shows that natural forests can be permanently perpetuated. Actual residual and wildling counts in 5 year old logged-over forests done in Basilan and Zamboanga del Sur showed numerous regenerations (33,000 and 17,500, respectively, Carandang, 1996), a number enough to regenerate a logged-over area even without human assistance. Studies in Samar Islands (SAMBIO, 2000) showed that the volume of matured residual forests even approximates old growth volume, hence, can be sustainably managed.

The first step in securing sustainable supply of goods and services from the forests is to identify and delineate on the ground all public forest lands in the country. This must be followed by the identification and delineation of permanent production forests as well as protection forests throughout the country which will form part of permanent forest estates, to be maintained and managed as such at all cost. This process would afford our society, especially the poor and marginalized upland dwellers, vast opportunities to benefit from sustainable forest management within production forests. Likewise, this process puts in equal importance the identification and delineation of all forest areas needed for protection purposes.

The next step is to develop sustainable forest management plans over these areas. Areas with existing plans shall continue to implement them, or such plans be improved in the purview of current realities in the local and international arena. Likewise, plans within specific management units must conform to the overall larger plan of the watershed in

which such management unit is located. Basic to these processes is the capacitation of the planners and would be implementers of the basic tools in science of forest management.

The last step is to implement the plan and see to it that the plan works. There must be effective and accountable managers who can execute the plan and endeavor to attain the overall goal of benefiting from forest resources in the area. Support systems must be present for each management unit in order for plan implementers to execute the plans and make science-based decisions.

The forestry sector is the major centerpiece of the country's natural resource base and ecosystems. Although the sector's contribution to the national economy has been declining, its continued development and that of the environmental sector is a prerequisite to sustained growth in agriculture and other industries. Besides, forestlands are the main watersheds of rivers that provide water for various uses. Soil erosion and hydrological deterioration of these watersheds cause losses in productivity and utility of infrastructures. The contribution of the sector to the economy in terms of gross value added, export revenues, full-time job creations, and the provision of biomass fuels, are still significant.

The commercial volume in forest and trees outside forest, as indicated in the FRA Report, shows the great potential of the forestry sector's contribution to the development of the country's economy. While forest has about 386.96 million m³ of commercial volume or an average volume per hectare of 54.02 m³, trees outside forest (TOF) has about 24.32 million m³ of commercial volume or an average volume per hectare of 1.32 m³. Portion of the commercial volume in forest may be under the management of private investors holding land tenure instruments such as integrated forest management agreement, socialized industrial forest management agreements and peoples organizations holding community-based forest management agreements. In this regard, in order to ensure the sustainable supply of timber products, the government needs to provide a favorable and stable policy and investment environment that promotes the development of efficient, globally-competitive and environment-friendly forest-based industries. Likewise, a package of incentives and services that are responsive to the development of forests in private and public forestlands shall be developed and adopted. The development of high-value tree crops and non-timber forest crops in public forestlands, private lands and in home forest gardens shall be promoted and encouraged to enhance economic and ecological benefits and attain self-sufficiency in the country's wood requirements. Management through partnership among stakeholders shall also be encouraged.

Under the auspices of CBFM, the approval of the proposed guidelines in the development of service contracts would create an avenue for interested parties and individuals to invest in the development of CBFM areas through plantation establishment and development of non-wood forest products. An equitable production/benefit sharing system shall also be developed to encourage stakeholders participate in the adoption of the CBFM strategy.

Considering the volume of trees that can be derived from the forest, it would be economically unwise to pursue the implementation of the proposed policy on total logging ban. Experiences in the past reveal that banning the cutting of trees did not curb the problem of timber poaching. The intensification of forest protection activities with the participation of multi-sectoral group of stakeholders shall be encouraged. A package of incentives such as the provision of insurance coverage and legal services may be provided. The Revised Master Plan for Forestry Development also proposes for the creation of Forest Industries Development Board to oversee the rationalization and development of forest-based Industries (FBI).

The forests have an important role in supplying freshwater, but their management must complement water management. Mountainous-forested watersheds are important freshwater yielding areas but are also source areas for landslides and floods (FAO 2003). In this context, forest can provide economic and environmental benefits that may best be identified within a watershed framework, hence, the Philippine Government advocates that a watershed-based integrated ecosystems management approach is appropriate for SFM due to the interrelationships and interactions between and among the various ecosystems of a watershed such as the uplands and coastal areas.

Treating water as a commodity can result in economic incentives that translate into better management. Policies and institutions can facilitate the achievement of freshwater objective, from the local watershed level to the river basin level. The new water economy will justify land use changes to enhance water supplies. By the same token, inhabitants who improve forests or reduce downstream losses through other land uses are to be adequately compensated (FAO 2003).

Non-wood forest products such as rattan, bamboo, and resin are important commodities from the forest that contribute to the economic well-being of the country. Despite their importance, there are no definite policies intended for their conservation, management and development as a competitive product. The natural sources of these products are also fast disappearing.

A wide range of NTFPs with multiple uses, in modern and traditional pharmacopoeia, in nutrition, as a pecuniary source of revenue for households and as source of employment is not given much attention.

(iii) Role of the sector in food security

Healthy mountainous-forested watershed could supply much of the freshwater requirement in agricultural production. Likewise, agro-forestry development in designated CBFM areas and in suitable upland areas may contribute in increasing food supply for the bulging population. Policies along this line should be developed. Convergence among government service providers particularly those dealing with agricultural production may also be encouraged. Currently, there is an ongoing process of convergence negotiation among the Department of Agrarian Reform, Department of Agriculture and DENR in support to the adoption of CBFM.

Though there are evidences pointing to the hunting of wild animals for meat and other products, the contribution of non-wood forest products in food security may be explored. Information on sources of edible fruits from forest tree species and edible plants from the forest may be gathered. Subsequent policies in the development of forest-based enterprise along this line may be encouraged. The Kalahan experience indicates that the development of product line (Mountain Fresh) out of edible forest tree fruits proved to be a successful venture.

(iv) Role of gender in resources management and utilization

The term gender is probably one of the most used and least understood or agreed upon term in the field of sustainable forest management or SFM (McDougall 2001). It is commonly built into donor requirements and strategic plans for SFM and other development research and practices, yet it frequently is assigned different literal as well as implied meanings.

Confusion about its meaning arises out of the following reasons: First, the differences between the meanings of sex and gender, where *sex* refers to the biological differences between men and women and *gender* as a social distinction that is culture-specific and changes across time. Through engenderization, male or female become men and women by acquiring the culturally defined attributes of masculinity and femininity where they take on the appropriate roles and responsibilities for these categories. Second, gender has been assigned different meanings by different users in various contexts. Interpretations range from “attributes of individuals” to “interpersonal relations” and from “modes of social organization” to “questions of difference and domination”. Through the relationship between psyche to social organization, social roles to cultural symbols, normative beliefs to the experience of the body and sexuality, gender can be understood as two interrelated aspects: gender as “a constitutive element of social relationships based on perceived differences between the sexes and gender as a primary way of signifying relationships of power. Therefore, gender is both a key force and a process that shapes or “socially constructs” relationship between men and women and a conceptual “torch” that points to or illuminates the distribution of power in those relationships.

Another concept neglected in SFM discussions is human diversity. Human diversity refers not only to different ethnic groups but also to all the other significant dimensions of social and biological difference that crosscut gender and ethnicity, such as wealth, age, status, and class. It is a force that influences social relationships on the basis of perceived differences, as a way of defining and understanding power relationships.

Natural resource use is based on decisions, actions, and behaviors rooted in overlapping social and natural systems. In this context, gender and diversity are relevant to SFM because stakeholders’ opportunities and constraints in decision making as well as resulting actions and behaviors are determined by their different gender and diversity identities, which include their roles, knowledge and responsibilities.

Sustainable forest management requires knowledge of different stakeholders, their interactions, and the impact of their activities on forest cover; access to resources by each of the stakeholders and also the equitable sharing of the benefits from the forest; and recognition that rural populations of forest zones are inevitably actors in the management of forest resources because of their proximity to, dependence on, and investment (time, energy, and resources) in the forest. Stakeholders are often made up of subgroups that have different and sometimes contradictory interests in forest resource management and utilization. Women’s role in this regard is often neglected and not considered as a separate group in SFM. Their place in resource use and management has rarely been recognized.

There has been an attempt in CBFM to mainstream gender considerations in all its stages through the development of gender responsive participatory tool. However, its application has not been apparent on ground.

Issue no. 3: Strengthen markets for forest products

(i) Products derived from forest and trees outside forest

Based on the information generated by the NFA Project, timber (80.75%) and firewood/fuelwood (9.74%) are the highest value products derived from forest whereas food (64.52%) and firewood/fuelwood (10.37%) are the highest value products derived

from TOF. This shows that cutting of trees for firewood/fuelwood is an activity that contributes to the decline of the country's forest and trees resources.

The following tables show the product/services derived from forest and trees outside forest.

Table 1: Wood and non-wood products derived from forest

Products from Forest	%
Timber	80.75%
Firewood	9.74%
Resin	3.64%
Non-wood constructions	2.58%
Food	2.55%
Other non-wood forest products	0.51%
Tannins	0.22%
	99.99%

Table 2: Social, economic and environmental services provided by the forests

Services from Forest	%
Soil and water conservation	85.29%
Conservation	10.51%
Grazing	1.24%
Scientific studies	1.14%
Windbreaking curtains	1.02%
Hunting (sport)	0.80%
	100.00%

Table 3: Wood and non-wood products derived from TOF

Products from TOF	%
Food	64.52%
Firewood	10.37%
Timber	6.27%
Oil, soap, cosmetics	5.88%
Non-wood construction materials	5.76%
Other non-wood forest products	3.05%
Fodder	1.93%
Medical products	0.61%
Handicraft	0.61%
Wild animals	0.41%
Bush meat	0.28%
Resin	0.17%
Ornaments	0.07%
Honey, beeswax	0.06%
	99.99%

Table 4. Social, economic and environmental services provided by TOF

Services from TOF	%
Grazing	49.09%
Soil and water conservation	34.24%
Windbreaking curtains	7.92%
Source of employment	4.18%
Recreation and tourism	1.72%
Scientific studies	1.53%
Hunting (sport)	0.70%
Relegious/spiritual	0.40%
Conservation	0.22%
	100%

(ii) By-product or product groups: trends in supply, end use, user distribution

The Philippines has been consuming an average of 3.1 million m³ log equivalent of wood-based products per year from 1994 to 2003. Of this volume, imports made up around 80% in 2003, a figure that is substantially higher than the 56% share of imports in 1994. The increasing role of imports in the country's wood-based product supply is the effect of the implementation of forest conservation policies resulting from the decline in the country's forest resources

Production

From a net exporter of wood in the 1970s' and early 1980's, the country at present is a net importer of wood and other wood products. This shows that the country's wood production is not enough to fulfil its demand for wood products. The lack of raw wood materials was triggered by many factors as follows: non-renewal of timber leases and licenses as well as granting of new ones as a result of Constitutional prohibition, cutting from old-growth forests has been banned since 1992 (through NIPAS Act or RA 7586 & DAO 02, 1992, timber concessionaires operating in secondary forests were either cancelled or suspended in the early 90s in view of emerging environmental problems allegedly caused by logging and the on and off policy of banning timber harvesting even in forest plantations, among others

In 2002, only about 403,263 cu m of logs were produced. This exhibited a significant slowdown of about 29.4% from the 2001 log production of 570,890 m³. In terms of producer category, the biggest slice of the log production pie came from private lands with 244,849 m³. Holders of timber license agreement (TLA) and industrial forest management agreement (IFMA) contributed a combined production of 30,413 cu m. In addition, about 11,296 m³ were harvested from CBFM projects.

Production of lumber likewise decreased registering a volume of 163,218 m³, a downswing of 17.2% from the 2001 level. Also recording a negative growth in production is veneer with 205,056 m³ or a 19.5% decrease.

On the other hand, plywood production increased to 350,353 m³ or about 19.8% from the 2001 production of 292,294 m³.

With regard to non-timber forest products (NTFP), the 2002 production of rattan poles was recorded at 6.64 million linear meters, which was below the 2001 production of 8.77 million linear meters. Comparing the 2001 and 2002 data, only almaciga resin maintained

the previous year's production while negative growth rates were observed in the production of anahaw leaves, buri midribs, nipa shingles, bamboo split, and unsplit rattan.

Export and Import

Traditional wood products like log, lumber, veneer and plywood are still being traded out of the country. The country was still able to export logs from natural forests until the 1990's with round-wood exports of 51 thousand cu m (Table 3). There were no records after that period until 2001. The exportation of log from 2001 to 2002 went down by more than 70%, in both volume and value terms. Most of these logs come from high yielding forest plantations. Similarly, lumber exportation experienced slumped down in 2002. The lumber export volume of 2002 was recorded at 90,610 m³. On the other hand, export of veneer increased by 112.35% in volume while plywood increased by 220.59% in volume.

Forest-based furniture, in value terms, topped the list of Philippine forest-based products exported in 2002. It accounted for about 46.04% of the total value of all 10 products exported.

On the other hand, importation of logs and processed wood products has steadily increased since 1990. From 381.2 thousand cu m importation of logs in 1990, it increased to 695.0 thousand cu m in 1995 then went down slightly at 584.8 thousand cu m in 2000. This importation level continued to be maintained in order to augment local supply. In 2002, 434,175 m³ of logs, 401,086 m³ of lumber, 650 m³ of plywood and 74,505 m³ of veneer were imported.

The country also imported other wood-based panels such as fibreboard and particleboard. In 2002, about 3.675 million gross kilogram of particleboard and 48.478 net kilogram of fibreboard were imported.

Table 3. Export-Import of major wood products, (in '000 cu m).

Commodity	1990	1995	2000
Export			
Roundwood	51.0	-	-
Lumber	77.0	84.0	120.0
Veneer	47.0	32.0	5.0
Plywood	176.0	-	2.2
Import			
Roundwood/log	381.2	695.0	584.8
Lumber	3.7	378.5	358.5
Veneer	0.1	25.8	119.3
Plywood	3.1	0.2	1.0
Tot. fin. Prod. import	6.9	404.6	478.9
Balance			
Roundwood/log	(330.2)	(695.0)	(584.8)
Lumber	73.3	(294.5)	(238.5)
Veneer	46.9	6.2	(114.3)
Plywood	172.9	(0.2)	1.2

Sources, RMPFD, 2003.

(iii) Wood volumes and distribution by species

Based on the information generated by the NFA project, the top 20 tree species in forest and their corresponding volume per hectare (gross and commercial) are shown in the succeeding table.

In the calculation of gross volume, the minimum limit was 10 cm dbh whereas in the commercial volume, the minimum limit was 50 cm dbh.

Table 4: Standing timber volume distribution by tree species in natural forest.

Order	Scientific Name	Species	Gross Vol. /ha	Comm. Vol. / ha
1	<i>Shorea contorta</i>	white lauan	19.91	7.85
2	<i>Shorea polysperma</i>	tangile	19.46	8.36
3	<i>Shorea negrosensis</i>	red lauan	16.41	6.29
4	<i>Shorea squamata</i>	mayapis	14.84	6.89
5	<i>Dipterocarpus grandiflorus</i>	apitong	10.88	3.24
6	<i>Parashorea plicata</i>	bagtikan	7.61	3.33
7	<i>Shorea astylosa</i>	yakal	5.01	1.14
8	<i>Pinus kesiya</i>	Benguet pine	4.22	2.34
9	<i>Shorea almon</i>	almon	3.70	1.44
10	<i>Lithocarpus llanosii</i>	ulayan	3.42	0.61
11	<i>Shorea guiso</i>	guijo	3.03	1.06
12	<i>Pterocarpus indicus</i>	narra	2.86	0.65
13	<i>Agathis philippinensis</i>	almaciga	2.26	1.05
14	<i>Palaquium luzoniense</i>	nato	2.12	0.79
15	<i>Combretodendron quadrialatum</i>	toog	1.82	1.17
16	<i>Syzygium brevistylum</i>	sagimsim	1.62	0.27
17	<i>Tristania decorticata</i>	malabayabas	1.35	0.33
18	<i>Terminalia foetidissima</i>	talisai-gubat	1.27	0.43
19	<i>Vitex parviflora</i>	molave	1.26	0.31
20	<i>Pterocymbium tinctorium</i>	taluto	1.22	0.34

Note: * In the calculation of volume distribution by tree species in natural forest, the area covered by mangrove was not included.

Table 5: Standing timber volume distribution by tree species in plantation forest.

Order	Scientific Name	Species	Gross Vol. /ha	Comm. Vol. / ha
1	<i>Gmelina arborea</i>	yemane	14.96	0.5
2	<i>Leucaena leucocephala</i>	ipil-ipil	5.65	0.0
3	<i>Ficus elastica</i>	India rubber	4.50	0.0
4	<i>Paraserianthes falcataria</i>	Moluccan sau	3.72	0.2
5	<i>Swietenia macrophylla</i>	broad-leaved mahogany	2.58	0.0
6	<i>Cocos nucifera</i>	coconut	2.07	0.0
7	<i>Acacia mangium</i>	mangium	1.52	0.0
8	<i>Araucaria bidwilli</i>	bunya pine	1.44	0.4
9	<i>Hevea brasiliensis</i>	para rubber	1.16	0.0
10	<i>Mangifera indica</i>	mangga	0.87	0.2
11	<i>Musanga cecropioides</i>	umbrella tree	0.82	0.0
12	<i>Samanea saman</i>	raintree	0.80	0.1
13	<i>Vitex parviflora</i>	molave	0.77	0.0
14	<i>Pterocarpus indicus</i>	narra	0.72	0.1

15	<i>Artocarpus blancoi</i>	antipolo	0.56	0.0
16	<i>Syzygium gigantifolium</i>	malatalisai	0.44	0.00
17	<i>Claoxylon arboreum</i>	banata	0.39	0.03
18	<i>Pangium edule</i>	pangi	0.38	0.00
19	<i>Albizia procera</i>	akleng-parang	0.37	0.00
20	<i>Pittospermum pentandrum</i>	mamalis	0.34	0.00

(iv) Supply of products from Forest vs. Trees Outside Forest

The results of the national forest assessment show that in forest, the gross volume of all trees with dbh ≥ 10 cm is 1,247.86 million m³ or an average volume per ha of 174.22 m³ while the commercial volume of all trees with dbh ≥ 50 cm is 386.96 million m³ or an average volume per ha of 54.02 m³.

In TOF, the gross volume of all trees with dbh ≥ 10 cm is 368.68 million m³ or an average volume per ha of 20.10 m³ while the commercial volume of all trees with dbh ≥ 50 cm is 24.32 million m³ or an average volume per ha of 1.32 m³.

Issue no. 4: Dwindling investments in plantation forests

Reforestation and tree plantation development are among the strategies of the country to sustainably manage its forest and trees outside forests and geared towards sustaining requirements on forest products, services and amenities. The involvement of the private sector in sustainably managing the country's forest resources is a continuing strategy since the DENR recognizes that the success of its reforestation and plantation development programs can only be achieved through the participation of upland communities and other agencies and private groups or organizations. However, private investments in forestry businesses have been dwindling as these are especially affected by unstable policies with respect to harvesting and transport of timber products.

The amount of investment and reinvestment for sustainable forest management are critical indicators to achieve its objectives and future targets.

However, government investments for direct activities pertaining to SFM projects and activities are likewise seriously constrained by lack of regular budget; and hence rely on official development assistance. In implementing the 1990 MPFD, only the programs on people-oriented forestry and bio-diversity conservation had been well funded, mostly by foreign assistance due to global priorities in these forestry concerns.

(i) Planted resources

In 1986, the DENR launched the National Forestation Program (NFP) that declares as a policy "the perpetuation of forest resources for the benefit of the present and future generations of Filipinos." The main focus of the program is the development of production forest plantations to ensure adequate supply of timber and fuel wood as well as rehabilitation of denuded watershed areas.

The main thrust of the NFP is to position the private sector as the vanguard of the country's reforestation efforts. The policy directs the employment of the private sector in executing government-funded forestation projects on contract terms. Reforestation contracts are granted to qualified corporations, NGOs, communities and families.

The government through the DENR continues to implement, expand and strengthen the various sustainable management-oriented programs, to wit:

Government Sector

➤ Community-Based Forest Management

The strategy helps promote: 1) sustainable management of forest resources; 2) social justice and improved well-being at local communities; and 3) strong partnership among local communities and DENR.

➤ Watershed Rehabilitation Program

The program involves the employment of vegetative and/or structural measures in the watershed areas with the aim of restoring the watershed to their former lush and life supporting state and arresting soil erosion, sedimentation and stabilizing its condition.

Watershed forest reserves have been included as initial component of the Integrated Protected Areas System (IPAS) as provided under RA No. 7588 and are excluded from logging operations and other exploitation/utilization activities.

➤ Urban and Roadside Forestry Program

The program involves the active participation of government agencies as well as private sector nationwide in tree planting activities within urban and sub-urban areas.

Its objectives are: 1) promote the establishment and maintenance of urban and sub-urban tree parks, nature ecological center; and 2) coordinate and integrate the strategies, thrusts, and direction of DENR towards the promotion of efforts including that of other government and non-government agencies/instrumentalities in urban and sub-urban forestry.

The areas available for development are: 1) pavement and center island of major thoroughfares, expressways, highways, boulevards, and rotundas; 2) parks, plazas and other recreational areas; and 3) coastal areas and riverbanks.

Cutting is not allowed within these sites.

➤ DENR Regular Reforestation Projects

This is implemented through the traditional scheme of reforestation by administration that involves the direct hiring of laborers by the government through the DENR.

The scheme, since 1991, has been adopted only in the protection and maintenance of government-funded established plantation.

Private Sector

➤ Industrial Forest Plantation Management

Industrial Forest Plantation refers to any tract of forestland planted to tree crops primarily to supply the raw materials requirement of existing or proposed wood processing and energy generating plants, and related industries.

The areas available for development are open, denuded, and inadequately stocked residual natural forest within concession areas

Initially, it was termed as Industrial Tree Plantation (ITP), however, it was renamed to Industrial Forest Management (IFM) when its coverage was expanded to allow the planting of non-timber products like bamboo, rattan, and rubber. Likewise, the activities under the program were expanded to include not just the industrial plantation

development and related activities but also the management and protection of natural forest. It was later renamed to Integrated Forest Management Agreement (IFMA). The area coverage is from 500 ha to 40,000 ha.

➤ **Socialized Industrial Forest Plantation Management**

The Socialized Industrial Forest Plantation Management program is a modification of the Industrial Forest Plantation Management program.

Areas available under the program are grasslands, brush lands, and open and denuded forest lands under the jurisdiction of the DENR, including those within government reforestation projects that are otherwise to be classified under the NIPAS, CADC, CALC, vested rights, licenses, permits or management agreements. The area coverage is from 1 to 10 hectares for individuals/single family and up to 500 hectares for association or cooperatives.

➤ **Private Forest Plantation Development**

In order to encourage private landowners to develop their lands into private plantations, regulations and guidelines pertinent thereto were promulgated as addenda to the IFMA regulations under DAO 16, Series of 1992. Under the program, private landowners are granted Private Forest Development Agreement (PFDA) for the establishment and development of forest plantation within their private lands for a duration of twenty five years.

➤ **Establishment of Timber Corridor**

The establishment of timber corridor is one of the strategies of the government aimed primarily to identify and set aside permanent forest areas which can be suitably managed and developed into plantation for the production of timber and non-wood products to support the forest based processing facilities and related industries for domestic and foreign markets.

The CARAGA area is prioritized as timber corridor because of its biophysical conditions, as follows:

- The area is not frequently visited by typhoons;
- The area has a short dry season that is favorable to the growth of trees;
- It has a fertile soil;
- The terrain and topography is generally rolling with elevation less than 500 meters above sea level;
- The presence of well developed road network; and
- Availability of skilled plantation manpower.

Mandatory Plantation Development

➤ **Holders of TLA/Lease/Permit**

Pursuant to Letter of Instruction No. 818, all holders of existing timber license agreement, leases, or permits having to do with cutting of trees for any purpose shall reforest one hectare of open, denuded or brush land area for every hectare logged.

TLAs are required to post reforestation deposit to cover expenses in the development of forest plantations pursuant to DAO 79, Series of 1987.

➤ Holders of pasture lease agreement

Holders of pasture lease agreements are also required to devote and develop at least 10% of their grazing land into forest plantation.

➤ Mining Lessees

As provided for under Sec. 47, P.D. 705, surface-mined areas shall be restored to as near its former natural configuration prior to its abandonment by the mining lessee concerned.

(ii) Incentives

The incentives under the IFMA program are as follows:

- May interplant secondary crops between trees within areas designated for IFP.
- All planted trees and other crops established pursuant to an IFMA belong to the IFMA holder who shall have the right to harvest, sell, and utilize such trees and crops in whatever marketable form(s) and in whatever legal manner(s).
- Allow without restriction the IFMA Holder to export logs, lumber and other forest products derived from IFMA area provided that logs harvested or obtained from naturally growing trees (not planted) in the IFMA area and the lumber manufactured from such logs will not be exported.
- All plantation products derived from an IFMA area shall be exempted from forest charges: provided, that logs derived from trees growing naturally (not planted) and/or other forest products from naturally growing trees (not planted also) in an IFMA area as well as logs from trees planted in compliance with reforestation obligations of TLAs shall be subject to forest charges as stipulated in RA 7161.
- Entitlement to all relevant incentives provided for under the Omnibus Investment Code and to all applicable incentives enumerated under Section 36 of PD 705, as amended.
- Transfer developed plantations that are at least three (3) years old to a cooperative upon fair compensation or payment thereof by the cooperative itself or through a financing institution or to open or public investments.
- Use stable plantation crops that are at least three (3) years old as collateral or security for loans offered by government development banks and financial institutions, or government-owned and controlled corporations.
- An IFMA holder who has satisfactorily complied with the terms and conditions of this IFMA based on performance evaluation by the DENR may be allowed either a) an additional area to the existing IFMA area; provided, that the aggregate size of the IFMA area shall not exceed 40,000 hectares.

The incentives granted under the SIFMA program include:

- Privilege to benefit from their crops that consist primarily of trees for wood production. Non-timber species and other cash crops may be inter-planted.
- All planted trees belong to the SIFMA Holder who shall have the right to harvest, sell and utilize such trees and crops, except those retained for environmental protection purposes.

- Export of logs, lumber and other forest products harvested from the SIFMA shall be allowed by the DENR in accordance with the government allocation system.

The incentives under the Private Forest Plantation Development include:

- Processing, selling or transporting of forest products without restriction as to local destination.
- Free technical assistance from the DENR.

(iii) Differences in concepts of forest in local and national levels

Prior to the implementation of the NFA Project, the Philippine Forestry Statistics (1978) defines forest as an area of one hectare or more which are at least 10 percent stocked with forest trees (including seedlings and saplings), wild palms, bamboo, or brush. Narrow strips of land bearing forest must be at least 60 meters wide and one hectare in size to qualify as forestland. Even today most people, particularly those outside of the forestry sector, connote the term forest to the legally classified forestland, regardless of the land use/land cover. Some people also interpret forest to refer only to the natural stand of trees covering vast areas; they do not classify tree plantations as forest even if it meets the criteria. The differences in opinion and understanding about forests often result to conflicting views on the extent of forest cover in the country.

However, conflicting views on the extent of forest cover do not amount to anything tangible on the ground as the de-facto forest managers and/or upland farmers do not care about forest statistics. The main objective of obtaining benefits for his family from the forests is his primal pre-occupation. It is only recently that the larger goal of society in forest management and environmental protection has been integrated in the consciousness of upland communities through CBFM.

Issue no. 5: Improve management of protected areas

The Philippines is one of the 17 megadiversity countries in the world, with more than 52,170 described species, about half of which are found nowhere else in the world. Studies show that on a per unit area basis, the Philippines is the top megadiversity country.

Continuous logging operations and forest development for wood and other products in the tropical rainforest proved to be a serious threat to its genetic and species richness thus hampering basic ecosystem processes and stability. Habitat destruction and ecosystem imbalance logically lead to wildlife loss and endangerment of unique and endemic flora and fauna.

The most important policy instituted on integrated protected area system (IPAS) and biodiversity conservation is RA 7586 (NIPAS Act of 1992) and its implementing rules and regulations (DENR Adm. Order No. 25, Series of 1992). The Act establishes a comprehensive system of integrated protected areas within the classification of National Parks to secure the sustainable existence of all native flora and fauna and conserve biodiversity.

The enactment of Republic Act 9147 or the Wildlife Act of 2001 has tremendously decreased the illegal collection and trade of wildlife resources in the country.

(i) Information from protected areas

The different protected areas established under the NIPAS Act of 1992 are presently being administered by the Protected Areas and Wildlife Bureau (PAWB) of the DENR.

By virtue of Executive Order 192 dated June 10, 1987, PAWB is mandated to perform the following:

- Formulate and recommend policies and programs for the:
 - establishment and management of an integrated protected areas system
 - conservation of biological diversity
- Monitor and assess management of protected areas and other biodiversity conservation-related activities
- Provide technical assistance to the Regional Offices and other clientele.

In view of these mandates, PAWB is continuously updating and publishing Statistics on Philippine Protected Areas and Wildlife Resources. The information contained in the Statistics covers the detailed information on protected areas; information on wildlife resources, their distribution and current status; and information on the revenues generated from the use of park facilities and amenities and data on wildlife trade.

(ii) Uses and users in reserves

Any sort of utilization activity is prohibited in parks and forest reserves; however, most of these areas are in a state of degradation owing primarily to illegal cutting and slash-and-burn cultivation resulting from inadequate physical protection. Most of the remaining old growth forests have been given protected status, but many of these areas are in critical condition and remain threatened due to inadequate protection resulting from lack of funds and lack of political will.

The different protected areas had been frequented by a number of visitors consisting of local and foreign tourists that have generated some revenues for these areas. Statistics show a total of 672,281 park visitors in 2002 that generated a total income of PhP13,179,350.82 (US\$239,624).

On the other hand, a total of 6,216 local transport permits for the movement of wildlife within the country were issued by the DENR.

(iii) Comparison with overall protected areas map

To date, a total of 88 protected areas with an aggregate area of 2.5 million hectares were already proclaimed under NIPAS, broken down as follows: natural park: 668,383.98 ha; protected landscape/seascape: 1,312,968.69 ha; natural monument/landmark: 21,513.88 ha; resource reserve: 167,489.50 ha; wildlife sanctuary: 279,665.91 ha; natural biotic areas: 11,456.72 ha; and marine reserve: 46,983.48 ha. There are still a number of areas being assessed and proposed for proclamation.

On the other hand, the NFA results show that protected areas cover about 1,771,957 hectares of forest, broken down as follows: natural reserve: 629,531 ha; national park: 302,950 ha; and managed protected area: 839,476 ha.

The difference in area may be attributed to the fact that the protected areas under NIPAS include land uses other than forest whereas the NFA result covers only land use areas classified as forest.

Issue no. 6: Remaining information gaps

Among the information gaps of the NFA approach are as follows:

- Volume of plant products removal - such as food, fodder, raw material for medicine and aromatic products, raw material for colorants and dyes, raw material for utensils, handicrafts and construction, ornamental plants, exudates.
- Volume/weight of animal products/raw materials - such as living animals; hides, skin, and trophies; wild honey and beeswax; bush meat; raw materials for medicine; raw material for colorants; other edible animal products.
- Data on employment.

How NFA can help fulfil the international reporting requirements

a. Current reporting requirements

The Philippines is a signatory to different forestry-related international agreements or protocols. As a consequence, the country has an obligation to regularly report to these international agreements. Said report shall be the basis of these international bodies in assessing the progress of the Philippine forestry sector in meeting its commitments.

Criteria and Indicators for SFM

The development of Criteria and Indicators (C&I) for Sustainable Forest Management (SFM) in the Philippines is being supported by the International Tropical Timber Organization (ITTO). The system that is being developed will be applied to both the national and forest management unit levels. The current set makes use of the seven general criteria or themes adopted by many countries (Enabling conditions for SFM; Forest resource security; Ecosystem health and condition; Forest production; Biological Diversity; Soil and water and; Economic, social and cultural aspects). Similar to the ITTO framework, there are a total of sixty-five indicators. The development of the Philippine C&I was carried out through a very transparent and participatory process and with the active involvement of non-governmental organizations, other government agencies, academic institutions, peoples' organizations and other civil society groups.

The Philippine C&I will be used initially to determine the country's progress towards sustainable forest management. The information that will be generated from the process will be used as an important input in the management and decision-making process both by the forest managers and the government.

Forest Health and Productivity

Currently, the country is a member of ASEAN Senior Officials on Environment (ASOEN) Haze Technical Task Force (HTTF) conducting studies on haze and other pollutions due to open burning of forests.

The promulgation of Republic Act No. 8749 or the Clean Air Act of 1999 and RA 9003 or the Ecological Solid Waste Management Act of 2000 provide a clear-cut policy and direction in combating air pollution including haze pollution in the Philippines. A National Framework Plan to curb haze pollution/open burning has already been prepared. The Implementing Rules and Regulations of these laws have been approved upon public consultation.

The Philippines, thru the act of the Senate, has joined in October 2003 the 119 countries that have ratified the Kyoto Protocol that seeks to reduce carbon dioxide emission to control climate change characterized by the rapid rise in temperature. The DENR Secretary is the Designated National Authority (DNA) for CDM. Simplified modalities and procedures for small-scale afforestation and reforestation project activities under the CDM in the first commitment period of the Kyoto Protocol and measures to facilitate their implementation have been approved.

Global Forest Resources Assessment (FAO)

Global Forest Resources Assessment (GFRA) is a process led by FAO and involving all countries and other partners that reports on the worldwide status and trends of forest resources, their management and uses. Global FRA Reports have been published at approximately 10 years interval. NFA is the backbone of the Global FRA.

In view of the fact that the NFA approach includes variables that are related to the data requirements of ongoing international processes such as the International Tropical Timber Agreement (ITTA), Global Forest Resources Assessment (FAO), Convention on Biological Diversity (CBD), and United Nations Framework Convention on Climate Change (UNFCCC), it could serve as a cost-efficient monitoring tool to generate the data needs for all these international agreements.

a. Relevance of NFA information for reporting

In the past decade, information on land use/land cover data in the Philippines had been based on experts' opinion. Said information had been generated through interpolation or extrapolation, using as base-data the results of the 2nd NFI and other available relevant information. The land use/land cover statistics is essential to the forestry sector as it provides information on the extent of the country's forest cover.

Although forest inventory has been periodically conducted in the legally classified forestland, the inventory is confined totally in areas covered by tenurial instruments; and the results are usually focused on the stand and volume density, particularly on how much wood is readily available for harvesting. Those areas not covered by tenurial instruments have not been subjected to on-ground forest inventory after the 2nd NFRI, thus information on their present situation is lacking or inadequate.

On the other hand, with the implementation of environmental policies that set aside old-growth forests as protected areas, the land base available for timber production from the natural forest had been reduced. As a consequence, plantation forests are expected to play a significant role in the future wood supply of the country.

In view of the fact that considerable areas in alienable and disposable lands have been oriented towards wood production, information on the extent, location and volume of these privately owned plantations are necessary for informed decision-making.

The implementation of the NFA project therefore has addressed these current information requirements because data collection was not limited in the legally classified forestland but also included alienable and disposable land.

b. Additional information sources and requirements

The National Mapping and Resource Information Authority (NAMRIA), through its Remote Sensing and Resource Data Analysis Department, has generated data on land use/land cover based on the interpretation of 2002-2003 satellite imageries. However, no ground truthing was carried out. While the data generated by NAMRIA and the NFA Project did not differ so much in terms of the total forest cover, big discrepancies were observed when it comes to data by forest type.

4. CONCLUSIONS AND OUTLOOK

The comprehensive statistical data generated on land classification and land use, including data on forest cover, forest ownership and management status, stand and volume density, biomass and carbon stock, socio-economic and other pertinent information related to forest and trees outside forest provide adequate databases and baseline information necessary in decision making and in the formulation of national forest policies, plans and programmes as well as in program/project evaluation.

The NFA approach generated a dataset on major forest parameters of high quality to national decision makers. It also highlighted areas where additional efforts for limited and more targeted inventories can be carried out to study specific aspects of the forest like mangroves, plantations, coniferous forest, etc. Among the general conclusions that can be derived from the study are as follows (lifted from Acosta, 2005):

- a. The 2003 NFA indicate that the forest cover of the country has increased from 6.5 million hectares in 1988 to 7.2 million hectares in 2003. Ninety one percent (91%) of this forest is in public forestlands while 9% is in A or D lands. This increase is attributed to natural regeneration and plantings, in both public and private lands. A significant area of Other Wooded Lands exist, indicating that lands previously under pasture, grasslands, and agriculture are growing tree cover, either by natural regeneration or planting.
- b. The increase in forest, however, does not necessarily mean an improvement in forest quality. In forestlands, the Open Canopy Forests (10%-40% canopy density) constitute 55%; only 38% is Closed Canopy Forest. In A or D lands, 70% is Open Canopy Forest and only 10% is Closed Canopy Forest. This indicates that more work should be expended in protecting the Closed Canopy Forests from degradation, through effective measures to prevent encroachment, fire management, and closing these forests to extraction. Likewise, there should be a deliberate effort to protect the Open Canopy Forests from further degradation, and to initiate massive timber stand improvement (TSI) and enrichment plantings in these areas.
- c. The forest cover maps generated by NAMRIA, and the forest structure and characteristics information generated by the NFA provide a comprehensive basis for forest management planning at the national, sub-national, and forest management unit level. On the basis of these information, the following should now be undertaken:

1. Delineate the Permanent Production Forests and Permanent Protection Forests; this should build on the preliminary map delineation undertaken by FMB and the DENR field offices in 2003-2004. If necessary, legislation should be proposed for such permanent delineation, building also on the current work on the Delineation of the Permanent Forest Line.
 2. Having delineated (on the map and on the ground) the Permanent Production Forests and Permanent Protection Forests, the appropriate management plans should be formulated for these blocks of forests. It will be necessary to subdivide these forest blocks further into Forest Management Units (FMUs), and FMU-level plans formulated.
 3. Having determined the metes and bounds of production and protection forests, and the corresponding subdivision into FMUs, all existing forest tenurial instruments should be reviewed in the context of aligning the areas covered by these instruments with the production/protection use classification. Boundaries of these tenured areas may have to be amended, and the management plans likewise reformulated.
 4. A large extent of forests are not under formal management; government should immediately take steps to place these areas under management, through: awarding these areas to qualified entities (individuals, families, people's organizations, NGOs, corporations), or direct management by government (local and national).
- d. The information should be made available to all stakeholders, particularly to local governments (in the formulation and implementation of their Comprehensive Land Use Plans), to organized communities and people's organizations within and adjacent to these forests, as well as to the private forestry sector.
 - e. The DENR field offices should obtain a complete set of the information relevant to their respective areas of jurisdiction. This information should be the basis of strategic and annual planning of these offices.
 - f. Using the resource assessment information, the Revised Forestry Master Plan and the recommendations contained in the report of the ITTO Diagnostic Mission may now be translated into detailed implementing plans at the sub-national, provincial, and even community-level. These plans should be spatially-referenced, time-bounded, and with details on which entity is responsible, including resource-requirements and sources of these resources.
 - g. The results of the National Forest Assessment 2003 show that there is a need for the rethinking of forest policy and forest land allocation in the country, particularly on where management of natural forests should be focused, where the initiatives on protected area management should be, where production forestry should be focused on, and where plantation forests development should be concentrated, as well as where community-based forest management (both in production and protection forests) should be given more emphasis.

A new outlook in forest management as related to forest resources assessments, past experiences and current situation can provide policy makers bases for projecting an improved scenario that could serve as a guide for future actions in forest management. Generation of better forest resources inventory results together with increase use of science-based information are expected to revitalize forest management in the country. Among the basic information provided by NFA that could help us develop sound plans for

improved forest management, demand driven forest production and marketing of forest products are as follows (lifted from Acosta, 2005):

- a. The NFA project, upon faithful continuation of field measurements and re-measurements, can provide sound basis for projecting changes in the quantity and quality of forest cover with parallel accounts on other land uses. The NFA highlights the land use changes within forest areas and conversion of forests to non-forest uses. The long-term economic impact of conversion can be illustrated through a forest resources accounting and valuation system. Thus, integration of NFA results to the system of computing for the national forest accounts is a positive move for this new outlook.
- b. The NFA results illustrate the availability of wood, non-wood resources, and services from forests. It also highlights the extent of dependence of local people on forest resources. A highly dependable information on these resources has tremendous potentials in cultivating local communities' potentialities for increased local incomes from forests. The livelihood generation potential of given forest areas can be ascertained.
- c. The NFA guides forest managers to where resource-extraction are beyond sustainable levels and where forest development is critical to sustain current production levels. It guides the decision makers to where better resource management practices should be introduced or maintained.
- d. NFA results can show geographic distribution of traditional and potential raw materials for emerging markets. In developing and strengthening markets for forest products, NFA results can indicate more efficient product movements by relating locations of processing facilities with geographic distribution of raw materials. Hence, a more rationalized forest-based industry can be put into effect.
- e. NFA results can help increase investments in forest plantations as it can indicate where consumption (demand) of plantation wood is high and what kind of plantations are needed. This information can significantly reduce the economic risks in forest development.
- f. NFA could guide decision on where, how much, land areas shall be designated as permanent production forests and permanent protection forests.
- g. The NFA has the potential for providing critical information on forests and TOF in a cost-effective manner

A requirement for this new outlook to materialize is the NFA's institutional permanency and continuing credibility. It needs to have a dedicated core of institutional advocates, and institutional users, especially policy makers.

5. FUTURE PLANS

- c. Institutionalization of FRA as a management tool which can both be useful in the regional and national level decision making. This would require improvement of field teams' capability that entails re-training of currently available team members as well as training of new members. Likewise, this would require training of additional national team members.
- d. Completion of unfinished tracts – There are still 28 tracts to be completed, as follows: CAR: T013 & T020; Reg. 4-A: T101, T105, T106 & T126; Reg. 4-B: T150

& T229; Reg. 5: T118; Reg. 9: T321; Reg. 10: T308, T309, T311 & T323; Reg. 11: T329, T343 & T354; Reg. 13: T297 & T314; and ARMM: T310, T325, T356, T361, T374, T387, T388, T394 & T395. Completion of these tracts would complete the initial number of plots as required in the first FRA Project and would improve confidence in the estimates generated by the Project.

- e. **Densification of sampling tracts** - A 100 percent sampling densification is expected to enhance accuracy of estimates as well as decrease the standard error which is currently at 7.92% to 5%. This densification would require establishment of additional tracts in the center of any existing 4-tract clusters (quincunx).
- f. **Improvement in the FRA processes** – As a new system compared to the NFIs of 1969 and 1988, many errors were encountered in the encoding and analysis of the results. These have been traced to faulty classification and recording in the field, encoding errors as well as unfamiliarity of encoders with the technical considerations in the whole FRA process, hence, low detection of errors and ultimately encoding of erroneous data. This required months and months of technical editing on the part of the national team. The process can be improved by retraining and training of new members. Nevertheless, emphasis on carefulness in following recording instructions as well as familiarity with the errors encountered in this FRA project can help prevent repetitions of the same errors. This would entail re-echoing of this initial experience with the field teams.
- g. **Use and integration of FRA results in the national forest resources accounting (NFRA) framework.** Since FRA results shall be part of the official Philippine forestry statistics, maintenance and expansion of the existing FRA tracts can be a permanent source of data for NFRA.
- h. **Put the results in the web** – Putting the FRA results in the official website/s of the DENR can be useful in setting the Philippine forestry statistics straight and would put to an end the endless debates on the matter where every organization has its own data to show based on their own computations all of which are apparently citing DENR data.

6 REFERENCES

1. Act No. 1148, 1904. Forest Act of 1904.
2. Act No. 2711. 1917. Revised Administrative Code.
3. Acosta, R. T. 2005. State of the Philippine Forests: The National Forest Assessment of 2003. Paper presented at the Philippines Forestry Forum, 2-3 June 2005, Asian Development Bank, Mandaluyong, Philippines
4. Acosta, R. T. 2005. National Forest Assessment and Policy Development Processes, Philippines. Paper presented in FAO meeting in Rome, 10 March 2005
6. Carandang, A. P. 2003b. The Wood Balance Model for Philippines (Consultant Report: SPPD/PHI/01/010) Revised Master Plan for Forestry Development. FAO-FMB, 2003.
7. Carandang, A.P. et. al. (1996). Impact Assessment and Policy Implications of Timber License Agreement (TLA) Cancellation/Expiration. Forestry Development Center. UPLB, College, Laguna.
8. BFD (1978): 1978 Philippine Forestry Statistics. Bureau of Forest Development , Quezon City, Philippines.
9. DENR (2003): Sustainable Forest Management, Poverty Alleviation and Food Security in Upland Communities in the Philippines (The Revised master Plan for Forestry Development). Final Report. Department of Environment and Natural Resources, Quezon City, Philippines.
10. DENR (2002): Technical Assistance for the Review of Forestry Policies vis-à-vis The Watershed and Ecosystem Management Framework and the CBFM Strategy and Program (RFPTA). Final Report. Department of Environment and Natural Resources, Quezon City, Philippines.
11. E.O. (2004): Promoting Sustainable Forest Management in the Philippines.
12. EO 263, 1995. "Adopting Community-Based Forest Management as the National Strategy to Ensure the Sustainable Development of the Country's Forestlands Resources and Providing Mechanisms for its Implementation", July 19, 1995.
13. FMB (2005): Country Report: Forest Resources Assessment Project. Forest Management Bureau, Quezon City, Philippines.
14. FMB (2002): 2002 Philippine Forestry Statistics. Forest Management Bureau, Quezon City, Philippines.
15. FMB (2001): 2001 Philippine Forestry Statistics. Forest Management Bureau, Quezon City, Philippines.
16. NSCB, 2003. Philippine Statistical Year Book. National Statistic Coordination Board. Makati City. Philippines.
17. PAWB (2002): 2002 Statistics on Philippine Protected Areas and Wildlife Resources. Protected Areas and Wildlife Bureau, Quezon City, Philippines.
18. PD 705. 1975. Revised Forestry Code of the Philippines. Manila, Philippines.

19. PD 1559. 1979. Revised Forestry Code as Amended.
20. R.A. 7161, 1991. An Act Incorporating Certain Sections of the National Internal Revenue Code of 1977, as Amended, to Presidential Decree No. 705, as Amended, Otherwise Known as “The Revised Forestry Code of the Philippines,” and Providing Amendments thereto by Increasing the Forest Charges on Timber and Other Forest Products.
21. RP -German FRI Project. 1988. The Philippine Forest Resources Inventory, Application of Results to Forest Policy. Seminar Proceedings. 14-19 February, 1988
22. Umali, R. M. 2004. The Current Score on Sustainable Forest Management. Society of Filipino Foresters, Inc. Annuals. General Santos City, Saranggani, Philippines.
23. Umali, R. M. 2000. State of Sustainable Forest Management in the Philippines.
24. Society of Filipino Foresters, Inc. Annuals. Angeles City, Pampanga, Philippines